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RELIGIOSITY AND PERCEPTIONS OF LIFE AND DEATH AMONG BULGARIANS AND INDIANS: A CROSS-CULTURAL STUDY

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Abstract. *This paper explores the religious beliefs of Indians and Bulgarians and the ways in which they have been modified during the postmodern period, as well as certain universal and specifically cultural beliefs that characterize the two nations. The discussion also outlines four basic models of religiosity in the postmodern world. The study presents empirical data that have been generated in the two countries on the basis of questionnaires on which individuals indicated their personal convictions about life and death. Our empirical data the main thesis of the present discussion, namely, that postmodernity is marked by an intense process of exchange concerning spiritual and religious ideas that influences people's belief systems.*

Keywords: religiosity; perceptions; beliefs; death; Bulgaria; India.

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INTRODUCTION

The paper resides upon empirical data produced in two different studies that were conducted in Bulgaria and India respectively. The research sample in Bulgaria consisted of 400 individuals who were primarily students and officials from Sofia University “St. Kliment Ohridski” and Plovdiv University “Paisiy Hilendarski.” The study in India was conducted at the Food Corporation of India, a state company where only top level managers and officers were interviewed. As a result, the two studies cannot be regarded as representative of the populations of Bulgaria and India. They instead present the perceptions of life and death among young and more highly educated people in the two countries, along with certain transformations in beliefs and spiritual practices in both Eastern and Western cultures. The main thesis of this paper is that postmodernity is marked by an intense process of exchange of spiritual and religious ideas that influences individual beliefs related to life and death. This thesis is demonstrated by the empirical data we have collected.

There has been a revival of spiritual consciousness during the postmodern period. In spite of the ongoing secularization of Western countries, Norris and Inglehart’s (2004) empirical findings have shown that the world as a whole has not become less religious. Quite in contrast to the European modernist value of secularization, there are indeed more people in the postmodern world with traditional religious views than ever before, and they constitute a growing percentage of the world’s population. It should be noted that Norris and Inglehart’s (2004) demographic thesis has been confirmed by a large number of other studies (see Diener et al. 2011). Hayward and Kemmelmeier (2011) have also found that nations and states with more difficult conditions of life are more likely to be highly religious, while religiosity is less prevalent in societies that have more favorable circumstances. Such studies suggest that the strength of religious beliefs depends on both the socio-demographic characteristics of society as well as its level of economic development.

It is thus clear that spirituality and religious beliefs have not lost their significance today. Studies focusing on the psychological processes of adaptation have revealed that the adoption of religious or spiritual beliefs may in fact comprise a response to the prevailing multiculturalism in society (Sarouglu 2010). For example, Gungor et al. (2012) have observed in their study of Turkish-Belgian adolescents that not only do recent immigrants reaffirm their religion in the process of acculturation to their new home land, they often place a greater emphasis on their religiosity than their counterparts in Turkey. Young Turks in Belgium regard the reaffirmation of their religion beliefs and practices as equivalent to establishing their individual and ethnic identity, thus utilizing their religious ideas as a tool for forging their unique personality. In addition, although we may regard traditionalism as one common response to multiculturalism, certain individuals develop completely new identities in forging an accommodation with their new cultural environment. This has been termed a process of “creolization” (Hannerz 1992) or “hybridization” (Hall 1993; Pieterse 2004), in which migrants accept new concepts and beliefs that intermingle with their old values to the point that a totally new cultural construct is created.

This paper also investigates religiosity in relation to individuals’ locus of control, which indicates the extent to which they believe they can control the events in their life (Rotter 1966; Silvestri 1979). A strong interior locus of control corresponds to one’s conviction that their life depends entirely on them, while a strong exterior locus of control denotes the tendency for an individual to locate control outside of themselves, believing that factors other than their own efforts shape their life. In this regard, strong religious feelings may be rooted in an elevated sense of an exterior locus of control.

Bulgaria and India are two countries that are geographically and culturally distant from each other, and they have followed markedly different social, historical, and economic paths of development. In Hinduism, the phenomenon of death is closely intertwined with the concepts of karma and reincarnation, while

in Bulgaria, the majority of the population belongs to the Christian Orthodox Church, which traditionally denies the notion of physical rebirth. However, the idea of rebirth is not totally unknown within the doctrines of Christianity and Islam. For example, the *Book of Revelation*, also known as the *Apocalypse of John*, prophesies that the dead will be restored to life at end of time in the same way that Jesus Christ was resurrected from death. This indicates that the concept of resurrection in reality plays a central role in Christian belief.

Many scientists have also studied the process of dying and the possible existence of an afterlife, with the psychologist Raymond Moody (1975) being one of the first scholars to investigate near-death experiences. On the basis of numerous interviews, Moody concludes that almost all those who have experienced clinical death speak of life in a different dimension of time and space. The idea of life after death is unquestionably one of the universal narratives from antiquity to the present day, and it is independent of any racial, ethnic, and cultural differences. As such, the concept of rebirth, in one form or another – whether on the spiritual level or in the physical realm – underlies the doctrines of all the major religions in the world.

The present discussion will examine the importance of perceptions of life and death in the cultures of India and Bulgaria, addressing such concepts as karma, destiny, and free will, which are closely intertwined with the idea of rebirth. It will also address the considerable changes that have taken place in this regard. A cross-cultural comparison of India and Bulgaria will thus reveal certain universal values and narratives, on the one hand, as well as specifically cultural beliefs and concepts, on the other. This study will also discuss mechanisms for the cultural exchange of ideas, including their significance for both individuals and societies in postmodern times.

METHODS AND PROCEDURE

In Bulgaria, the sample for our study consisted of 400 Bulgarian citizens who were students, professors, and officials at Sofia University

“St. Kliment Ohridski” and Plovdiv University “Paisiy Hilendarski” at the time of the interviews. 308 (77%) were female, 86 (21.5%) were male, and 6 (1.5%) did not indicate their sex on the questionnaire they were asked to complete. The latter included both closed and open-ended questions. This paper does not discuss all of the responses on the questionnaire, but takes into consideration only those that are directly related to the religious beliefs and feelings of the respondents. The study in Bulgaria was conducted in September–October 2017.

In India, the sample consisted of 196 respondents from the business community. 51 (27%) were female, 144 (72.5%) were male, and 1 (0.5%) did not indicate their sex on the questionnaire, which consisted of closed questions. All worked at the Food Corporation of India, which is a state company with elite status, and came from the various states and cities in the country. The questionnaire was administered during a business seminar conducted in March 2016 in Tamil Nadu, India.

The two questionnaires used for these studies included different questions. While this rendered our intended cross-cultural comparison challenging, certain questions on the Indian questionnaire were not relevant for our Bulgarian respondents, with the reverse also being the case. For example, questions concerning karma and particular rituals would not be understood by most of the Bulgarian respondents, while questions about certain beliefs typical of Bulgarian culture might not be clear for our Indian respondents. This was the rationale for constructing two different sets of questions for the two different studies. The samples for the two studies were also very different in composition, with our Indian respondents being predominately male while our Bulgaria respondents were predominantly female. In light of such empirical differences between the two studies, the data we have collected do not support a generalization of our findings. Nevertheless, they are useful for tracking the contemporary dynamics of ideas, spiritual beliefs, and religious practices in the two countries.

The preliminary hypothesis of this study was that beliefs in karma and reincarnation would be so prevalent in India that almost everyone would adhere to them. The existing literature suggests that the concept of reincarnation continues to form the basis of the belief system in India and molds the everyday lives of individuals (Bhungalia 2002; Kopalle et al. 2010). However, our findings did not fully support this hypothesis. The majority of our sample who believe in karma and reincarnation adhere to the cultural traditions of Hinduism, while those who identify themselves as Christian or Muslim claim not to profess such beliefs.

RESULTS

The questionnaire we used in India was structured as a series of statements and answers using a 5-step Likert scale, with respondents having to choose the answer that most clearly described them. The items were constructed in accordance with various beliefs that have been found to be prevalent in traditional Hindu culture. For example, item one stated "There is reincarnation and we have lived many times before." Of the 196 people in the sample, 51 (26%) strongly agreed with the statement, 30 (15.3%) agreed to a certain extent, 41 (20.9%) chose neutral, 16 (8.1%) rather disagreed, and

35 (17.8) strongly disagreed. A considerable number of people, 23 (11.7%), did not respond to the question (Figure 1).

Consequently, these results do not support our hypothesis, with less than 50% of the sample claiming that they believe in reincarnation.

Answers to the following items were rather paradoxical, however. For example, the next statement was "Good deeds in this lifetime bring merit in the next." 74 (37.7%) respondents strongly agreed with it, 40 (20.4%) rather agreed, 31 (15.8%) chose neutral, 15 (7.6%) rather disagreed, 23 (11.7%) strongly disagreed, and 13 (6.6%) did not answer (Figure 2).

These responses indicate that while a substantial number of the sample explicitly disagreed with the concept of reincarnation, many of them agreed with it implicitly. The answers to the next item demonstrated this same tendency among the Indian sample.

The next statement was "Donations create good karma." 65 (33.2%) respondents strongly agreed with this statement, 56 (28.5%) rather agreed, 33 (16.8%) chose neutral, 9 (4.5%) disagreed, and 22 (11.2%) strongly disagreed. Eleven (5.6%) respondents registered no reply. These results indicate that the majority of our sample believed in the concept of karma, at least to some extent (Figure 3).

The next statement on the questionnaire was "A very important part of being an In-

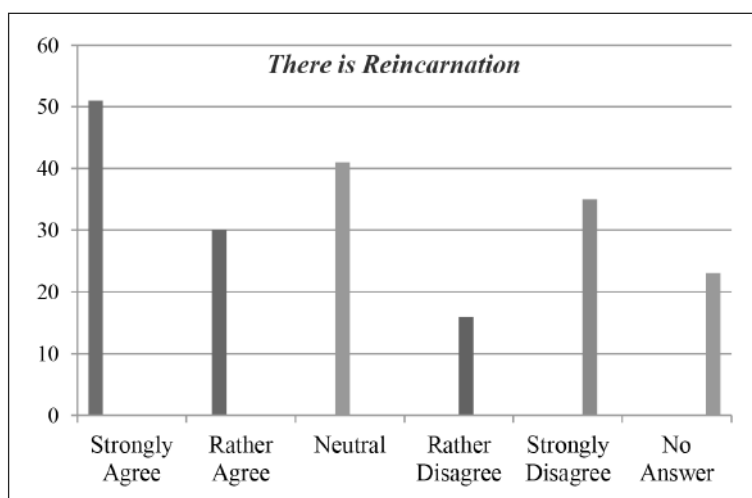


FIGURE 1. BELIEF IN REINCARNATION IN INDIA

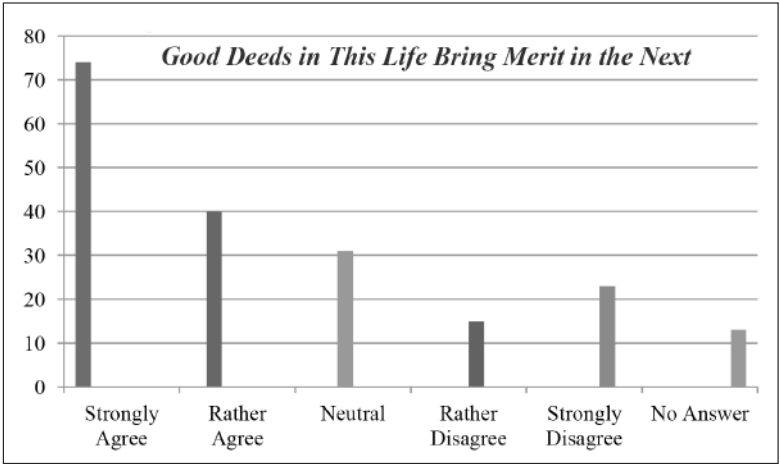


FIGURE 2. BELIEF IN REINCARNATION AND KARMA IN INDIA

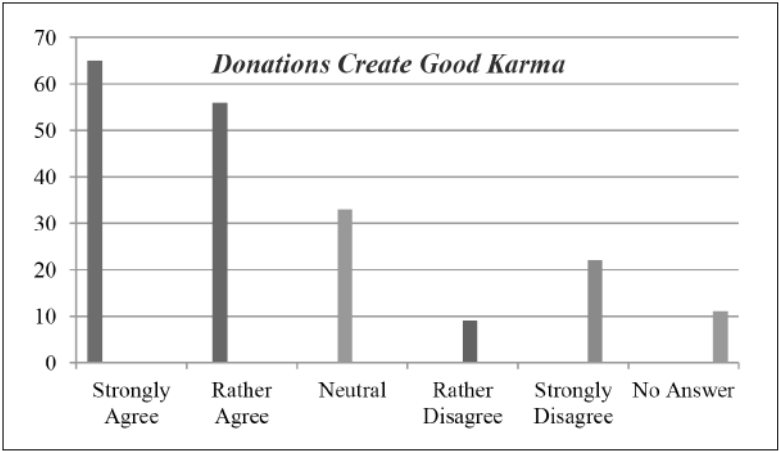


FIGURE 3. BELIEF IN KARMA IN INDIA

dian is following one’s own religion.” Sixty (30.6%) respondents strongly agreed with this statement, 43 (21.9%) rather agreed, 36 (18.3%) chose neutral, 12 (6.1%) rather disagreed, and 32 (16.3%) strongly disagreed. Thirteen (6.6%) respondents provided no answer. Consequently, only about half of our sample believed that following religious traditions is an essential element of Indian culture (Figure 4).

If the results in India were surprising, the data collected in Bulgaria did not correspond

to our preliminary expectations either. For example, although a considerable number of the Indian sample expressed an explicit doubt in reincarnation, it is not so unusual for Bulgarians to profess this belief. The Bulgarian questionnaire included a structured question concerning what our informants personally believe in, and the respondents had to choose between a number of different options. Of our 400 respondents, 200 (50%) claimed that they believe in God, 72 (18 %) believe in angels, 52 (13%) in the saints, and 115 (28.7%) in

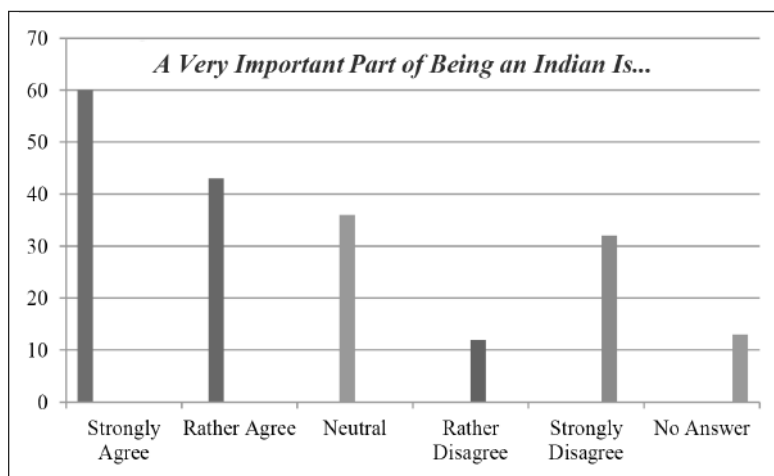


FIGURE 4. IDENTIFICATION WITH ONE'S OWN RELIGION IN INDIA

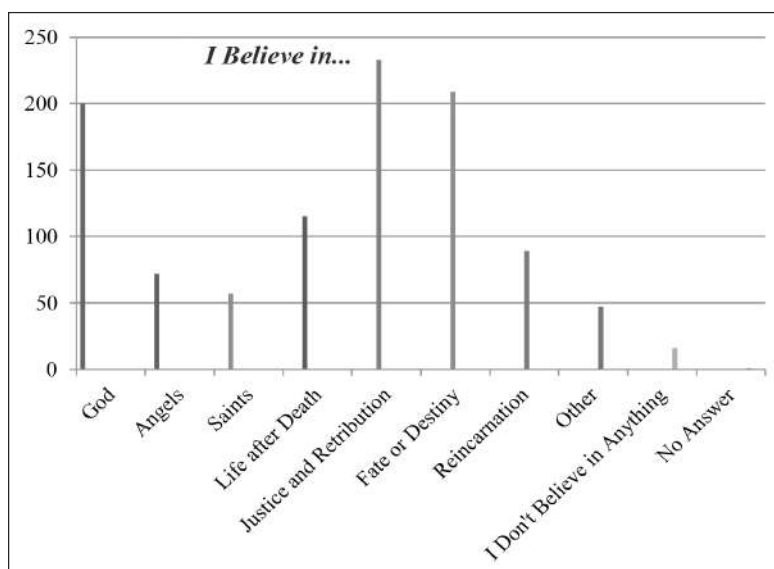


FIGURE 5. BELIEFS IN BULGARIA

life after death. A considerable majority of 233 (58.2%) claimed that they believe in justice and retribution, while 209 (52.2%) stated they believe in fate or destiny. 89 respondents (22.2%) remarked that they believe in reincarnation.

Only 16 respondents (4%) claimed that they do not believe in anything. One person (0.2%) did not answer this question, while

47 (11.7%) chose "other." Respondents also stated that they believed in such things as "oneself", "energy", "the Universe", "nature", "the supernatural", "love", "extraterrestrials", and so forth. The total number of answers was greater than 100% because many respondents chose two or even three options (Figure 5).

The next item on the Bulgarian questionnaire addressed whether respondents would

agree with the statement that they are a religious person. 79 (19.7%) informants strongly agreed with it, 129 (32.2%) rather agreed, 106 (26.5%) rather disagreed, and 83 (20.7%) strongly disagreed. 3 informants gave no answer. This means that half of the Bulgarian respondents view themselves as being religious (Figure 6).

The following item concerned what is most important for being a truly religious person. 223 (55.7%) respondents claimed that

faith was most important for them, and 172 (43%) respondents stated that it was most important for them to be a good person. Eleven (2.7%) chose following the 10 Commandments, and 14 (3.5%) indicated praying. Only 5 (1.2%) people thought that visiting church regularly was the most important thing to do. Respondents who chose “other” noted that it was most important for them to read the Bible, believe in Jesus Christ, be baptized, and so forth. (Figure 7).

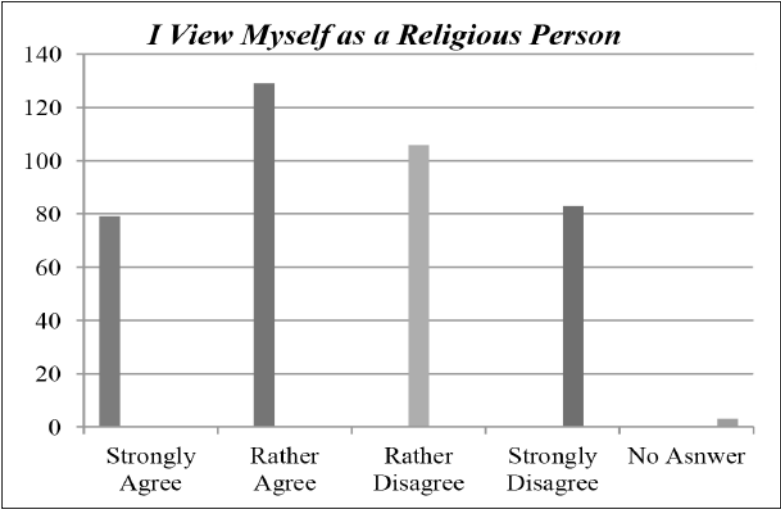


FIGURE 6. SELF-PERCEPTIONS OF RELIGIOSITY IN BULGARIA

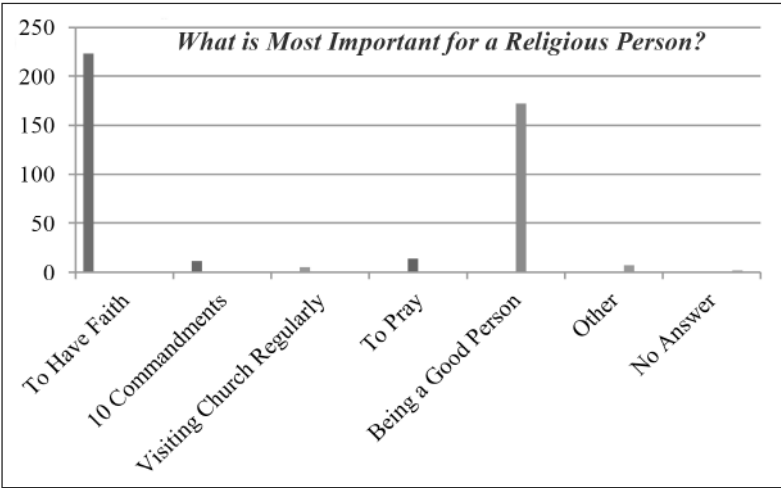


FIGURE 7. PERCEPTIONS OF RELIGIOSITY IN BULGARIA

The last item that we will discuss here, which was included on both the Bulgarian and Indian questionnaires, was aimed at identifying our respondents' locus of control. It consisted of several statements, and informants had to select the one that they thought most accurately described their views. Of our 400 Bulgarian respondents, 145 (36.2%) believed that they were fully responsible for all successes and failures in their life. 136 (34%) felt that they were responsible for the majority of their successes and failures, but that an element of

fate was also involved. 111 (27.7%) respondents regarded their life as an equal mixture of their own efforts and fate, while only 5 (1.2%) believed that they had very little control over events in their life. 3 (0.7%) respondents did not answer the question (Figure 8).

Among our 196 informants in India, 78 (39.7%) believed that they were fully responsible for their successes and failures. 54 (27.5%) felt that they were responsible for the majority of their successes and failures, but that an element of fate was also involved.

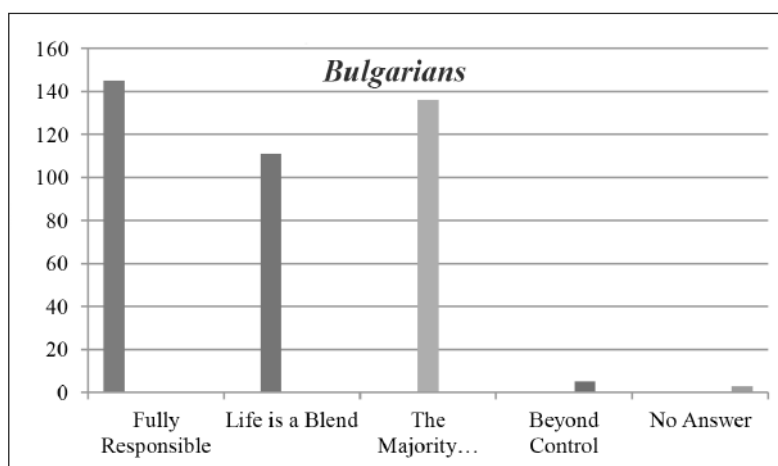


FIGURE 8. LOCUS OF CONTROL FOR THE BULGARIAN RESPONDENTS

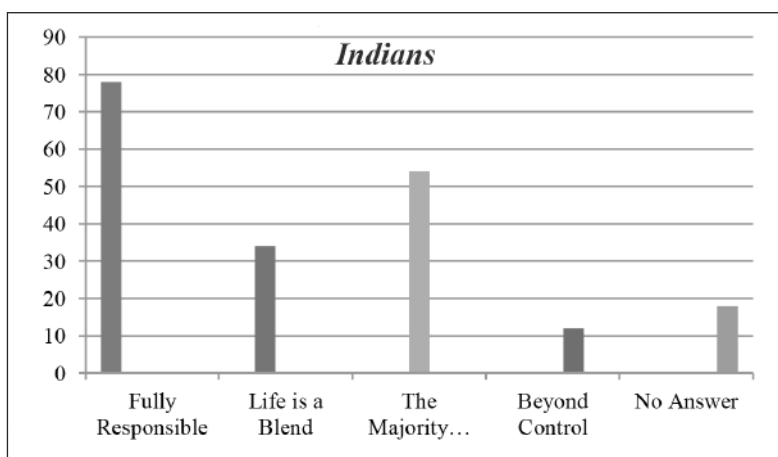


FIGURE 9. LOCUS OF CONTROL FOR THE INDIAN RESPONDENTS

54 (27.5%) claimed that their life was an equal blend of their own efforts and fate, while 18 (9.1%) stated that everything that happens in their life was beyond their control (Figure 9).

It is evident from these answers that the majority of both the Bulgarian and Indian respondents demonstrated a strong to moderate interior locus of control. However, a significant number of both samples believed that fate or destiny had a role to play in their lives as well.

DISCUSSION

Although the results obtained in India and Bulgaria appear to be contradictory, in reality this is not the case. In addition to those individuals who uphold traditional beliefs in the two samples, there is a larger group who accept religion as cultural tradition and heritage rather than as an attachment to a particular ideology or doctrine. Only about half of the Indian respondents stated that following one's own religion was an essential part of Indian culture. Similarly, half of the Bulgarian respondents viewed themselves as religious, while the other half claimed that they were not religiously inclined. The majority of the Bulgarian informants also shared a belief in justice and retribution, which functions primarily as a guiding ethical principle within the context of Bulgarian culture, even though it may be viewed as a concept taken from the Bible. At the same time, however, very few Bulgarians claimed that they do not believe in anything.

The data collected in Bulgaria reveal certain interesting tendencies. For example, while 50% of the Bulgarian respondents professed their belief in the Christian idea of God, the remainder perceived God as a form of energy, power, or supernatural presence rather than as a religious figure or personality. Together with those who cherished the traditional doctrine of the Orthodox Church, there was thus another group of individuals who were open to different ideas concerning spirituality and religiosity. One proof of this tendency is the fact that more of our Bulgar-

ian sample believed in reincarnation than in the saints or angels. This also indicates that certain religious concepts of the church have apparently eroded to a significant degree, and that there are holes in the traditional system of belief that need to be filled with new ideas. One sign of this process is the fact that very few people in the Bulgarian study stated that it was important for them to visit church regularly, with respondents instead maintaining that the most important factor for one to be religious was to have faith or be a good person. This is an important example of the decline of trust in traditional religious institutions. A large number of those in our sample regarded religion more as a cultural attitude, personal psychological experience, or a shared ethical code, than as a set of particular rituals or ideological doctrines that are to be followed.

The Indian respondents shared similar convictions. For example, a considerable number of people expressed doubt in the traditional concept of reincarnation, although a majority of the respondents agreed with such statements as "Good deeds in this life bring merit in the next" and "Donations create good karma." This reveals that while certain respondents doubted or even denied reincarnation, they accepted the idea as a broad cultural context within which to express and communicate their spiritual or religious feelings. This is also why the respondents may associate such concepts as reincarnation and karma with a type of cultural behavior or ethical principle rather than with a particular ideology. However, it should be reiterated that our two studies are not representative of the populations of Bulgaria and India as a whole. The majority of individuals living in rural areas or remote parts of India may very well continue to follow their patriarchal customs and religious traditions.

The comparison of our Bulgarian and Indian data nevertheless indicates that a considerable number of people in the two countries do not adhere to traditional religious convictions. There may be several reasons for this phenomenon in Bulgaria. First, as was noted above, there has been a significant decline

of trust in the Orthodox Church. Second, the collapse of socialism has been followed by a revival of previously established esoteric doctrines or philosophies that had been banned by the authorities. Occult traditions have in fact always been strong in Bulgaria except for the socialist period, one example being the idea of reincarnation. The White Brotherhood of the Bulgarian philosopher and spiritual teacher Petar Deunov (2005), also known as Beinsa Douno (1864-1944), professes the idea of reincarnation, and the number of his followers have increased significantly with the emergence of democracy after 1989. Third, there also appear to be certain contemporary influences that are associated with new ideologies, such as the New Age milieu.

In order to understand the role of religion in individuals' lives in India, one has to take into consideration the existence of very large religious minorities, such as Muslims and Christians. In this respect, it is not by chance that almost all of the informants who indicated on the questionnaire that they totally disagreed with the concept of reincarnation identified themselves as Christian, with one stating that he was a Muslim. In addition, many informants who claimed that they were Hindu indicated that they were either neutral to or rather disagreed with the notion of reincarnation. However, those who expressed open resistance and strongly disagreed with the Hindu concepts of reincarnation and karma came predominantly from the Christian and Muslim communities.

In reality, this fact confirms Castells' (1997) theory of resistance identity, which maintains that ethnic or religious minorities may adhere more strongly to their ethnic, racial, or cultural characteristics in order to differentiate themselves from the culture of majority. Christians in India might thus resist the country's prevailing religious ideology in order to maintain their religious identity and shape their cultural uniqueness, being more devoted, sincere, and ardent believers than the many Christians in Europe who regard their religion primarily as comprising a cultural tradition or shared ethical code.

The research data we obtained in India and Bulgaria may initially appear to be paradoxical. For example, in a country where the concept of reincarnation is a millennia-old tradition, there are religious and social communities who clearly differentiate themselves from it. Conversely, in another country where the idea of rebirth has long been excluded from the official doctrine of the church, there are a growing number of people who profess this belief. However, a closer look at the cultures of India and Bulgaria reveals the same tendency – more individuals today view their religion primarily as a set of cultural or ethical principles. One reason for this process might well be the secularization of society, which in the case of Bulgaria is combined with an almost total collapse of trust in traditional religious institutions. This does not mean that individuals have become less religious as they have abandoned church institutions, as some authors state (Diener et al. 2011). Many of the Bulgarian informants who claim that they do not attend church services still consider themselves to be religious, which indicates that they do not regard religion as comprising collective participation in established institutions. They instead view religion as involving a particular way of life and a type of personal experience. This shift reflects a change in consciousness from a more collective and institutionalized concept of religion to a more personalized perception of the belief system, and it constitutes an intense process of the de-institutionalization of religion that has a particular affect on beliefs related to life, destiny, and death.

In a similar manner, many people in India accept Hinduism as their cultural foundation, but the latter can be influenced by ideas and concepts that come from various other religions. Even when people today adhere to their traditional religion as a basic framework of beliefs, they may also be open to new ideas. Many Indians may thus be receptive towards ideas that come from Christianity or Islam in much the same way that individuals who profess the Christian idea of a personal God may also believe in reincarnation, as was evident in the Bulgarian study.

CONCLUSIONS

Insofar as the comparative study presented in this paper has certain limitations concerning the samples, methodology, and quality of the empirical data, the findings should not be regarded as representative of the populations of India and Bulgaria as a whole. A future study of the issues we examined should employ one questionnaire for both countries and include similar samples from each. The empirical data collected has been used here only to trace religious and spiritual beliefs in postmodern times.

Four models of religiosity can be outlined on the basis of the analysis we have conducted. The first is the traditional model, whereby individuals adhere to their accepted values and beliefs concerning life and death. The second comprises a contrasting model of withdrawal, which typifies individuals who are skeptical about or in full disagreement with religious ideas in general. Very few people represent this model in either India and Bulgaria. The third is a model of resistance, in which religious feelings and concepts stand in opposition to other dominant ideologies, functioning as a tool for individual and collective self-enhancement. The fourth is the open culture model, which is represented by people who view religion as primarily a set of cultural or ethical principles. The fact that individuals whom this model describes are not members of any organized church does not mean that they are less religious than others since as many of them perceive themselves as religious. This model rather reflect a shift in consciousness from a more collective and institutionalized notion of religion to a more individualized set of beliefs.

This fourth model marks the de-institutionalization of religion that has taken place in certain societies in the postmodern world. This change makes it possible to embrace new concepts and ideas, which comprises the manner in which the postmodern world represents varieties of religious feelings and attachments. Within this broader context, such older ideas as life after death and rebirth are given new meaning and come to be redefined within both old and new structures.

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TOLERANCE/INTOLERANCE OF AMBIGUITY: ASSESSING ITS PERCEIVED IMPORTANCE

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Abstract. *A scale for measuring attitudes towards ambiguity tolerant (AT) and ambiguity intolerant (AInT) behaviors was constructed for use with adolescents. It was initially applied in a concurrent study of high school students, their teachers, and their parents (Stoycheva 1998, 2003) that examined the development of ambiguity tolerance. The research question arose concerning whether its utilization could be extended to a new age group (university students) and to a new research topic (creativity). 43 men and 87 women aged 19-34 from three universities in Sofia who participated in a correlational study of creativity (Stoycheva et al. 2008) provided data for analysis. In addition to the scale, they were measured for ambiguity tolerance, creative motivation, and the need for achievement. The scale yields two scores for the importance ascribed to AT and AInT behaviors. The good internal reliability of the scale, the relationship between its two scores (weak, negative correlation), and the pattern of preferences (AT behaviors being regarded as more important) were replicated across samples. This was also the case concerning the relationship between individual differences in ambiguity tolerance and the importance ascribed to AInT behaviors. The scale also proved useful in differentiating between two motivations relevant to creativity. While there were positive correlations between creative motivation and the need for achievement, there were differences in the way they related to the importance university students reported for AT and AInT behaviors. Our results encourage the application of the scale in broader studies of adolescents and young adults that investigate their educational and vocational choices, professional preferences, work-related attitudes and aspirations, norm-relating behavior, and engagement with creative activities.*

Keywords: tolerance/intolerance of ambiguity; creative motivation; need for achievement; university students.

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INTRODUCTION

Tolerance/intolerance of ambiguity refers to individual behavior in ambiguous situations (Stoycheva 2010 2011), which comprise situations that confront the individual with either a lack of information or a lack of clarity in the information available. Individuals encounter ambiguous situations in a wide range of settings – at work (such as unclear performance criteria), at home (having to deal with emotional ambivalence), at school (needing to master imprecise concepts), in everyday life situations with uncertain outcomes, in social interactions that call for meeting novel or uncommon situations, and in interpersonal communication in which one may face inconsistency between the verbal and non-verbal parts of a discourse. The need to act upon ambiguous stimuli or situations challenges the individual to cope with ambiguity and react to it in one or another way.

How people experience and act in an ambiguous situation is indicative of their tolerance/intolerance of ambiguity. Those who are *intolerant of ambiguity* perceive and interpret ambiguous situations as a source of psychological discomfort or a threat, and they tend to avoid them either psychologically (by ignoring ambiguity) or operationally (by leaving the situation). Those who are *tolerant of ambiguity* are better able to meet the challenge insofar as they can withstand the discomfort of an ambiguous situation long enough to accommodate and generate more appropriate and flexible responses to it.

Tolerance regarding ambiguity refers to a disposition of acceptance, such as is the case in notions of drug tolerance or political tolerance. Ambiguity tolerance as a personality disposition indicates the capacity to “live with” ambiguity, that is, enduring ambiguity and operating with and within it. Tolerance is typically contrasted with an intolerance of ambiguity to indicate how well people cope with ambiguous situations, from accepting to deal with ambiguity to avoiding it.

It is this understanding that informed our research on ambiguity tolerance, particularly concerning its development in adolescence

(Stoycheva 2010, 2011). One of the most powerful ways in which a culture encourages or discourages certain behavior involves the ways in which teachers and parents reward or punish various personality characteristics as they develop in children as well as the behaviors that manifest those characteristics. This is why we designed a unique psychological instrument for evaluating the attitudes of adolescents and adults towards ambiguity tolerant (AT) and ambiguity intolerant (AInT) behaviors. Since the construction of the scale has been presented in detail elsewhere (Stoycheva 1998, 2003), here we will only briefly retrace the main steps we have taken in this regard.

From the research literature we compiled a list of 30 behaviors indicative of a tolerance for ambiguity and 30 indicative of an intolerance of ambiguity. These 60 items were presented to 30 professional psychologists and 34 graduate students in psychology who served as experts in the evaluation of the content validity of the items. Of the initial 60 items, 23 AT and 11 AInT items were identified as correct by at least 80% of the experts. 30 teachers and 48 parents then evaluated the remaining 34 items for social desirability. An equal number of AT and AInT behaviors were selected from these 34 items. The scale for measuring attitudes towards the tolerance/intolerance of ambiguity thus consists of 7 AT and 7 AInT behaviors that are thematically related and possess a similar moderate degree of social desirability. The scale we have constructed in this manner yields two scores – one for the importance ascribed to ambiguity tolerant behaviors, and a second for the importance ascribed to ambiguity intolerant behaviors.

The scale was first used in a concurrent study of high school students, their parents, and their teachers that described the development of ambiguity tolerance in adolescents in relation to how adults encourage the tolerance/intolerance of ambiguity, on the one hand, and, on the other, how adolescents perceive such encouragement. The study involved 303 high school students, their teachers (N = 52), and their parents (N = 236) (Stoycheva 1998,

2003). Since the scale proved to be effective in research concerning ambiguity tolerance, we considered extending its area of application. The following analysis examines the utilization of the scale with a new age group – university students – and a new research topic – creativity.

METHOD

In the first study (Stoycheva 1998, 2003), subjects were drawn from Secondary School 55 in the capital Sofia (N = 143) and from the As-sen Zlatarov Natural Sciences and Mathematics School in the town of Botevgrad in north-west Bulgaria (N = 160). These subjects were students in grades 9 (N = 102), 10 (N = 105), 11 (N = 71) and 12 (N = 25) between 14 and 19 years of age (mean = 16.5, SD = 0.97). There were 131 boys and 172 girls.

These students were administered the MAT-50/BG-3, which is abbreviated in Bulgarian as MAT-50/BB-3. This is the third Bulgarian version of Norton's MAT-50 questionnaire, which includes 52 items used to measure individual differences regarding ambiguity tolerance. The students were also administered the 14-item scale we developed, which was designed to assess attitudes towards AT and AInT behaviors.

In the second study, 43 men and 87 women aged 19-34 (Mean = 22.24, SD = 1.86) from three universities in Sofia provided data for analysis. They were students in their 2nd to 5th year of education in physics at Sofia University (N = 30), in pharmacy at the Medical University (N = 65), and in art at the Academy of Arts (N = 35).

Participants in this *correlational study of creativity* (Stoycheva et al. 2008) were measured for a) ambiguity tolerance, using the MAT-50/BG-3 (Stoycheva 2003); b) creative motivation, using the Bulgarian version of Torrance's Creative Motivation Scale (Stoycheva et al. 2008); and c) the need for achievement, using the Bulgarian questionnaire designed for this purpose by Paspalanov and Stetinski (1988). They were also administered the 14-item scale we designed for evaluating attitudes concerning AT/AInT behaviors.

RESULTS

Since the results of the first study have been presented and discussed in detail elsewhere (Stoycheva 1998, 2003), we will focus in this paper on presenting and discussing the results of the second study. We will nevertheless refer to our findings concerning high school students when it is necessary to compare the scale's performance across the high school and university samples.

THE RELIABILITY OF THE SCALE

The 14-item scale for measuring attitudes yields two scores – one for the importance ascribed to AT behaviors, and a second for the importance ascribed to AInT behaviors. The good internal reliability of these two scores in high school students is replicated in university students as well (Table 1 below).

Though alpha coefficients between $\alpha = 0.60$ and $\alpha = 0.70$ may appear somewhat low, these values are acceptably high for a scale of this length. It is also important to note that the items upon which the two scores are based are specifically designed to describe different areas of functioning, such as problem solving, social relations, vocational interests, and others. In light of this diversity of the items, the values of Cronbach's alpha indicate that the reliability of the scale is satisfactorily good.

TABLE 1
CRONBACH'S ALPHA FOR THE HIGH SCHOOL AND UNIVERSITY STUDENTS SAMPLES

	High School Students	University Students
AT Attitudes	$\alpha = 0.62$	$\alpha = 0.64$
AInT Attitudes	$\alpha = 0.69$	$\alpha = 0.81$

The attitudes reported concerning AT behaviors displayed similar levels of internal consistency in the two samples. Corrected for all items, the score correlations for AT attitudes varied from 0.24 to 0.42 for high school students (mean correlation 0.33, N = 290) and from 0.16 to 0.49 for university students (mean correlation 0.35, N = 126). Univer-

sity students displayed greater consistency in their attitudes towards AInT behaviors. Corrected for all items, the score correlations for AInT attitudes varied from 0.22 to 0.61 for high school students (mean correlation 0.40, N = 287) and from 0.35 to 0.72 for university students (mean correlation 0.55, N = 126). University students appear more unanimous in their perception of ambiguity-avoidant behaviors and in their evaluation of the importance that such behaviors have for them.

In addition, the scores for AT and AInT attitudes are weakly intercorrelated in both samples – $r = -0.26$ ($p < 0.001$) for high school students and $r = -0.31$ ($p < 0.001$) for university students. Those who assign greater importance to AT behaviors tend to assign lesser importance to AInT behaviors, although the shared variance between the two variables is small. Attitudes towards AT and AInT behaviors, though interrelated, appear to reflect different psychological dimensions. Further analysis would be required to provide data that might support this observation.

IMPORTANCE ASCRIBED TO AT/AInT BEHAVIORS

While high school students assign somewhat greater importance to AT behaviors, there is no significant difference between the AT attitudes among the two samples (Table 2). Both

high school and university students view AT tolerant behaviors as rather important for them, with the mean scores for each of the seven behaviors regarding AT attitudes being presented in Table 3 below. There is a significant difference between the evaluations of the high school and university students in respect to only two items.

In contrast, university students assign less importance to AInT behaviors (Table 2). The value of Cohen’s d (0.23) for the statistically significant difference between the scores concerning AInT attitudes indicates a small effect size. Although individual scores showed greater variance in the university sample ($F = 3.95$, $p < 0.05$), the similar and almost identical minimum and maximum of the two empirical distributions suggest that the difference observed in the means was not due to certain individuals having very low and/or high scores. It is rather due to the fact that university students, compared to high school students, rated four of the seven AInT behaviors as significantly less important (Table 3 below).

In general, our participants regard both AT and AInT behaviors as more important than not. The means reported in Table 3 vary from 2.49 to 3.21 for AT behaviors and from 2.33 to 3.25 for AInT behaviors. However, AT attitudes scored significantly higher than AInT

TABLE 2
DESCRIPTIVE STATISTICS AND T-TESTS FOR THE AT/AInT ATTITUDES
WITHIN AND BETWEEN THE TWO SAMPLES

		High School N = 290	University N = 130	<i>t</i> -test
AT Importance	M	20.54	19.90	1.60 <i>p</i> = 0.11 <i>d</i> = 0.17
	SD	3.76	3.75	
	Range	10-28	11-28	
AInT Importance	M	19.58	18.60	2.10 <i>p</i> = 0.04 <i>d</i> = 0.23
	SD	3.90	4.56	
	Range	8-28	7-28	
<i>t</i> -test		2.73 <i>p</i> = 0.007	2.12 <i>p</i> = 0.03	

attitudes in both samples (Table 2). The pattern of preferences revealed is replicated across both populations – both high school and university students perceive AT behaviors as more important than AInT behaviors.

A paired samples *t*-test was used to compare the two scores within each sample, while

an independent samples *t*-test was used to compare the scores of high school students and university students. The value of Cohen's *d* for the statistically significant differences between the two samples regarding the scores for AT and AInT behaviors indicates a small effect size.

TABLE 3
DESCRIPTIVE STATISTICS AND T-TESTS BETWEEN THE TWO SAMPLES
FOR THE IMPORTANCE ASCRIBED TO AT AND AInT BEHAVIORS

Item No	AT Behaviors	High School N = 290	University N = 130	<i>t</i> -test
1	Puts him/her self to the test by experimenting in different situations.	M = 3.21 SD = 0.88	M = 3.12 SD = 0.95	
4	Enjoys unexpected situations and surprises.	M = 3.11 SD = 0.92	M = 2.79 SD = 0.99	3.22*** d = 0.33
6	Prefers situations with no strict rules and no prescribed ways of doing things.	M = 2.83 SD = 0.99	M = 2.57 SD = 0.91	2.63** d = 0.27
7	Inclined to a non-traditional profession.	M = 2.47 SD = 1.05	M = 2.49 SD = 1.14	
9	Puts to test his/her abilities with complex tasks which he/she might not manage to solve.	M = 2.90 SD = 1.06	M = 2.96 SD = 1.06	
12	Willing to participate in new endeavors and to take risks.	M = 3.01 SD = 0.92	M = 2.94 SD = 0.94	
14	He/she is rather original and non-traditional in his/her tastes and preferences.	M = 3.02 SD = 0.95	M = 2.91 SD = 0.98	
	AInT Behaviors			
2	Prefers well established aesthetic values.	M = 2.50 SD = 0.93	M = 2.33 SD = 0.94	
3	Holds definite opinions and judgements about most things.	M = 3.21 SD = 0.85	M = 2.96 SD = 0.90	2.73** d = 0.29
5	Chooses situations with clear chances for success.	M = 3.25 SD = 0.88	M = 2.98 SD = 0.89	2.82** d = 0.31
8	Avoids risks.	M = 2.53 SD = 1.10	M = 2.48 SD = 1.08	
10	Strictly follows the norms and the rules set at home and at school.	M = 2.39 SD = 0.94	M = 2.48 SD = 1.00	
11	Prefers to be on the safe side.	M = 3.03 SD = 0.95	M = 2.79 SD = 1.05	2.31* d = 0.24
13	Prefers well-known, certain things.	M = 2.71 SD = 0.95	M = 2.51 SD = 0.95	2.00* d = 0.21

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

INDIVIDUAL DIFFERENCES IN AT/AInT ATTITUDES

There were no gender differences concerning AT/AInT attitudes among high school students. Nor were differences found between the scores of students from Sofia and those from Botevgrad. Students' ages did not correlate with their attitudes, but ANOVA revealed that the sub-group of 9th graders ascribed greater importance to AInT behaviors than the sub-group of 10th graders (Stoycheva 1998, 2003).

Similarly, no significant gender differences were observed among university students, nor were their ages correlated with their AT/AInT attitudes. However, students from different universities differed in their attitudes towards both AT and AInT behaviors (Table 4 below).

One-way ANOVAs, followed by Scheffe tests for post hoc multiple comparisons, revealed that pharmacy students ascribed less importance to AT behaviors than their colleagues in art and physics ($F_{2,123} = 5.62$, $p = 0.005$, $\eta^2_p = 0.08$), while art students ascribed less importance to AInT behaviors than students in pharmacy ($F_{2,123} = 8.00$, $p = 0.001$, $\eta^2_p = 0.11$).

Students' preferences also varied across specialties. Art students ($t = 4.41$, $p = 0.000$)

and students in physics ($t = 2.17$; $p = 0.04$) ascribed greater importance to AT behaviors, while students in pharmacy displayed no differences regarding their AT/AInT attitudes ($t = 1.63$, ns).

RELATION OF AT/AInT ATTITUDES TO AMBIGUITY TOLERANCE AS PERSONALITY DISPOSITION

A particular focus of earlier analyses (Stoycheva 1998, 2003) was the relation between attitudes (the importance one ascribes to AT/AInT behaviors) and personality dispositions (one's inclination to behave in AT/AInT ways across a range of situations). The present study extends the previous analysis involving high school students by examining this relation within a new population consisting of university students. Pearson's correlations between attitudes and disposition in the two samples are presented in Table 5 below. Partial correlations (in brackets) were also computed to account for the relation between AT/AInT attitudes. In order to facilitate the reader's understanding, the abbreviation AT/AInT Disposition is used for the scores derived from the Bulgarian version of Norton's measure of ambiguity tolerance (Stoycheva 2003).

TABLE 4
DESCRIPTIVE STATISTICS FOR AT/AInT ATTITUDES IN STUDENTS FROM DIFFERENT UNIVERSITIES

	MU - Pharmacy	SU - Physics	Academy of Arts
AT Importance	M = 18.84 SD = 3.67	M = 20.90 SD = 3.49	M = 21.09 SD = 3.63
AInT Importance	M = 20.06 SD = 4.10	M = 17.87 SD = 4.83	M = 16.48 SD = 4.24

TABLE 5
ZERO-ORDER AND PARTIAL CORRELATIONS BETWEEN
AT/AInT DISPOSITION AND AT/AInT ATTITUDE

	AT/AInT Disposition	
	High School Students	University Students
AT Importance	0.06 (-0.06)	0.22* (0.10)
AInT Importance	-0.48*** (-0.48***)	-0.60*** (-0.58***)

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results summarized in Table 5 indicate a moderate negative correlation between individual behavior in ambiguous situations and the importance ascribed to AInT behaviors. This finding is consistent across the samples of high school and university students we examined. The inverse moderate relation between ambiguity tolerance and AInT attitudes persists even after partialling out the effect of AT attitudes. In contrast, there is small positive correlation between ambiguity tolerance and AT attitudes that is significant only in the university sample. This correlation is reduced to non-significance after controlling for the relation between AT and AInT attitudes. The respective correlations between ambiguity tolerance and AT attitudes were not significant in the high school sample.

We may conclude that the AT personality disposition is related to individuals' AInT attitudes, but not to their AT attitudes. One's capacity to live with and endure ambiguity is inversely related to the importance they assign to avoiding ambiguity. This capacity tends to be lower when one considers seeking certainty, following norms obliging, and avoiding risks as desirable personal outcomes. This relationship holds for both the adolescents and the young adults who comprised our two samples of high school and university students. Their tolerance of ambiguity is related to a relative freedom from internal pressures to be on the safe side and follow the established ways.

We observed a relation between AT dispositions and subjective perceptions of the importance of AT behaviors only among the sample of university students, and it appears to be mediated by their attitudes towards

AInT behaviors. Since students who ascribe a low value to AInT behaviors tend to ascribe a higher value to AT behaviors, there appears to be a relation between their higher tolerance of ambiguity and their positive AT attitudes. This is not a genuine relationship, however, since it does not hold after partial correlations are computed. It is in fact the "freedom from" the well-known and the certain that entails the "freedom for" exploration and experimentation that we have observed in university students with a higher tolerance of ambiguity.

AT/AInT ATTITUDES AND MOTIVATION FOR CREATIVITY

The university sample was studied for creative motivation for a two-fold purpose: a) to replicate earlier findings concerning the relation of creative motivation to personality in high school students, and b) to provide a new set of data about the relation of creative motivation to other creativity-relevant individual characteristics (Stoycheva et al. 2008). It is for this reason that we administered the scale for measuring attitudes towards AT/AInT behaviors to this sample. The participants also provided data concerning their creative motivation, need for achievement, and ambiguity tolerance.

There was a positive correlation ($r = 0.25$, $p = 0.007$) between creative motivation and the need for achievement – two motivational dispositions that are relevant to creative performance. However, they related differently to students' ambiguity tolerance. Individual differences in AT disposition, as measured by Norton's scale, were not related to a need for achievement, but they correlated positively with students' creative motivation (Table 6).

TABLE 6
ZERO-ORDER AND PARTIAL CORRELATIONS BETWEEN NEED FOR ACHIEVEMENT AND
CREATIVE MOTIVATION WITH AT/AInT ATTITUDES AND AT/AInT DISPOSITION

	Need for Achievement	Creative Motivation
AT Importance	0.18	0.54*** (0.47***)
AInT Importance	0.13	-0.38*** (-0.23*)
AT/AInT Disposition	-0.15	0.34***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Finally, we performed a stepwise linear regression with forward variable selection

We may thus conclude that the intrinsically motivated exploration of and experimentation with novel ideas and new things is related to the perceived importance of a tolerance of ambiguity among university students. University students with a high level of creative motivation differ from others primarily in respect to how they regard experimentation, put their abilities to test, and explore novel and uncertain situations as desirable personal outcomes. We should also note that their disposition to the acceptance of ambiguity and their capacity to live with and endure it also comprise a factor that affects their level of creative motivation.

	R	RR ²	Change Statistics					Beta	Sig. Beta
			R ² Change	F Change	df1	df2	Sig. F Change		
AT Importance	0.54	0.29	0.29	41.41	1	100	0.000	0.54	0.000
AT Importance								0.49	0.000
AT/AInT Disposition	0.57	0.33	0.04	5.34	1	99	0.023	0.20	0.023

DISCUSSION

This paper has examined the performance of a scale for measuring attitudes towards AT/AInT behaviors. It was originally designed for use with adolescents, and was later applied in a study of high school students, their teachers, and parents in order to examine the development of ambiguity tolerance (Stoycheva 1998, 2003). Its utilization has now been extended to a new age group – university students – and to a new research topic – creativity. The present study with university students, and the comparison of these new findings with previous results, points to a positive conclusion concerning the scale's broader application.

ADVANCES OUR UNDERSTANDING OF TOLERANCE/INTOLERANCE OF AMBIGUITY

We have seen that the scale differentiates well between individual attitudes towards AT and AInT behaviors in different populations. The empirical distribution of the individual scores of high school and university students closely matches their theoretical range. The scale is also sufficiently sensitive to detect differences in respect to age and education concerning AT/AInT attitudes, as well as group preferences for AT or AInT behaviors.

Employing the scale with a different group of subjects made it possible to further identify certain consistencies in both attitudes and behavior towards ambiguity. First, AT and AInT attitudes are weakly interrelated in both adolescents and young adults. In addition, individual disposition concerning the tolerance/intolerance of ambiguity is related to AInT attitudes, but not to AT attitudes. Individual behavior in ambiguous situations is related to the importance people assign to AInT behaviors, while their attitudes towards AT behaviors have no significance in this regard. Furthermore, it appears that a subjective pressure to avoid ambiguity – which arises from viewing certainty, norm following, being on the safe side, and risk avoidance as personally valuable outcomes

– is what matters for individual behavior in ambiguous situations. It is the relative freedom from such pressure that contributes to one's tolerance of ambiguity. These findings add empirical evidence to the theoretical discussion concerning the nature of individual differences in ambiguity tolerance (Stoycheva 2010, 2011).

OUTLINE OF FUTURE RESEARCH

Our findings also suggest certain interesting lines of future inquiry and research. In this regard, there are several indications that attitudes towards AT and AInT behaviors are neither symmetrical, nor homological. First, there is a greater internal consistency concerning AInT attitudes among university students, and further research is needed to determine whether this is related to a specific type of behavior, the characteristics of the participants, or both. It is also useful to recall that the behaviors included in the scale we developed were selected because of their similar and moderate social desirability. It may be possible that the fact that AInT behaviors are less desirable to the population of young adults is reflected in the internal consistency of their AInT attitudes.

Certain limitations to the two studies we have described call for further verification of our findings. For example, unequal groups of students from different specialties comprised our university sample. It would be valuable to investigate the possible replication and extension of the present findings in one or more samples with a larger and more balanced representation of different specialties in order to draw more reliable conclusions concerning the relationship observed between AT/AInT attitudes and students' main programs of study. We should also note that we have used Norton's measure of ambiguity tolerance, MAT-50, in our empirical research. Given that various individual-difference measures have been employed in research concerning ambiguity tolerance (Furnham and Marks 2013; Lauriola et al. 2016), it would be fruitful to determine whether the relations we have observed between AT/AInT attitudes and indi-

vidual disposition regarding ambiguity tolerance/intolerance will hold if another measure of ambiguity tolerance is used.

GENERATES NEW KNOWLEDGE ABOUT CREATIVITY

Investigating AT/AInT attitudes in relation to creativity produced new and valuable findings concerning motivation for creativity in university students.

The scale for measuring AT/AInT attitudes revealed a differential relation to two creativity-relevant motivations – need for achievement and creative motivation – that are themselves interrelated. Individual differences regarding the need for achievement did not correlate with AT/AInT attitudes – the search for high standards of achievement in the results of one's work and/or study was not related to the importance one ascribes to AT/AInT behaviors. However, creative motivation is related both to an individual's ambiguity tolerance, and to the importance one ascribes to AT/AInT behaviors.

As a result, conclusions concerning the contribution of ambiguity tolerance to creative motivation may take several different directions:

- 1) The ability to withstand the discomfort of an ambiguous situation and cope with induced uncertainty contributes to one's willingness to embark on the exploration of new possibilities, unusual ideas, and pathways not commonly taken.
- 2) People with a high tolerance for ambiguity ascribe little importance to AInT behaviors and, therefore, are not afraid to undertake creative initiatives that are uncertain and unpredictable.
- 3) A positive attitude towards ambiguity tolerance, as it is manifested in the importance one ascribes to AT behaviors, strengthens an individual's creative motivation in that individuals with high levels of creative motivation tend to value experimentation, are not afraid to take risks and try out new things, and welcome non-traditional approaches.

- 4) Creative motivation is positively related to a tolerance of ambiguity both as a behavioral disposition to tolerate the discomfort of an ambiguous situation, and as a positive attitude towards AT tolerant behaviors. There is more to creative motivation than tolerance for ambiguity. It is not enough to be able to withstand the discomfort of an ambiguous situation, for it is also necessary to have a genuine interest in exploring new ideas, becoming involved with unusual avenues of thought and work, and being ready to value such endeavors and experiences. One must not simply be free *from* the subjective pressure of seeking certainty, but also be free *for* intrinsically motivated exploration and experimentation.

CONCLUSION

Our study complements and extends already published research on ambiguity tolerance and creativity in university students that relates the tolerance of ambiguity with the cognitive aspects of the creative process and creative performance. For example, the impact of the tolerance of ambiguity upon the creative performance of graduate students in business programs depends on their role ambiguity (Shuhong et al. 2011), while engineering students with a lower ambiguity aversion were better able to generate novel ideas and more likely to select creative design concepts (Toh and Miller 2016a,b). Our findings point to motivation and attitudes as comprising another way in which tolerance for ambiguity enters into the creative process – they empower the individual to become engaged with an intrinsically motivated exploration of novel, unusual, or complex stimuli and situations.

Our findings thus encourage the application of the scale we have developed in broader studies of adolescents and young adults that investigate their educational and vocational choices, professional preferences, work-related attitudes and aspirations, norm-relating behavior, and engagement with creative activities.

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BASIC INDIVIDUAL VALUES OF BULGARIAN STUDENTS IN EMERGING ADULTHOOD: A COMPARATIVE ANALYSIS

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Abstract. *This article traces the dynamics of the fundamental individual values of Bulgarian students in emerging adulthood, between 18 and 29 years of age, during the period of social and economic transition in Bulgaria. Three empirical studies were conducted in 1995, 2005, and 2015 that were based on the Schwartz Value Survey (Schwartz 1992). Results from a comparison of the three cohorts indicate that the importance of both individual and collective values has grown during the 20-year period of the overall study. While value priorities did not generally change over time, they became more ambivalent, with collective interests prevailing over individual interests in 2015. The article also discusses issues related to the characteristics of value models observed among emerging adults since 1989 after the fall of the communist regime in Bulgaria.*

Keywords: basic individual values; dynamics of value orientations; emerging adulthood; Bulgarian students; post-totalitarian context.

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Magdalena Garvanova – Abstract, Introduction, Method, Data Collection, Results, Data Analyses, Discussion, and References.

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INTRODUCTION

The term value is widely used in the social sciences (Rokeach 1973; Schwartz 1992; Triandis 1995), which gives rise to a certain degree of confusion together with attempts at theoretical clarification. Cognitive psychologists have used the term in its fundamental sense as denoting *cognitive structures* that establish criteria or standards for alternative models of behavior (Feather 1992; Olson and Zanna 1993). In respect to the functionalist paradigm, however, values are not epiphenomenal in character insofar as they can predict behavior, even under planned and controlled laboratory conditions (Maio and Olson 1994). Rokeach's classic theory explains values through a comprehensive theoretical model which postulates the presence of *terminal values* that refer to desirable end-states of existence and *instrumental values* that refer to preferable modes of behavior (Rokeach 1973; Rokeach and Ball-Rokeach 1989).

Shalom Schwartz's theoretical approach to values (Schwartz and Bilsky 1987; Bilsky and Schwartz 1994; Schwartz 1992; Schwartz and Bardi 2001) is currently the most popular, being widely used by contemporary researchers (Baychinska 1994; Tair 2011; Garvanova 2013). Schwartz postulates the existence of 10 value types (categories) comprising two bipolar dimensions that indicate a preference for either individualistic or collectivist motivational goals.

In ontogenetic terms, a typical feature of values is that they are formed early in life, when a person is between the ages of 13 and 19. Although people are then still far from social maturity, they nonetheless explicitly manifest their value orientations in the act of choosing behavior (Stoitsova 1998). It is thus not surprising that more recent empirical studies in Bulgaria based on Schwartz's model (1992) have focused primarily on youth samples, in which individual interests prevail over collective ones (Baychinska 1994; Papazova and Garvanova 2008; Tair 2011; Garvanova 2013).

Among contemporary theories in developmental psychology, that of Jeffrey Arnett defines a new period between 18-29 years of

age that he terms *emerging adulthood* (Arnett 2000, 2004). In its essence, Arnett's theory replicates the classical theory of Erikson concerning the *psychosocial moratorium* in adolescence (Schwartz et al. 2005), with Arnett arguing that the moratorium in most Western cultures lasts until the age of 30 (Arnett 2000, 2004). He further maintains that the value preferences of young people in emerging adulthood are not strictly individualistic, but rather a combination of individualistic and collectivist values insofar as individualistic value preferences can be determined by collectivistic preferences (Arnett 2014).

SCHWARTZ'S THEORETICAL VALUE SYSTEM MODEL

Schwartz defines values as *desirable common goals that serve as guiding principles with different significance for human life* (Schwartz and Bilsky 1990). Values are trans-situational goals that represent various motivational orientations, such as striving for power, benevolence, preserving tradition, autonomy, and so forth. Schwartz differentiated 11 value types on the basis of his theoretical deduction of their motivational content and the empirical research he conducted, although the category of spirituality has been removed from the model because of variations in its structure and content (Baychinska 1994). Values may thus be organized into 10 distinct universal types, including both terminal and instrumental values, depending on their motivational orientation.

Figure 1 indicates the ten value categories that form the structure of an individual's value system in respect to Schwartz's model, with the values for each category being located in a separate wedge-shaped section. Categories that can be represented simultaneously are arranged next to each other. Value categories that serve common interests (either individual or collective) are positioned relatively close to each other, while conflicting categories are located opposite to each other (Baychinska 1994). The value types may be described in terms of their content as follows:



FIGURE 1. CIRCULAR MODEL OF SCHWARTZ'S VALUE SYSTEM (1992)

1) *Security*. The motivational goal of this value type is safety, sustainability, and a sense of protection in the social sphere, in relationships, and in respect to one's personality. This type includes such values as social order, family security, national security, cleanliness, reciprocation of favors, healthiness, and a sense of belonging.

2) *Conformity*. The ultimate motivational goal of this value type is the limitation of actions, inclinations, and intentions that do not comply with the established social norms and may disrupt or hinder relationships between members of social groups. This type includes such values as obedience, self-discipline, politeness, and honoring one's parents and elders.

3) *Tradition*. This value type is identified by the empirical fact that all social groups use symbols and specific practices (religious or secular) to share their fortune and experience. The motivational goal of this value type is respect and obedience regarding the prescripts and rules of the given culture or religion that have been imposed upon the individual. This type includes such values as respect for tradition, humility, devoutness, and accepting one's place in life.

Both conformity and tradition are included in this type because of their similar motivational goals, namely, constraining the personality in order to preserve social manners. Conformity is associated with consideration for people within one's inner circle, while tradition is associated with more abstract religious and cultural matters (Schwartz 2005).

4) *Benevolence*. While pro-social values involve caring for the welfare of all people in all social interactions, benevolence concerns only those in one's closer circle and the nature of communication in daily life. The motivational goal of this value type is to preserve and uphold the welfare of the people with whom we have frequent personal contacts. This type includes such values as helpfulness, honesty, forgivingness, responsibility, true friendship, and mature love.

5) *Universalism*. The motivational goal of this value type is understanding, appreciation, tolerance, and preservation of the welfare of all people and nature. Universalism is similar to the category of benevolence, but it is much broader in scope. This type includes such values as broadmindedness, social justice, equality, world peace, world beauty, union with nature, wisdom, and protecting the environment.

6) *Self-direction*. The ultimate motivational goal of this value type is independence in thought and action through choice, shaping and pursuing one's own objectives, and not being restrained by externally imposed boundaries. This type includes such values as creativity, freedom, choosing one's own goals, curiosity, and independence.

7) *Stimulation*. This value type is formed upon the basis of the putative organismic need for variety and stimulation in order to maintain an optimal level of activation. Its motivational goal is excitement, novelty, and challenge in life. This type includes such values as variation in life, excitement in life, and daring.

8) *Hedonism*. The motivational goal of this value type is derived from bodily needs and the pleasure associated with their satisfaction. This type includes such values as pleasure, enjoying life, and self-indulgence. A broken

line in Figure 1 differentiates between the categories of stimulation and achievement since the empirical data indicate that hedonism is related to both.

9) *Achievement*. The motivational goal of this value type is personal success defined as the pursuit of competence in accordance with social requirements, not in respect to subjective standards. This type includes such values as ambition, success, ability, and influence.

10) *Power*. Schwartz maintains that a number of motivational goals are associated with this value type. For example, the functioning of social institutions requires social differentiation, dominance, and submission, which is an essential dimension of interpersonal relationships within a given culture and between members of different cultures. This motivation goal is associated with such values as authority, wealth, social power, social recognition, and the preservation of one's public image. The values in this category are aimed at securing one's dominant position in society, while those in the category of achievement are aimed at demonstrating one's competence in a specific interaction.

These ten value categories are grouped into two bipolar dimensions (alternatives), namely, *self-transcendence* versus *self-enhancement* and *conservation* versus *openness to change*. The first dimension sets values associated with the welfare of the community against values associated with the pursuit of personal success and ambitions. Self-transcendence brings together the categories of universalism and benevolence, while self-enhancement brings together those of achievement and power. The second dimension sets values associated with limiting the activity of the self for the sake of stability and social order against values associated with independent thought and action and striving for change in the status quo. Conservation includes the values of tradition, security, and conformity, while openness to change includes the values of self-direction, hedonism, and stimulation (Schwartz 1992; Baychinska 1997).

Self-transcendence and conservation express *collective interests*, while self-enhancement and openness to change express *indi-*

vidual interests. Collectively and individually oriented motivational goals represent the most generalized and fundamental organization of the individual's value system (Schwartz 1992).

EMPIRICAL RESEARCH IN BULGARIA BASED ON SCHWARTZ'S VALUES MODEL

An empirical study in 1995 (N = 242) that employed Schwartz's model of basic individual values (1992) has shown that students, as bearers of the liberal-democratic ideal in Bulgarian society, tend to ascribe the greatest value to self-direction and the lowest to power (Baychinska 1994, 1997). The dominant dimensional priorities of self-transcendence and openness to change define the values of this socio-professional group as *transcendental liberalism* (Baychinska 1997).

A second empirical study conducted ten years later in 2005 (N = 161) indicated the existence of the same hierarchical arrangement of values. The students again ranked self-direction first while power was ranked in ninth place, followed only by tradition as the least preferred value. Individual motivational goals and interests generally dominated over collective ones, with no significant changes observed during the period of analysis (Garvanova 2013).

Trends in students' value hierarchy remained the same in 2006-2007 (N = 253), while indicating an increased intensity regarding individual and collective orientations in comparison with 2005 (Papazova and Garvanova 2008). A comparative analysis of data from a new study conducted in early 2015 with a student sample of 128 respondents confirmed the long-term growth of collective-oriented values during the 20-year period of social transition in the country towards democracy and a market economy (Garvanova 2015a).

On a societal level of analysis, research in 2013 that employed Schwartz's model of cultural values (Schwartz 2008) with a sample of respondents aged 18 to 65 (N = 432) found that Bulgarian between 18 and 29 years of age demonstrated a preference for such values as mastery and intellectual and affective autonomy (Garvanova and Tyankov 2015). This is a typical feature of emerging adulthood.

EMERGING ADULTS: 18-29 YEARS OF AGE

In many parts of the world the period between the completion of compulsory education and entry into the role of an adult has been differentiated as a new stage of life termed *emerging adulthood* (Arnett 2000, 2005). In a number of countries and regions the majority of problems associated with identity do not occur in adolescence. Erikson maintains that emerging adulthood – roughly 18 to 25 years of age in the United States, with the upper limit varying in different countries depending on individuals and cultures – is a continuation of the *psychosocial moratorium* (Schwartz et al. 2005). For example, young people often spend their late teens and 20s exploring different college majors, travelling, engaging in promiscuous sex, and experimenting with drug use (Arnett 2005; Arnett et al. 2011).

In addition, increased individualization in Western cultures creates alternative life patterns that deviate from accepted norms and standards. Living with a permanent partner has replaced marriage as a lifestyle, for instance, and doing so has become a choice for many young Americans and Europeans (Wiik 2009; Dykstra and Poortman 2010). In 2009, 47% of American women aged 25 to 29 had never entered into marriage in comparison with 1986, when the rate was only 27% (Kreider and Ellis 2011). And although young people settle into life in a conventional manner in some cases, in others they continue an unconventional way of life into their 30s and beyond. Emerging adulthood today has become a stage of the life cycle in most Western societies (Nelson and Barry 2005; Buhl and Lanz 2007).

The few empirical studies in Bulgaria that have focused on the 18-29 age period have verified the presence of heterogeneity, confirmed the existence of certain dimensions of emerging adulthood, and highlighted typological specificities and life tasks typical of emerging adults within the context of contemporary Bulgarian culture (Pencheva et al. 2009; Pencheva and Papazova 2009; Garvanova 2011, 2015b; Ganeva 2012; Garvanova and Tyankov 2015; Papazova et al. 2015; Garvanova and Papazova 2017).

VALUES DURING THE YEARS OF EMERGING ADULTHOOD

A useful way of thinking about values turns upon the issues of individualism and collectivism, which are the most commonly used terms for describing cultural differences in values. Individualistic values are centered on the rights and needs of all people, with examples being freedom, independence, self-sufficiency, self-esteem, individual achievement, personal satisfaction, and self-presentation. Collectivist values focus on human responsibilities towards others, with examples comprising loyalty, respect, generosity, obedience, and sacrifice. The United States is traditionally defined as an individualistic culture, while Japan, China, and other Asian countries are typically regarded as collectivist cultures.

Jeffrey Arnett, the father of the theory of emerging adulthood, poses two questions to emerging adults in the United States, with the answers reflecting their values:

When you are at the end of your life, what would you like to tell about it as you look back?

What values and beliefs do you think are the most important to be transmitted to the next generation? (Arnett 2014).

Arnett observed that emerging adults often have individualistic values (Arnett 2004), but he also noted that many pursue personal goals related to collectivist values that focus on the welfare of others. For many emerging adults, especially from ethnic minorities, collectivism is the main moral language, not individualism. Moreover, the lives of emerging adults are reflected in both individualism and collectivism, which are not necessarily in opposition to each other – both can be elements in the ideal of life of emerging adults. Although emerging adults may pursue individualistic goals, their individualism is often determined by collectivist values, such as concern for the success and well-being of others (Arnett 2004).

AIM AND TASKS OF THE STUDY

In 2015, the dearth of research concerning the developmental paradigm of emerging adulthood that focused on value choices among

Bulgarian youths 18 to 29 year of age led the two authors to the idea of conducting an empirical study among students in this age group. This would include a comparative analysis of data from earlier studies conducted by K. Baychinska in 1995 (Baychinska 1997) and M. Garvanova in 2005 (Garvanova 2013). Briefly stated, the aim of this comparative cohort study was to outline change and stability in respect to the significance and arrangement of basic individual values upon the basis of Schwartz's model (1992) under the conditions of socio-political reorganization in Bulgaria after 1989. The main tasks were the following:

- 1) Analyze the dynamics and intensity of Swartz's ten value types in respect to the emerging adults who were surveyed in 1995, 2005, and 2015.
- 2) Study changes in the significance of the poles of value dimensions and interests in youth groups over this 20-year period.
- 3) Describe the categorical and dimensional value priorities of young people in the three years under review.

BASIC HYPOTHESES

- 1) We assumed that, in the long-term, the importance of both individually and collectively oriented values would increase as a result of greater age (maturity) and the liberal socio-economic conditions in the country.
- 2) In light of the relative stability of value hierarchies (Rokeach and Ball-Rokeach 1989; Schwartz and Bardi 2001), we expected that the value priorities typical of the student population would not change significantly over time. Self-direction would be the most preferred value at the categorical level of analysis, while self-transcendence and openness to change would be the most preferred values at the dimensional level.

RESPONDENTS

A total of 644 students ranging in age from 18 to 29 were surveyed. 232 students participated in 1995 ($M = 22.53$, $SD = 2.59$), including 118 men (50.9%) and 113 women (48.7%), with

1 (0.4 %) not indicating their gender identity. 157 students participated in 2005 ($M = 21.85$, $SD = 2.53$), including 88 men (56.1%) and 69 women (43.9%). 255 students participated in 2015 ($M = 22.86$, $SD = 3.86$), including 166 men (65.1%) and 89 women (34.9%). All participants were in various bachelor degree programs at Bulgarian universities. These included Sofia University "St. Kliment Ohridski"; Sofia Technical University; the University of National and World Economy (UNWE); the National Academy for Theatre and Film Arts "Kr. Sarafov" (NATFA); the University of Chemical Technology and Metallurgy (UCTM); the University of Mining and Geology "St. Ivan Rilski" (UMG); Trakia University, Stara Zagora; and the University of Library Studies and Information Technologies (ULSIT).

PROCEDURE

A survey questionnaire was used in the three cross-sectional studies to measure values in respect to the Schwartz Value Survey (SVS) (Schwartz 1992). Demographic variables, such as sex, age, place of residence, family status, and others, were also included in the survey. The SVS consists of 30 terminal and 28 instrumental values, with later modifications of the questionnaire contained 56 or 57 values. Respondents were asked to indicate the importance of each value as a guiding principle in their lives on a 9-point scale (0 = not important, 7 = extremely important, and [-1] = opposed to my own values). 44 values proved semantically unambiguous for all samples in cross-cultural approbation of the SVS, forming 10 value categories, 2 bipolar dimensions, and 2 types of value interests (see Schwartz 1992; Baychinska 1994; Garvanova 2013). The empirical data were processed using SPSS 19.

RESULTS AND DISCUSSION

The most important results from a one-way ANOVA (independent variable=socio-historical time; dependent variables=type of values) and a post hoc multiple comparisons test are summarized in Table 1 for value categories and in Table 2 for value dimensions and interests.

TABLE 1
SIGNIFICANCE OF VALUE CATEGORIES AMONG EMERGING ADULTS – 1995, 2005, AND 2015
(DESCRIPTIVE STATISTICS, ANOVA, AND POST HOC TEST)

Value Categories	Year/Group		Descriptives					ANOVA and LSD	
			N	M	SD	Min	Max	F, df = 2,641 (p)	LSD, p < 0.05
Security	1995	I gr.	232	4.82	0.89	2.00	6.80	61.70 (0.000)	III with I & II gr.
	2005	II gr.	157	4.69	0.92	1.40	6.40		
	2015	III gr.	255	5.56	0.87	1.20	7.00		
Conformity	1995	I gr.	232	4.38	1.10	0.25	6.50	117.32 (0.000)	III with I & II gr.
	2005	II gr.	157	4.34	0.86	1.50	6.25		
	2015	III gr.	255	5.57	0.92	1.75	7.00		
Tradition	1995	I gr.	232	3.13	1.24	-0.80	6.60	67.80 (0.000)	III with I & II gr.; I with II gr.
	2005	II gr.	157	2.71	1.28	-1.00	6.00		
	2015	III gr.	255	4.08	1.23	0.20	7.00		
Benevolence	1995	I gr.	232	4.50	1.07	-1.00	6.60	47.12 (0.000)	III with I & II gr.
	2005	II gr.	157	4.64	0.87	0.80	6.40		
	2015	III gr.	255	5.31	0.94	0.60	7.00		
Universalism	1995	I gr.	232	4.43	0.91	1.57	6.71	52.31 (0.000)	III with I & II gr.; I with II gr.
	2005	II gr.	157	3.97	0.92	1.00	5.86		
	2015	III gr.	255	4.93	0.99	1.14	6.86		
Self-direction	1995	I gr.	232	5.06	0.82	2.40	6.60	27.34 (0.000)	III with I & II gr.
	2005	II gr.	157	5.03	0.94	2.20	6.80		
	2015	III gr.	255	5.56	0.85	2.40	7.00		
Stimulation	1995	I gr.	232	4.02	1.35	-0.67	7.00	14.41 (0.000)	III with I & II gr.
	2005	II gr.	157	4.09	1.48	0.00	6.67		
	2015	III gr.	255	4.66	1.42	0.33	7.00		
Hedonism	1995	I gr.	232	4.34	1.58	-1.00	7.00	27.93 (0.000)	III with I & II gr.; I with II gr.
	2005	II gr.	157	4.64	1.52	-0.50	7.00		
	2015	III gr.	255	5.31	1.29	-0.50	7.00		
Achievement	1995	I gr.	232	4.74	1.02	1.00	6.75	19.66 (0.000)	III with I & II gr.
	2005	II gr.	157	4.66	1.04	1.25	7.00		
	2015	III gr.	255	5.22	0.97	0.50	7.00		
Power	1995	I gr.	232	3.84	1.26	-0.50	7.00	7.70 (0.000)	II with I & III gr.
	2005	II gr.	157	3.40	1.45	0.25	6.50		
	2015	III gr.	255	3.87	1.15	0.25	7.00		

Table 1 clearly indicates that today's young people appreciate both individually and collectively oriented values to a greater extent than the older student cohorts ($p < 0.05$), which accords with the concept of the value priorities of emerging adults (Arnett 2004). This finding may be regarded as the first sign that the crisis of values in post-totalitarian Bulgarian society, which reflects social anomie and the devaluation of both types of motivational goals in the early years of democratic change, is being overcome (Garvanova 2013).

It is noteworthy, however, that collective value categories, particularly the values of conformity, tend to grow more intensively than individual value categories. This result again corresponds with the determination of

individualism by collectivist values as postulated by Arnett, such as devotion and loyalty to the common interests of emerging adults (Arnett 2004).

One could also say that *deficiency needs*, such as security, conformity, tradition, and power, which express a desire to preserve the status quo, material prosperity, and social influence, are basic. Not only are they marked by a stronger tendency to dominate over such *growth needs* as benevolence, universalism, self-direction, stimulation, hedonism, and achievement, they are also prerequisites for the development of a *self-actualization personality* (Maslow 2001). These findings are confirmed in the dimensional and basic structures of values as well (Table 2).

TABLE 2

SIGNIFICANCE OF VALUE DIMENSIONS AND INTERESTS AMONG EMERGING ADULTS – 1995, 2005, AND 2015
(DESCRIPTIVE STATISTICS, ANOVA, AND POST HOC TEST)

Value Dimensions and Interests	Year/Group		Descriptives					ANOVA and LSD	
			N	M	SD	Min	Max	F, df = 2,641 (p)	LSD, p < 0.05
Self-transcendence	1995	I gr.	232	4.46	0.84	1.14	6.66	59.92 (0.000)	III with I & II gr.
	2005	II gr.	157	4.31	0.74	1.83	5.99		
	2015	III gr.	255	5.12	0.87	1.16	6.93		
Self-enhancement	1995	I gr.	232	4.29	1.01	1.00	6.25	12.71 (0.000)	III with I & II gr.; I with II gr.
	2005	II gr.	157	4.03	1.11	0.88	6.50		
	2015	III gr.	255	4.54	0.94	0.50	6.75		
Dominant Force of Self-transcendence over Self-enhancement	1995	I gr.	232	0.17	1.37	-4.86	4.12	7.00 (0.001)	III with I & II gr.
	2005	II gr.	157	0.27	1.41	-4.42	3.41		
	2015	III gr.	255	0.58	0.99	-3.35	3.33		
Conservation	1995	I gr.	232	4.11	0.86	1.08	6.30	124.34 (0.000)	III with I & II gr.; I with II gr.
	2005	II gr.	157	3.91	0.76	1.87	5.72		
	2015	III gr.	255	5.07	0.84	1.12	7.00		
Openness to Change	1995	I gr.	232	4.48	1.01	0.77	6.63	34.05 (0.000)	III with I & II gr.
	2005	II gr.	157	4.59	1.05	0.90	6.49		
	2015	III gr.	255	5.18	0.94	2.02	6.89		
Dominant Force of Conservation over Openness to Change	1995	I gr.	232	-0.37	1.34	-4.44	3.29	11.66 (0.000)	III with I & II gr.; I with II gr.
	2005	II gr.	157	-0.67	1.30	-3.86	4.09		
	2015	III gr.	255	-0.10	0.87	-2.87	2.64		

TABLE 2

Collective Interests	1995	I gr.	232	4.29	0.77	1.90	6.48	108.04 (0.000)	III with I & II gr.; I with II gr.
	2005	II gr.	157	4.11	0.65	2.20	5.39		
	2015	III gr.	255	5.10	0.79	1.14	6.96		
Individual Interests	1995	I gr.	232	4.38	0.84	1.19	6.25	26.37 (0.000)	III with I & II gr.
	2005	II gr.	157	4.31	0.96	1.05	6.40		
	2015	III gr.	255	4.86	0.83	1.94	6.69		
Dominant Force of Collective over Individual Interests	1995	I gr.	232	-0.10	1.12	-4.04	3.04	11.34 (0.000)	III with I & II gr.
	2005	II gr.	157	-0.20	1.15	-3.86	2.87		
	2015	III gr.	255	0.24	0.75	-2.94	2.31		

The data in Table 2 show that, from a long-term perspective, the significance of the values of the two opposing individual and collective motivational complexes, particularly the latter, has increased ($p < 0.05$). This is pronounced in conservation and reflected in the power of collective interests. These survey results can be interpreted in several ways. On the one hand, there has clearly been a dynamic reassessment of heterogeneous value orientations that has led to the growing importance of both individual and collective life goals on the part of young people in 2015 in comparison with those from the earlier stages of social transition towards democracy. Other empirical studies have found that younger generations neither feel nostalgia for socialism, nor are psychologically burdened with the socio-economic situation after 1989. They are instead characterized by growing autonomy and generational emancipation as a result of the new information environment in which they live (Mitev 2007; Mitev and Kovacheva 2014).

From a global perspective, this value change is also manifested in the rise of individualism as an opportunity for personal development and self-expression under the influence of general economic and technological factors. This is inevitably associated with the strengthening of collectivism, marked by a striving towards group affiliation, social identification, integration, and cooperation in society (Inglehart 1992; Friedman 2002). Emerging adults in Bulgaria are thus bearers

of new value models at national, intercultural, and global levels.

On the other hand, however, the dominance of self-transcendence over self-enhancement significantly increased in 2015 ($F = 7.00$, $p < 0.001$), with the ratio in the means of the two variables favoring the collective pole (5.12 vs. 4.54, $t = 9.35$, $p < 0.001$). Even more interesting is the situation regarding the dimension of conservation versus openness to change. The increased value placed upon the collective pole in the current study neutralizes the dominant position of the individual pole in 1995 and 2005 ($F = 11.66$, $p < 0.001$). It also reflects parity in the mean scores in 2015 (5.07 vs. 5.18, $t = -1.92$; $p = 0.056$). The dominant potential of collective over individual interests thus also increased among contemporary students in comparison with their peers from the previous studies ($F = 11.34$, $p < 0.001$). While the difference was not predominant in 1995, and individual interests prevailed over collective interests in 2005, the trend was reversed in 2015, with the mean of collective interests (5.10) being higher than that of individual interests (4.86, $t = 5.03$, $p < 0.001$).

These findings likely reflect the revival and adoption among the later generations of youths of new social values associated with greater confidence, solidarity, and justice in social activity that were destroyed during totalitarianism (Fotev 2009). That is to say that an increased need for collective values, such as national prosperity, stability, order, security, harmony, and so forth, is a com-

pensatory response to the deficit of socially shared values and norms during the transitional period. This is projected at the level of individual consciousness, and it may be regarded as a key prerequisite for the promotion of individualistic and liberal-democratic European ideas in society. *Our first research hypothesis is then demonstrated* by the steadily growing, long-term importance of individually oriented, and especially collectively oriented, values.

Analyzing the structural and hierarchical organization of values enables us to examine much more closely any possible changes in the value priorities of the three student groups. For that purpose, the mean of the value categories is sorted in descending order, with 1 being the highest value and 10 the lowest. We used a paired samples *t*-test to identify the statistically (in)significant differences between each pair of variables. Value types with statistically significant differences in the mean are classified by a single ranking, while those with insignificant differences share the same ranking as others. The final rankings of value categories are shown in Figure 2, with the final rankings of value dimensions being visualized in Figure 3. Collective values are indicated by a black circle, and individual values are indicated by a white triangle.

Figure 2 indicates that self-direction lost its independent position in 2015 as the dominant value among emerging adults, which it had been in 1995 and 2005. It was accompanied at the highest level of the value system by security and conformity, which register upward growth. The latter is particularly significant for conformity. Benevolence, achievement, and hedonism remained at the second structural level of the value order, where they had also been located in 2005.

We should note that the ambivalence of value priorities among youths during the period studied steadily increased, with both the *materialist values of survival* and the *post-materialist values of self-expression* (Inglehart 1997) being represented. The effects of age and socio-historical time thus contributed to the formation of a specific motivational amalgam of conflicting individual and collective goals.

Our analysis of value preferences also indicates that while the values of self-direction, achievement, and hedonism focus on independence in thought and action, personal success, and enjoyment in life, the values of security, conformity, and benevolence express emotional commitment and social identification with internal groups (*in-groups*), such as family, relatives, friends,

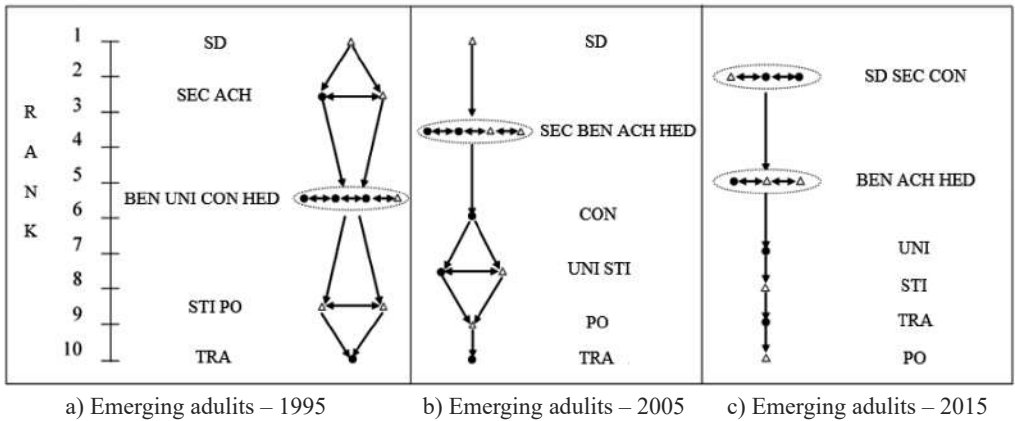


FIGURE 2. HIERARCHY OF VALUE CATEGORIES AMONG EMERGING ADULTS – 1995, 2005, AND 2015. SEC = SECURITY, CON = CONFORMITY, TRA = TRADITION, BEN = BENEVOLENCE, UNI = UNIVERSALISM, SD = SELF-DIRECTION, STI = STIMULATION, HED = HEDONISM, ACH = ACHIEVEMENT, AND PO = POWER

and acquaintances (Triandis 1995). The relatively low ranking that young people from all three stages of social transition ascribed to values associated with the preservation of the welfare of all people and nature, or external groups (*out-groups*) (Triandis 1995), indicates that there are long-term barriers to the establishment of democratic civil principles that can be referred to the value category of universalism (Paunov 2009). Moreover, the preference for the self and close reference groups over the welfare of the social environment and nature promotes certain negative phenomena, including corruption, nepotism, civic apathy, and social aggression, which are more typical of collectivist cultures (Triandis 1995). Strictly speaking, the on-going socio-economic transition in the country is fraught with ambivalence insofar as it reinforces *domestic individualism* of Bulgarians and narrows their living horizons to primary social groups (Nedelcheva 2010).

Stimulation, tradition, and power are ranked as the least important values, with their positions changing little during the period studied. The latter two categories are in fact symptomatic of the Bulgarian population as a whole, with their circulating secular, unconventional, and apolitical attitudes – a heritage of both the recent and distant past (Paunov 2009; Garvanova 2013). In the latest 2015 study, power is categorically rank 10th as the value least preferred by students. A semantic analysis of this concept indicates that power in the Bulgarian socio-cultural

context is regarded as the image and behavior of the authorities rather than being primarily understood as marking a state of subordination (Ilieva 2013). This explains the negative attitude of young people to power-wielding subjects.

The specifics of the value orientations shared by *the children of transition* can also be presented by the dimensional structural models of the value system provided in Figure 3.

The ambivalence of value priorities at the poles of value dimensions has been increasing during the period 1995-2015 (Figure 3), as has also been the case with value categories. This is likely influenced by the dynamics of the social environment. In the mid-1990s, self-transcendence and openness to change accorded with equal energy at the first level of value hierarchy, while in 2005 the links between them were broken and openness to change became paramount. The situation in 2015 was different, however. As a result of the progressive growth of the importance of conservation in the lives of currently emerging adults, along with the levelled valence of the values of self-transcendence and openness to change, these three value variables united in a shared dominant position, subordinating self-enhancement.

The results obtained thus *support the second hypothesis of the study*. It must be added, however, that the value priorities of self-enhancement, self-transcendence, and openness to change remain stable over time, although

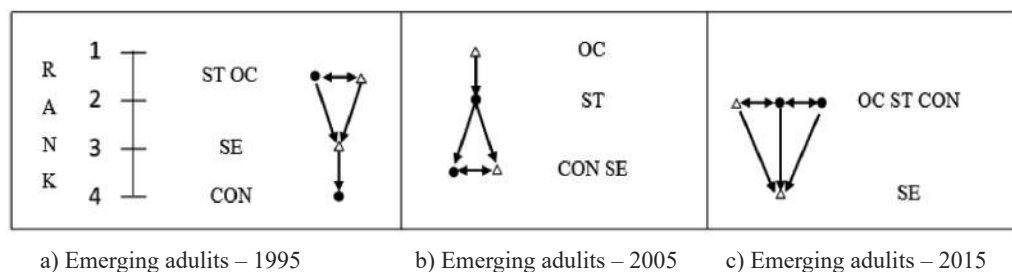


FIGURE 3. HIERARCHY OF VALUE DIMENSIONS AMONG EMERGING ADULTS – 1995, 2005, AND 2015. ST = SELF-TRANSCENDENCE, SE = SELF-ENHANCEMENT, CON = CONSERVATION, AND OC = OPENNESS TO CHANGE

they are joined by security, conformity, and conservation. This reinforces the contradictory nature of the categorical and dimensional value models.

CONCLUSION

This study was designed to track changes in the importance and hierarchy of fundamental individual values among Bulgarian students aged 18-29 on the basis of the Schwartz Value Survey. Students were surveyed in 1995, 2005, and 2015 during three different phases of the historic transition to democracy in the country after the fall of communism in 1989. Youths of this age are of particular interest as a target group insofar as examining the period of emerging adulthood reveals the complex initiation of young people into the adult world as well as the psychological mechanisms of their adaptation within the macro-social framework.

The mathematical and statistical analysis we have conducted shows that, from a long-term perspective, both individually and collectively oriented value categories, dimensions, and interests have grown in the direction anticipated. Stated otherwise, the new student generations, in comparison with their predecessors, appreciate both individual and collective values to a greater extent. This can be viewed as a step towards overcoming the crisis of values in society that is consistent with global trends in value change and accords with the life strategies of emerging adults. In addition, the study indicates that collective interests have grown more intensively, coming to take precedence over individual interests in 2015. This is due primarily to conformity and conservation. This finding is likely a compensatory response to a lack of commonly shared social values in the difficult and uncertain conditions of life in Bulgaria.

However, a closer look at the data concerning value priorities reveals that students today prefer goals related to personal well-being (self-direction, achievement, and hedonism) and to the welfare of those within their inner circles (security, conformity, and benevo-

lence), rather than goals related to the welfare of society and nature (universalism). The ambivalent motivational complex of individual and collective perceptions formed at the level of the categorical and dimensional organization of the value system most probably reflects contradictory processes in a society in transition that is marked by an apparently increasing social distance from the modern civic ideal.

In summary, one may say that in spite of the aggravated anticipation of democratic principles, which are still new to Bulgarian society, emerging adults, particularly 18-29 year-old students, comprise the great hope of the Bulgarian people in their effort to attain national unity and prosperity by building political, economic, and cultural elites of professionals with new moral and personal characteristics.

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VALUES, BELIEF IN A JUST WORLD AND THE FLOURISHING OF BULGARIAN ADOLESCENTS

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Abstract. *The aim of the study is to examine the roles of values and belief in a just world concerning the psychosocial well-being of Bulgarian adolescents as measured on the Flourishing Scale. The study resides upon Valdiney Gouveia's (1998, 2003, 2013) functional theory of values, which defines six sub-functions of values that serve as guides for action and expressions of needs. Belief in a just world (BJW) as used in the present article is defined in respect to the General and Personal BJW scales developed by Claudia Dalbert and colleagues (Dalbert et al. 1987, 1996, 1999), also building upon the Justice Centrality Scale (Dalbert and Umlauf 2003) and the Justice Sensitivity Scale (Schmitt et al. 2010). Ed Diener's Flourishing Scale (Diener et al. 2010), which focuses on personal goals, positive and supporting relations, and competence, was also utilized. The results obtained from 223 adolescents who were 18 years of age indicate that values are strong predictors of well-being insofar as Gouveia's Existence Values, as well as his concepts of Interactive and Suprapersonal Values, explain 31% of the variances in flourishing. The effects of BJW upon well-being are weaker ($R^2 = 0.10$), although both Personal BJW and Justice Centrality contribute to an increase in flourishing. Gender effects were insignificant in spite of our expectations, explaining 1% or less of variances in the well-being of Bulgarian adolescents. We conclude the article with remarks concerning future research and the goals of adolescents.*

Keywords: functional theory of values; belief in a just world; flourishing; Bulgarian adolescents.

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Contribution:

Ergyul Tair – Abstract, Introduction, Theoretical background, Methodology, Results & Discussion, Conclusions.

Kalina Popova – Theoretical background, Data processing and graphics, Results & Discussion, References.

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The authors have read and approved the final manuscript.

INTRODUCTION

Psychological well-being or happiness is a topic that has been developed by scholars in the fields of positive psychology and quality of life research. In recent years, such researchers as Richard Ryan and Edward Deci (Ryan and Deci 2000, 2001) and Carol Ryff (1989) have developed a notion of well-being, distinct from the idea of subjective well-being (SWB), that resides upon the idea of universal human needs and effective functioning. The tradition that arises from Aristotle's concept of *Eudaimonia* presupposes the existence of six basic needs – autonomy, personal growth, purpose in life, environmental mastery, positive relations with others, and self-acceptance – as the source of satisfaction in life and psychological well-being (Ryff and Keyes 1995). Self-determination theory has also been established upon a conception of basic psychological needs that are regarded as innate and universal (Ryan and Deci 2000, 2001). It maintains that the needs for competence, autonomy, and relatedness must be satisfied if people are to develop and function in healthy and optimal ways, and this point has been demonstrated by a wide range of empirical studies from Germany, Russia, and the United States (Chirkov and Ryan 2001; Schmuck et al. 2000). However, the list of needs and desires is seemingly infinite, standards are growing, and merely satisfying needs is not enough to achieve happiness; nor can one ignore the role of culturally specific goals, values, and beliefs in attaining SWB (Diener et al. 2003).

PSYCHOLOGICAL WELL-BEING: DEFINITIONS AND MEASURES

Psychological well-being may be regarded as a dimension of the quality of life at an individual level, the main indicators of which are life satisfaction and happiness. A person uses various criteria to assess her/his well-being by assigning an individual weight to specific elements in order to form a general judgment. On the one hand, these judgments reflect how an individual perceives their life at the level

of cognitive assessments, that is, life satisfaction; on the other, they reflect the frequency of positive and negative affects (Diener and Diener 1995). In order to attain a high level of SWB, a person has to balance positive and negative affects with more positive emotions and a high level of life satisfaction that reflect evaluations of life as a whole, such as job satisfaction and family. Affective balance is a reflection of direct positive and negative experiences, while life satisfaction is a long term judgment of the standards of life and the realization of goals and aspirations.

The idea of SWB, developed by Ed Diener and colleagues (Diener and Diener 1995; Oishi et al. 1999; Diener et al. 2003), has been extended over the years upon the basis of theories of optimal functioning (see Deci and Ryan 2000; Ryan and Deci 2000; Ryff and Keyes 1995). These authors argue that psychological well-being is distinct from subjective feelings of well-being even if they overlap empirically. While SWB is defined as an individual's evaluation of their life, psychological well-being is regarded as representing optimal human functioning (Diener et al. 2009).

Diener and others designed a new scale as an instrument for measuring psychosocial well-being, which they later termed the Flourishing Scale (Diener et al. 2010). This scale combined ideas arising from a variety of notions concerning psychosocial functioning, including meaning and purpose in life (Ryff and Keyes 1995; Seligman 2002); supportive and rewarding relationships (Ryan and Deci 2000; Ryff and Keyes 1995); being engaged and interested (Ryff and Keyes 1995; Seligman 2002; Csikszentmihalyi 1990); and competency (Deci and Ryan 2000; Ryff and Keyes 1995). Several aspects of well-being that were not included in existing scales, such as "optimism" (Csikszentmihalyi 1990), social capital (Helliwell et al. 2009), and contributing to the well-being and happiness of others (Brown et al. 2003), were introduced primarily because they are related to health and optimal functioning. Diener and colleagues thus made available a scale in a very brief format that is a broad measure of a number of aspects

of psychological well-being (Diener et al. 2010). The Flourishing Scale is an element of our own broader research, and it has also been utilized in other Bulgarian research related to the psychological and subjective well-being of adolescents (Kalchev 2014).

PSYCHOLOGICAL WELL-BEING AND CULTURE

A large body of research concerning psychological well-being focuses upon cultural differences, including the degree to which people are happy in different groups and how the cultural context influences well-being. Various theories of happiness maintain that most people are mildly happy, whereby they have the energy, creativity, and friendliness needed to function effectively, while scientific studies reveal that some groups are much happier than others (Diener and Biswas-Diener 2008). Aside from such characteristics as wealth, health, and governance, characteristics associated with culture, a set of shared beliefs, attitudes, self-definitions, and values can affect the happiness of groups and nations (Diener and Biswas-Diener 2008:132).

Values are motivational constructs that are viewed as the most general goals we have in life. They have an ambivalent nature because, on the one hand, they act as objective norms and regulators of social behavior, and, on the other, are subjective concepts of something that the individual or group desires. Values as

regulators of personality functioning provide an opportunity to change the hedonic level (Lyubomirsky et al. 2005). For example, researchers assume that people pursue goals in an individualistic culture that reflect personal desires and needs, while goals in a collectivist culture reflect mainly internalized group wishes and aspirations (see Schwartz 1992). There is evidence that such values as self-esteem and freedom are important predictors of life satisfaction in individualistic cultures more than in collectivist cultures (Diener and Diener 1995).

Values are often used to understand and access cultural variability (Matsumoto and Yoo 2006), and they may be defined as categories of orientation that are desirable, based on human needs and the preconditions to satisfy them, that are adopted by social actors, and that can vary in their magnitude and their constituting elements (Gouveia 2003:433).

One of the most widely accepted models of values in psychology is that of Shalom Schwartz, which makes conceptual, methodological, and empirical contributions to efforts to map a set of universal values (Schwartz 1992, 2011). While other theoretical and empirically proven value models have also been proposed by such researchers as Rokeach (1973), Inglehart (1989), Triandis (1995), and Hofstede (2001), we find Gouveia's functional theory of values, which is presented in Figure 1 below, to be

		Values as Guides for Action (Circle of Goals)		
		Personal Goals (the individual by herself)	Central Goals (the general purpose of life)	Social Goals (the individual in the community)
Values as Expressions of Needs (level of needs)	Thriving Needs (life as a source of opportunities)	Excitement Values Emotion Pleasure Sexuality	Suprapersonal Values Beauty Knowledge Maturity	Interactive Values Affection Belonging Support
	Survival Needs (life as a source of threats)	Promotion Values Power Prestige Success	Existence Values Health Stability Survival	Normative Values Obedience Religiosity Tradition

Source: Gouveia et al. 2014:42.

FIGURE 1. FACETS, DIMENSIONS, AND BASIC VALUES

particularly useful and integrative (Gouveia 1998, 2003; Gouveia et al. 2014). This model postulates that values possess two primary functions, namely, to guide human actions and to express human needs (Gouveia et al. 2014), each of which form distinct dimensions (Gouveia et al. 2014:3).

The first functional dimension involves goals associated with the types of orientation that values serve when guiding human behaviors (personal, central, or social goals), while the second involves levels of needs that reside upon the type of motivator which values serve when cognitively representing human needs (thriving and survival, or basic needs). Each of the three types of goals pursued is represented by two basic values – personal goals are associated with Excitement and Promotion Values, central goals with Suprapersonal and Existence Values, and social goals with Interactive and Normative Values. Each of the two types of expressed needs is represented by three basic values – thriving needs by Suprapersonal, Excitement, and Interactive Values, and survival needs by Promotion, Existence, and Normative Values (Gouveia et al. 2014:4). The six basic values may be briefly described as follows (see Gouveia et al. 2015):

Excitement Values express thriving needs with a focus on personal goals, reflecting a more personal orientation. They are measured by the markers of *emotion, pleasure, and sexuality*.

Suprapersonal Values express thriving needs in respect to central goals, and help organize and categorize the world in a meaningful way, providing clarity and stability in one's life. They are measured by the three marker values of *beauty, knowledge, and maturity*.

Interactive Values express thriving needs and focus on social goals. They are essential in regulating, establishing, and maintaining one's interpersonal relationships, stressing the common circumstances and affective experiences among individuals (Gouveia et al. 2015). They are measured by the three markers of *affection, belonging, and support*.

Promotion Values express survival needs and focus on personal goals (Gouveia et al.

2015). They stem from a personal orientation, emphasize material achievements, and comprise vital requirements for successful social interactions and institutional functioning (Schwartz 1992). They are measured by the three markers of *power, prestige, and success*.

Existence Values express survival needs, focus on central needs, and represent the most basic psychological needs. Their main purpose is to guarantee basic conditions for individual biological and psychological survival. They are measured by the three markers of *health, stability, and survival*.

Normative Values express survival needs, but focus on social goals. They reflect the importance of preserving one's culture and conventional norms, and are measured by the three markers of *obedience, religiosity, and tradition* values.

PSYCHOLOGICAL WELL-BEING AND VALUES IN ADOLESCENCE

We have already noted the regulatory role of values in respect to human activity, along with their capacity to change one's hedonic level (see Lyubomirsky et al. 2005). The relations between values and well-being may also be examined either from the perspective of mental health (Ryan and Deci 2000), or from the perspective of the congruence of values (see Sagiv et al. 2004). The first perspective assumes that maintaining the internal values that are related to the need for development fosters prosperity; conversely, maintaining the external values that are directed towards receiving approval and praise from others reduces well-being (Ryan and Deci 2000). A number of studies have confirmed these assumptions in respect to different cultural circles (see Tair and Popova 2017). However, other studies have not established links with inner values, particularly between benevolence, universalism, and life satisfaction (Sagiv and Schwartz 2000). The second perspective implies that maintaining values that are similar to those of the environment leads to higher levels of well-being, regardless of whether they are internal or external (Sagiv et al. 2004). On the one hand, values such as hedonism, stimulation, and self-direction, which express individual-

istic orientations and openness to experience, demonstrate weak but positive relationships with affective well-being (happiness). On the other, such conservative and collectivist values as tradition and obedience have negative relationships with well-being. There are thus specific relations between values and psychological well-being.

An example of this last point is provided by our recent comparative study concerning values and well-being among student samples from Argentina, Bulgaria, and Finland, in which we found that Bulgarian business administration students and Finnish pedagogy students were those most happy and satisfied with their lives. Finnish business students, however, had the lowest scores in respect to psychosocial well-being. These results are interesting because Finland is ranked first and Bulgaria last in terms of life satisfaction in Europe, as measured in the European social survey during the period of our research (Tair and Sortheix 2011). Psychological well-being is apparently highest among Finnish pedagogy students insofar as they display values consistent with their cultural norms. Bulgarian business students live in an individualistic country, where the values of self-orientation and openness to new experiences are related to life satisfaction, and they maintain the corresponding values, ascribing the greatest importance to hedonism and self-direction. There is thus a congruence between their personal values and those of their culture as well. In contrast, the values of Finnish business students are not congruent with those in their country's profile insofar as they rank hedonism and self-direction highly. This may well be why they have the lowest well-being scores among the groups we surveyed, in which there was a strong relationship between psychological well-being and congruence with the values of one's culture (see Tair and Sortheix 2011). We should also note that the psychological well-being of the Bulgarian students, consisting of positive relationships, self-competence, and pursuit of interests, was higher than their life satisfaction.

Similar trends emerged in our study concerning functional values and well-being

($N = 448$, age 18-65), measured in terms of flourishing and life satisfaction (Tair and Popova 2017). First, functional values have little impact upon life satisfaction, with only normative values playing a significant role. Briefly stated, the values of obedience, religiosity, and tradition promote life satisfaction to some degree. Second, there are moderate positive relationships between functional values and flourishing insofar as Interactive and Suprapersonal Values essentially determine psychosocial well-being. That is to say that an orientation towards values related to affection, belonging, and social support, as well as to beauty, knowledge and maturity, significantly contributed to the psychosocial well-being of our Bulgarian sample.

Value change is likely to occur as a function of distinct developmental priorities at different ages, particularly in response to changing roles and environmental requirements associated with life stages (see Gouveia et al. 2015). Value change is also likely to occur because of physiological and biological changes, such as when individuals during adolescence experiment with new stimuli in efforts to create their own identity and find mating partners. Finally, value change can also result from societal changes, including economic development, democratization, and political and economic stability. In general, life span development theories suggest that values change normatively according to age in a balanced adaptive process, thereby maximizing opportunities, competence, and well-being in accordance with individuals' social roles and biological conditions (Gouveia et al. 2015).

We may expect high levels of Excitement Values among adolescents because younger adults are typically more oriented towards satisfying hedonistic desires and gaining stimulation. Furthermore, since males are socially encouraged to explore and dominate the environment more than women (Gouveia et al. 2015), it thus reasonable to expect that Excitement Values should be more important for younger individuals, particularly males (Schwartz and Rubel 2005; Zuckerman 1994).

In respect to Promotion Values, young adults are generally expected to get good grades, establish a career after finishing school, and display an ability to support a family, which increases their chances of finding a life partner (Gouveia et al. 2015). Some researchers assume that there is a gender effect in respect to Promotion Values insofar as females are typically less promotion-oriented than males (Schwartz and Rubel 2005). Insofar as Suprapersonal Values reflect maturity, appreciation of beauty, and knowledge, they are likely to increase in importance with age. Research has also indicated greater perceived wisdom in older individuals, who focus more on retrospection and reflection on life than do adolescents (Vaillant 2002). In addition, there is evidence that gender may influence growth-related values. For example, Schwartz and Rubel (2005) have noted that universalism was more important for women than men in 106 out of 127 cultural groups.

Expectations concerning Existence Values are more complex. Since they are closely related to one's own physical and material well-being as well as that of those who are close to them, Gouveia and colleagues have proposed that they may have a lower importance among adolescents (Gouveia et al. 2015). However, the economic and political situation in Bulgaria over the last three decades, coupled with traditionally greater respect in the country for security values (Baychinska 2011; Garvanova 2013), may increase the importance for adolescents of Existence Values because of their concerns about survival and well-being in general.

Interactive Values are likely to be a concern for people of all ages because these socially-oriented values are essential for human well-being independently of age (Gouveia et al. 2015). Given that social networks and social relations are more important for women, some researchers expect females to ascribe a greater importance to Interactive Values than males (see Schwartz and Rubel 2005).

Since Normative Values emphasize conservation and stability, we speculate that they are likely to be less important for adolescents, becoming more important with age (Gouveia

et al. 2015). Certain research has suggested that children might also place a greater importance upon Normative Values because they are still dependent upon their parents, for whom Normative Values should be important (Goodnow 1997). Normative Values would then be expected to be relatively important among children, decrease to their lowest level of importance among adolescents, steadily increase in significance through adulthood, and reach their highest level of importance among the oldest age groups (Gouveia et al. 2015). There is also evidence of a gender effect, with certain previous studies indicating that Normative Values may be more pronounced among men than women in adulthood (See Robinson 2013).

Bulgarian studies of young people are in line with these expectations, and our survey of students ($M = 22.9$ years) establishes the importance of values expressing hedonism, self-determination, and achievement (Tair and Sorthaix 2011). Another Bulgarian study with a large sample of students has found that the most important value for the respondents was self-determination, followed by security, benevolence, achievement, and hedonism (Garvanova 2013). Other studies by Bulgarian researchers have found that the main life goals and most significant values among students in the country from the 1990s to the present include health, personal freedom, interesting work, good friends, pleasure, independence, self-direction, and achievement (see Baychinska 2011).

Gouveia and colleagues (2015) have used large cross-sectional data ($N = 36,845$) from Brazil in investigating how the mean levels of basic values differ as a function of age (age 12-65, $M = 28$) and whether the effects of age are moderated by gender. Results for adolescents indicate that Excitement Values continue to change during the course of life, and that change for men was observed only early in life. For women, Excitement Values increased in importance during adolescence and early adulthood, but then began to decrease in significance, becoming negative in middle and late adulthood. Gouveia and colleagues (2015) established that Promotion

Values increased in importance during adolescence, and that the gender effect in this regard was greater for men than for women after age 18. Suprapersonal Values showed a marked increase in importance for women in adolescence and early adulthood, but then stabilized after age of 35. A similarly marked increase in Suprapersonal Values in adolescence and early adulthood was noted for men, but there also was an increase in late adulthood. Existence Values increased in significance during adolescence and early adulthood for both women and men. In addition, gender moderated age-related changes in Interactive Values insofar as its influence increased for women in adolescence, but then became stable after age 18. For both women and men, there was a decline in the importance of Normative Values during adolescence, an increase in early adulthood, a stable period in middle adulthood, and an increase later in life (Gouveia et al. 2015).

BELIEF IN A JUST WORLD: DEFINITIONS, MEASUREMENT, AND ASSOCIATIONS WITH PSYCHOLOGICAL WELL-BEING

The notion of justice, which is salient in both social life and scholarly traditions, has been investigated throughout scholarly history, being discussed in both Aristotle's *Nicomachean Ethics* and Plato's *Republic*. It has later been addressed at length by Karl Marx, Thomas Hobbes, John Stuart Mill, and many contemporary empirically-oriented researchers from the social sciences, including psychology, sociology, and economics (Sabbagh and Schmitt 2016). Varied disciplinary perspectives guide justice theory and research, with a number of different definitions and classifications being proposed, such as distributive, procedural, retributive, and restorative justice. Distributive justice refers to the perceived justness of the principles and rules that regulate resource distribution (effort, need), including evaluations of the actual outcomes of distribution in relation to expected outcomes. Procedural justice focuses on the justness of the procedures through which resource distribution takes place. Retributive justice is concerned with the negative outcomes that may be associated

with resource distribution. In this case, the observer frames the resource valence in negative terms (punishment or imprisonment). Historically, justice research has focused its attention on the distribution of positive resources, assuming that an understanding of that domain also applies to the distribution of negative resources. Restorative justice (or reparative justice) also deals with negative outcomes, but rather than emphasizing the importance of procedures in redressing justice, it focuses on informal processes whereby victims, offenders, and communities are encouraged to undertake steps (apologies, community service, return of stolen goods) to repair the harm done (Sabbagh and Schmitt 2016).

In spite of social, economic, and technological development, inequalities continue to exist in different areas of life, and a number of psychological theories have been put forward in an effort to cast light on how individuals react to observed or experienced injustice (see Dalbert 2009). One of the most influential theories in this regard is Lerner's (1965, 1980) just world hypothesis, which maintains that people need to believe in a just world in which everyone gets what they deserve and deserves what they get. This belief serves important adaptive functions in that it makes it possible for individuals to deal with their social environment as though it were stable and orderly. As a result, they are motivated to defend their belief in a just world when it is threatened by injustices, whether they be experienced or observed (Dalbert 2009).

A substantial amount of research concerning belief in a just world (BJW) has been experimental in nature (see Hafer and Bègue 2005; Dalbert 2009). Since the 1970s, however, another line of research has examined individual differences regarding BJW consequent to Rubin and Peplau's (1973, 1975) introduction of the first scale designed to measure this belief. Their 20-item Belief in Just World Scale included both general and domain specific items ("Basically, the world is a just place") as well as items that addressed belief in an unjust world ("Good deeds often go unnoticed and unrewarded") (Rubin and Peplau 1975). There were also items that ad-

dressed other constructs, such as authoritarianism ("When parents punish their children, it is almost always for good reasons"). As a result, this scale was criticized for being heterogeneous in content (Furnham and Procter 1989), which led to the development of two homogenous general scales for measuring BJW. First, Dalbert and colleagues constructed a 6-item scale (Dalbert et al. 1987) for exploring General BJW ("I think people try to be fair when making important decisions") that displays a validity convergent with Rubin and Peplau's scale (Dalbert 2009). The scale developed by Dalbert and colleagues has been utilized in numerous studies (see Allen et al. 2005), some of which present it as independent of social desirability (Loo 2002). Lipkus (1991) constructed a 7-item Global Belief in a Just World Scale that is positively associated with the Rubin and Peplau scale (Dalbert 2009), which has also been successfully employed in a number of studies (see Reich, Wang, 2015). This line of research, that started with Rubin and Peplau's (1973, 1975) work, made it possible to investigate BJW within the framework of personality dispositions (Dalbert 2009).

One of the first associations that was observed between BJW and other personality dispositions was the positive correlation between General BJW and religiosity (Dalbert and Katona-Sallay 1996; Rubin and Peplau 1973, as cited in Dalbert 2009). Positive and at times substantial associations were also established between authoritarianism and General BJW and between BJW and an internal locus of control, which prompted speculation concerning an overlap between these two constructs (see Furnham and Procter 1989). Finally, there is evidence which suggests that BJW as a personality trait correlates with global personality dimensions (Dalbert 2009). More specifically, empirical findings indicate a negative relationship between Personal BJW belief and neuroticism, which is consistent with the positive outlook that BJW provides (Lipkus et al. 1996). Taken collectively, research findings support the differential validity of BJW within the network of personality dispositions (Dalbert 2009).

A number of studies since the 1990s have investigated both the positive and negative social consequences of BJW, with their focus having been extended to cover the consequences of BJW for those believing in a just world (Dalbert 2009). Such studies have shown that it is necessary to distinguish between Personal BJW, or a world in which one is usually treated fairly, and general BJW, or a just world in which people in general get what they deserve (Dalbert 1999; Lipkus et al. 1996). Although Personal and General BJW are positively interrelated, there are certain independent and even opposing effects (Bollman et al. 2015). For example, in line with self-serving bias in general and fairness reasoning in particular, research indicates that people tend to endorse Personal BJW more strongly than General BJW, and that the two constructs in fact have different meanings (Dalbert 2009). Personal BJW is a better predictor of psychosocial adjustment, such as subjective well-being, while General BJW is a better predictor of, for example, negative social stereotypes (see Bègue and Bastounis 2003).

The meaning of BJW also appears to differ systematically across one's lifespan (Maes and Schmitt 2004). BJW's main function in adolescence and young adulthood appears to provide trust in the fairness of the world, which enables people to master challenges in school and at the workplace and invest in their personal goals. In old age, when one's remaining lifetime is shorter, BJW's primary function seems to involve providing a framework that assists people with interpreting the events of their life in an fruitful way. A strong BJW permits older adults to see themselves as having been less discriminated against during the course of their life, thus helping them to avoid ruminating about its negative aspects and instead find a positive meaning in their experiences (Dalbert 2009).

It is also necessary to differentiate between a justice motive and a justice motivation. Motives are individual dispositions that reflect individual differences in respect to the tendency to strive for a specific goal, with a justice motive thus being an individual disposition to strive for justice as an end in itself.

Lerner (1977) argues that an individual's BJW can be interpreted as an indicator of such a justice motive. BJW then indicates a personal contract – the more people want to rely upon being treated justly by others, the more obligated they should feel to behave justly themselves. Consequently, the stronger one's BJW, the stronger is their justice motive (Dalbert 2009).

Other researchers, primarily those working in the field of experimental just world research, interpret people's reactions in the light of just world reasoning, but address their actions in respect to a justice motivation, not to a justice motive as a disposition regarding individual differences. From this perspective, a justice motivation is regarded as one's orientation toward justice in a given situation. A justice motivation is triggered by specific situational circumstances in interaction with personal dispositions, with it being possible for the latter to be a justice motive or some other disposition (see Lind and Van den Bos 2002; Miller 1999, as discussed in Dalbert 2009).

Other differentiations of the just world construct have also been proposed, including its differentiation from a general belief in an unjust world (see Dalbert 2009). Hafer and Sutton (2016) break down BJW “as a general construct into more specific facets, such as domain-specific BJW (e.g., sociopolitical, interpersonal, personal), BJW for self vs. for people in general, and different ways of believing in a just world (immanent, ultimate).” They also point out that “BJW may not be an ideal indicator of the justice motive, because the justice motive operates automatically, whereas BJW scales tap-controlled judgments that can be, and often are, independent of automatic evaluations” (Sabbagh and Schmitt 2016:5).

Furthermore, individuals differ greatly in their reactions to identical incidents of injustice, and it is not possible to explain justice-related judgments, emotions, and actions solely by situational and contextual factors. It seems plausible to assume that such differences stem from how easily individuals perceive injustice and how strongly they react to

it, which may be termed their Justice Sensitivity (JS). Baumert et al. (2013) argue that JS is a specifically justice-related disposition that serves as an indicator of an individual's concern for justice. Unlike BJW, it directly captures stable and consistent differences in individuals' readiness to perceive injustice and in the strength of their cognitive, emotional, and behavioral reactions to it. Schmidt and colleagues (2010) conceptualize JS as a personality trait consisting of four distinct components associated with the perspectives of the victim, observer, beneficiary, and perpetrator, all of which one may adopt in respect to a given injustice. They developed a Justice Sensitivity Inventory, established its factorial validity, revealed its links with personality traits, and identified minor demographic effects (Schmidt et al. 2010). Baumert and Schmitt (2016) concluded on the basis of their review of the available research that information processing, such as selective attention, selective interpretation, and selective memory, plays a role in JS and translates its effects into reactions to injustice.

In the present study we have employed the Justice Sensitivity Scale–Beneficiary Perspective (Dalbert and Umlauf 2003), which measures feelings of distress over an injustice that is to one's own advantage. An example item is “I feel guilty when I receive better treatment than others.” We also utilized the Justice Centrality Scale (Dalbert et al. 1987) in order to gauge distress concerning injustice as well as satisfaction with one's own fairness (“There are few things that make me as happy as justice”).

In respect to values, previous findings have shown that BJW is positively related to extraversion and to the value domains of conformity and security, and negatively related to neuroticism and openness. Worfradt and Dalbert (2003) found a negative correlation between BJW and openness to experience. Norman Feather's (1991) study of human values, global self-esteem, and BJW across two different samples established that just world beliefs were positively associated with the restrictive conformity domain of values. That is to say that subjects who believe in a

just world in which people get what they deserve also regard values that support conformity to social rules and obedience to authority as more important than subjects whose just world beliefs were not as strong (Feather 1991:103-104).

Research during the last decade has demonstrated that BJW as a personality disposition serves at least three primarily adaptive functions and may thus be regarded as a resource that sustains subjective well-being (Dalbert 2001). The first of these functions involves the assimilation of injustice. In this respect, when individuals with a strong BJW experience an injustice that they do not believe can be resolved in reality, they seek to assimilate the experience into their just world belief. They endeavor to do so by justifying the unfairness they have experienced as being at least partly self-inflicted, playing down the degree of unfairness, avoiding brooding over what has taken place, or by forgiving. As a result of these mechanisms, positive relationships have been observed between BJW and judgments concerning justice in various domains of life (see Dalbert 2009). For example, as a consequence of the assimilation process, school students with a strong Personal BJW have been found to be more likely to evaluate their school grades and the behavior of their teachers, peers, and parents towards them as just (Dalbert and Stoeber 2006). Research has also revealed that experiences of justice at school and within the family modify one's Personal BJW (Dalbert and Stoeber 2006), and that factors such as length of imprisonment (Otto and Dalbert 2005), monotony at work, and mobbing at work (Dzuka and Dalbert 2007; Otto and Schmidt 2007) are negatively related to a Personal BJW.

The second adaptive function involves trust in justice, whereby people with a strong BJW are confident in being treated justly by others. It is particularly this type of trust that is hypothesized as identifying BJW as a resource in everyday life (Dalbert 2009). Research has proven the expected positive association of BJW with general interpersonal trust, trust in societal institutions, and the trust

of young adolescents in the justice of their future workplace insofar as individuals with a strong BJW display a higher level of trust in their own future and in how others behave towards them than those with lower levels of trust (see Dalbert 2009).

Third, BJW functions serves as a justice motive indicator in the sense that the more individuals believe in a just world, the more they feel compelled to strive for justice themselves. Research has found BJW to be an important correlate of social responsibility and commitment to just means, among other matters (Dalbert 2009). Consequently, the adaptive functions of BJW that have been noted above – commitment to a personal contract, trust in the fairness of the world, and provision of a framework for interpreting the events in one's life – may be regarded as having a positive impact, either directly or indirectly, upon subjective well-being. Furthermore, Personal BJW has been shown to be more important than General BJW in explaining well-being (see Dalbert 1999; Lipkus et al. 1996; Sutton and Douglas 2005). Dzuka and Dalbert (2007) have established that the well-being of teachers is positively associated with their Personal BJW, and that this relationship held when they controlled for exposure to student violence.

In summary, BJW makes it possible for people to deal with their physical and social environment as though it were stable and orderly. Individuals suffer greatly when confronted with injustice because observed or experienced injustice threatens their adaptive functions. Individuals with a strong BJW respond to such threats by trying to restore justice, either in reality, or psychologically (Dzuka and Dalbert 2006). BJW is regarded as a relatively stable personality dimension (Dalbert 2001) that provides a conceptual framework which helps individuals interpret the events of their personal lives in a meaningful way, thereby helping individuals to maintain their subjective well-being (SWB). But although numerous studies have shown that BJW serves to foster SWB (see Correia and Vala 2004; Dalbert 1997, 1998, 2002; Dalbert and Dzuka 2004; Lipkus et al. 1996),

none have addressed the importance among adolescents of functional values and such varied justice-related dispositions as General BJW, Personal BJW, Justice Sensitivity, and Justice Centrality.

METHOD

RESEARCH AIM, TASKS, AND HYPOTHESES

The aim of the study is to establish whether functional values and BJW are predictors of psychological well-being (flourishing) for Bulgarian adolescents.

This aim is realized through completing the following tasks:

- 1) Identifying the functional values of Bulgarian adolescents as they are measured by the Promotion, Excitement, Existence, Suprapersonal, Interactive, and Normative Values.
- 2) Identifying the BJW of Bulgarian adolescents as measured by General and Personal BJW, Justice Centrality, and Justice Sensitivity.
- 3) Establishing whether there are gender differences in respect to functional values and BJW among Bulgarian adolescents.
- 4) Defining the predictive roles of the six sub-function values noted above and BJW regarding the flourishing of Bulgarian adolescents.

In the light of the results of previous studies concerning the values, BJW, and well-being of adolescents, we assume that there are significant differences concerning functional values and BJW, and expect that there is a gender effect as well. More precisely, there is reason to anticipate that Excitement Values are more important for males, and that Normative Values are more pronounced for females. In light of the economic and social situation in Bulgaria and the goals adolescents possess, we assume that there is no gender effect in respect to Existence, Interactive, Suprapersonal, and Promotion Values. We anticipate that there are no significant differences regarding BJW, but still assume that there is a gender effect. In particular, we assume that there are no differences regarding General and Personal BJW,

but expect that Justice Centrality and Justice Sensitivity are more important for females. We expect that functional values and BJW have a significant impact upon flourishing, and assume that values have a stronger impact than BJW upon psychological well-being.

SAMPLE

The sample consisted of 223 eighteen-year-old Bulgarian secondary school students, primarily in specialized mathematics and economics schools, of whom 147 were males and 86 females. The following analytical tools were utilized for the purposes of the study:

1) *The Bulgarian Adaptation of the Basic Values Survey* (BVS) (Gouveia 2003). This consists of 18 marker values that all participants were asked to rate in respect to the importance each had as a guiding principle in their life. Responses were indicated on a 7-point Likert scale ranging from 1) "completely unimportant" to 7) "of the utmost importance." Each of the 18 marker values is explained in a short sentence (Gouveia et al. 2014). The six sub-functions and their markers are as following:

- a) **Excitement Values** (thriving needs and personal goals): *Emotion* (enjoying challenges or unknown situations); *Pleasure* (living for the moment); and *Sexuality* (having sexual relationships and obtaining sexual pleasure).
- b) **Promotion Values** (survival needs and personal goals): *Power* (being able to influence others and control decisions); *Prestige* (know that many people admire you); *Success* (attaining your goals).
- c) **Existence Values** (survival needs and central goals): *Health* (looking after your health at all times, not just when sick); *Personal Stability* (being certain that tomorrow you will have all that you have today); *Survival* (having water, food, and shelter every day of your life).
- d) **Suprapersonal Values** (thriving needs and central goals): *Beauty* (being able to appreciate the best in art, music, and literature); *Knowledge* (searching for up-to-date news on not very well-known matters);

Maturity (feeling that your purpose in life has been fulfilled).

- e) **Interactive values** (thriving needs and social goals): **Affectivity** (having a deep and enduring affectionate relationship); **Belonging** (being part of a group, such as a social, religious, or sporting group); **Social Support** (obtaining help when you need it).
- f) **Normative Values** (survival motivator and social goals): **Obedience** (fulfilling your daily duties and obligations, respecting your parents, superiors, and elders); **Religiosity** (believing in God as the savior of humanity); and **Tradition** (following the social norms of your country, respecting the traditions of your society).

2) **BJW Scales**, including:

- a) **The Personal Belief in a Just World Scale** (Dalbert 1999), which includes seven items, such as “I believe that I usually get what I deserve.”
- b) **The General Belief in a Just World Scale** (Dalbert 1999), which includes six items (“I think that basically the world is a just place”).
- c) **The Justice Sensitivity Scale–Beneficiary Perspective** (Schmitt et al. 2005). This includes seven items for evaluating feelings of distress over an injustice that is to one’s own advantage (“I feel guilty when I receive better treatment than others”).
- d) The extended version (Dalbert and Umlauf 2003) of **The Justice Centrality Scale** (Dalbert et al. 1987). This includes 13 items for evaluating feelings of distress over injustice and satisfaction with one’s own fairness (“There are few things that make me as happy as justice”).

Responses for all scales were indicated on a 6-point Likert scale ranging from 1) “strongly disagree” to 6) “strongly agree.”

3) **The Bulgarian Adaptation of the Flourishing Scale** (Diener et al. 2010), which includes seven items (“My social relationships are supportive and rewarding,” “I am competent and capable in the activities that are important to me”). Responses were indicated on a 6-point Likert scale ranging from

1) “strongly disagree” to 6) “strongly agree.” Participants also provided certain demographic variables, such as age, sex, type of the school, and so forth.

RESULTS AND DISCUSSION

Table 1 below presents the descriptive statistics, reliability indicators, and correlations of the 6 subscales of the BVS, the 4 scales of the BJW, and the Flourishing Scale.

The values of Cronbach’s alpha for the BVS vary from $\alpha = 0.47$ (Promotion) to $\alpha = 0.66$ (Existence, Excitement). The alphas are generally lower than the value of $\alpha=0.70$ that is recommended as a cut-off point, but they indicate a reasonable level of internal consistency for the number of items (only 3 items per subscale) and for a broad construct, such as values. In addition, these coefficients are similar to or higher than those reported in previous research using other value measures in various countries (Gouveia et al. 2015; Schwartz 2005). We therefore assume that the internal consistency of the six subscales is fully acceptable.

The matrix of corresponding correlations is also presented in Table 1. All are positive and moderate to strong except for the expected low correlation between the Normative and Excitement sub-functions ($r = 0.20$).

The values of Cronbach’s alpha for the BJW scales vary from $\alpha = 0.64$ (General BJW) to $\alpha=0.83$ (Justice Sensitivity), which indicates that they are also fully acceptable for the purposes of the study. Correlations between the BJW subscales are positive and, as expected, are stronger between General and Personal BJW (0.59), as well as Justice Centrality and Justice Sensitivity (0.47). Other research has also found similar associations between General and Personal BJW (Lipkus et al. 1996; Sutton et al. 2017). The inter-correlations between the four BJW scales in our research accord with the theoretical assumptions that differentiate BJW and Justice Sensitivity as personality variables.

Only the correlations between the functional values and Personal BJW are significant for all six values, being stronger for Suprap-

ersonal and Interactive Values. Correlations with personal values – Excitement and Promotion – are low and not significant for General BJW. Justice Centrality has a similar pattern of inter-correlations – low but significant with Existence and Interactive Values and stronger with Suprapersonal Values. Justice Sensitivity is not correlated with functional values. The scales for Justice Sensitivity and Justice Centrality are moderately correlated, but they are interrelated differently with the six functional values and the Flourishing Scale. Items on the Justice Sensitivity Scale are more specific, expressing beneficiary sensitivity as a narrower domain of Justice Sensitivity. The Justice Centrality Scale is more general and balanced. It is expected that its highest correlations are with Suprapersonal Values due to the fact that justice itself may be conceptualized as a value in the field of Suprapersonal Values (see Feather 1991; Dalbert and Umlauf 2003; Schmidt et al 2010).

The value of Cronbach's alpha is high ($\alpha = 0.78$) for the Flourishing Scale. Correlations with the sub-functions of all values and the BJW scales are positive and moderate, with the exception of Justice Sensitivity. The

associations are stronger between Existence, Suprapersonal, and Interactive Values and flourishing, as well as between General and Personal BJW, Justice Centrality, and flourishing.

The descriptive statistics presented in Table 1 indicate high scores for all of the students' basic values, although certain tendencies can be identified. First, the sub-function Existence ($M = 6.09$) is regarded as the most important, followed by Interactive ($M = 5.62$) and Suprapersonal ($M = 5.48$) Values. Excitement ($M = 5.39$) and Normative ($M = 5.25$) Values are in third place, while the sub-function Promotion ($M = 5.16$) was ascribed the least importance. It should be noted, however, that the difference between the most important and least important sub-function is close to 1. Consequently, our expectation concerning the differences between the dimensions of the functional values is supported.

It is somewhat surprising that the Bulgarian 18-year-old students in our sample are not only more mature than we expected, they are also more mature than their counterparts from the 1990s and the beginning of the 2000s. Rather than possessing predominantly person-

TABLE 1
MEANS, STANDARD DEVIATIONS, CRONBACH'S ALPHA, AND CORRELATIONS OF THE SIX SUB-FUNCTIONS OF THE BVS, THE FOUR BJW SCALES, AND THE FLOURISHING SCALE

	<i>M</i>	<i>SD</i>	α	1	2	3	4	5	6	7	8	9	10
1. Excitement	5.39	1.15	0.66										
2. Promotion	5.16	1.05	0.47	.58***									
3. Existence	6.09	0.95	0.66	.48***	.49***								
4. Suprapersonal	5.48	0.95	0.54	.44***	.48***	.59***							
5. Interactive	5.62	1.06	0.61	.43***	.45***	.58***	.59***						
6. Normative	5.25	1.14	0.56	.20**	.36***	.52***	.44***	.46***					
7. General BJW	3.92	0.82	0.64	.09	.10	.14*	.25***	.22***	.17**				
8. Personal BJW	3.98	0.82	0.74	.21**	.22***	.16*	.25***	.25***	.14*	.59***			
9. Justice Centrality	4.06	0.71	0.80	.12	.13	.18**	.27***	.17*	.11	.27***	.30***		
10. Justice Sensitivity	3.63	0.95	0.83	-.05	0	.07	.13	.13	-.02	.23***	.19**	.47***	
11. Flourishing	31.87	5.01	0.78	.32***	.30***	.49***	.45***	.46***	.25***	.36***	.38***	.33***	0.13

al goals, as measured in terms of Promotion and Excitement Values (Gouveia et al. 2015), or in terms of self-determination, pleasure, achievement, hedonism, and so forth, in other Bulgarian studies (see Baychinska 2011), the adolescents whom we have studied are more focused on central and social goals and on Existence, Suprapersonal Values, and Interactive Values, ascribing lower importance to Excitement and Promotion Values than was previously observed. Although both survival and thriving needs are present, only Existence is noted regarding survival needs, while Suprapersonal and Interactive Values are predominant in respect to developmental needs.

While the data support our expectations concerning significant gender differences among the values of adolescents (see Table 2), we cannot generalize the results because our sample was small in size and consisted of nearly twice as many males than females. We nonetheless observed no significant gender differences in the functional values that were ranked in the top positions – Existence, Suprapersonal, and Interactive Values. There were also no significant gender differences regarding Promotion Values, which are ranked in last place. As is shown in Table 2, however, which presents the results of the

ANOVA analysis, adolescent males and females differ significantly in respect to Excitement ($F = 15.70$, $p < 0.001$, $\eta^2_p = 0.07$) and Normative ($F = 4.05$, $p < 0.001$, $\eta^2_p = 0.02$) Values. The males ranked Excitement Values higher and the females ranked Normative Values higher, as was anticipated. Our results thus partly support the hypothesis that males ascribe greater importance to personal goals (Excitement, but not Promotion), while females ascribe greater importance to social and central goals.

It was expected that males, particularly adolescents and young men, would rank Excitement Values highly. It is typical for these groups, who are socially encouraged to explore the environment to a greater extent than females (Gouveia et al. 2015), to perform better in the search for feelings and new experiences (e.g. Zuckerman 1994). Although our sample is small in size and is marked by an uneven gender distribution, we may nevertheless assume that the male and female Bulgarian adolescents whom we surveyed do not differ significantly in their striving for success and power insofar as they display no statistically significant gender differences concerning Promotion or self-oriented values (Schwartz and Rubel 2005; Gouveia et

TABLE 2
ANOVA RESULTS FOR GENDER DIFFERENCES IN SUB-FUNCTIONAL VALUES

Values		Men (N = 144)	Women (N = 79)	F
Excitement	M	5.61	4.99	$F = 15.70^{***}$ $\eta^2_p = 0.07$
	SD	1.06	1.21	
Promotion	M	5.26	4.99	n.s.
	SD	1.02	1.08	
Existence	M	6.10	6.06	n.s.
	SD	1.02	0.81	
Suprapersonal	M	5.53	5.41	n.s.
	SD	1.02	0.83	
Interactive	M	5.58	5.68	n.s.
	SD	1.18	0.80	
Normative	M	5.13	5.45	$F = 4.05^*$ $\eta^2_p = 0.02$
	SD	1.21	0.99	

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, η^2_p – Partial Eta Squared

al. 2015). Normative Values, which express the importance of preserving social rules and norms, are usually rated higher by women and adults than by male adolescents (Robinson 2013). It is thus not surprising that the female adolescents in our study ranked these values highly since, as future mothers and responsible persons, they will pass on these rules and norms to their children.

The descriptive statistics for the justice-related scales presented in Table 1 above indicate similar scores for the four BJW scales. More specifically, the General ($M = 3.92$) and Personal ($M = 3.98$) BJW scores are very close to each other, while the score for Justice Centrality ($M = 4.06$) is slightly higher. The result for Justice Sensitivity ($M = 3.63$) is the lowest, but it is still close to other subscales. These findings comprise the average results for adolescents' BJW. The significance or centrality of justice in their lives is thus highlighted, followed by Personal BJW and the importance of fairness in the world as a whole. Adolescents ascribe the lowest ranking to a beneficiary sensitivity to justice.

The expectations of gender differences in justice-related dimensions were partly confirmed, with the results being presented in Table 3 below. Although there were no differences concerning gender in respect to

Personal and General BJW, such differences are found in respect to Justice Sensitivity and Justice Centrality insofar as females ascribed a higher value to the latter. In spite of the uneven distribution by gender in our sample, we can nevertheless link the results obtained with the findings for functional values. For example, since the females ascribed a greater importance to Normative Values, we may assume that justice is an important goal in their lives alongside such values as tradition and religion. It is not surprising, however, that females display a greater sensitivity to injustice. Regardless of certain suggestions that the systematic correlation of demographic factors with BJW appears to have been substantially neglected by researchers (Furnham and Procter 1989), there are findings that support the hypothesis that females are significantly more sensitive to justice than males (Schmitt et al. 2010). This difference may reflect women's greater emotional vulnerability, their greater concern for the well-being of others, or their lower aggressiveness (Alfermann 2005), although such interpretations remain speculative. It may also be the case that women are more sensitive to justice than men because they are disadvantaged in respect to men in many domains of life (Schmitt et al. 2010).

TABLE 3
ANOVA RESULTS FOR GENDER DIFFERENCES IN BJW SCALES

BJW Scales		Men (N = 144)	Women (N = 79)	F
General Belief in a Just World	M	3.88	4.01	n.s.
	SD	0.85	0.75	
Personal Belief in a Just World	M	4.03	3.88	n.s.
	SD	0.81	0.84	
Justice Centrality	M	3.98	4.20	F = 4.67* $\eta^2_p = 0.02$
	SD	0.75	0.63	
Justice Sensitivity – Beneficiary Perspective	M	3.50	3.87	F = 7.84** $\eta^2_p = 0.04$
	SD	0.93	0.93	

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, η^2_p – Partial Eta Squared

The results of the regression analysis are presented in Table 4 below. First, we examined the degree to which functional values predict the flourishing of adolescents, and found that three of the six subscales contribute significantly to predicting psychosocial well-being. Existence Values have the highest significant moderate positive coefficient, followed by Interactive and Suprapersonal Values. Excitement and Promotion Values are practically unrelated to psychosocial well-being, while Normative Values have a small and non-significant negative beta coefficient. The value subscales explained 31% of the variance in flourishing.

TABLE 4
RESULTS OF A HIERARCHICAL REGRESSION
ANALYSIS OF 6 VALUE SUB-FUNCTIONS AND BJW
SCALES ON FLOURISHING

Variables	Step 1	Step 2	Step 3
Excitement	0.04	0.02	0.04
Promotion	-0.03	-0.04	-0.03
Existence	0.28***	0.30***	0.30***
Suprapersonal	0.18*	0.10	0.11
Interactive	0.23**	0.19**	0.18**
Normative	-0.07	-0.09	-0.11
General BJW		0.14*	0.13
Personal BJW		0.17*	0.18**
Justice Centrality		0.18**	0.17**
Justice Sensitivity		-0.08	-0.09
Gender			0.09
R ²	0.31	0.41	0.42
R ² Change		0.10	0.01
F	15.98***	14.81***	13.74***
Df	6, 216	10, 212	11, 211

Note: Standardized regression coefficients (β) are shown.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

The four BJW scales were added to the six value sub-functions in Step 2. Together they explain 41% of the variance in flourishing,

with an R² Change value of 0.10. The BJW dimensions have positive significant coefficients, albeit small, with the exception of Justice Sensitivity. The General BJW has the smallest beta coefficient. Gender was added to the previous sets of predictors in Step 3 since significant gender differences were observed in both values and beliefs. The results indicate that the full model explains 42% of the variation, with the inclusion of gender increasing the value of R² by 0.01. There is thus some gender effect, but it explain no more than 1% of the variance in the flourishing of adolescents.

The results thus show that the flourishing of adolescents, involving their self-esteem, goals in life, and positive relationships with others, is largely linked to and predicted by Existence Values, namely, health, survival, and a feeling of personal stability. Although Interactive Values, which are associated with affection, belonging, and support from others, are of lesser importance, they also have a positive connection with flourishing. Personal BJW and Justice Centrality appeared to be equally strong predictors, which is to say that belief in a world in which one is usually treated fairly has a positive effect on flourishing for adolescents. We anticipated these results insofar as there is evidence in the literature that Personal BJW is a significant predictor of adaptive outcomes, including subjective well-being (Bègue and Bastounis 2003). Justice Centrality, or concern with injustice and satisfaction with one's own fairness, also contributes significantly to well-being for adolescents.

In respect to the values variables, Existence and Interactive Values contribute significantly to the regression model; Excitement, Promotion, and Normative Values make no contribution; and the contribution of the Suprapersonal Values is reduced to non-significance when the BJW variables are added to the model. Additional statistical analysis revealed that multi-collinearity between the sub-functions of functional values and BJW scales poses no problem since the values of the variance inflation factors in all regressions were between 1.09 and 1.86 (Belsey et al.

TABLE 5
RESULTS OF THE HIERARCHICAL REGRESSION ANALYSIS OF THE 6 VALUE SUB-FUNCTIONS
AND THE 4 JUSTICE-RELATED SCALES (ADDED SEPARATELY) UPON FLOURISHING

Variables	Step 1	+ General BJW	+ Personal BJW	+ Justice Centrality	+ Justice Sensitivity
Excitement	0.04	0.04	0.02	0.04	0.05
Promotion	-0.03	-0.02	-0.05	-0.03	-0.03
Existence	0.28***	0.30***	0.31***	0.27***	0.28***
Suprapersonal	0.18*	0.13	0.14	0.13	0.17*
Interactive	0.23**	0.19**	0.19*	0.22*	0.22**
Normative	-0.07	-0.09	-0.08	-0.07	-0.07
General BJW		0.25***			
Personal BJW			0.34***		
Justice Centrality				0.22***	
Justice Sensitivity					0.06
R ²	0.31	0.36	0.35	0.33	0.29
R ² Change		0.05	0.04	0.02	-0.02
F	15.98***	17.72***	18.47***	16.56***	18.47***
Df	6, 216	7, 215	7, 215	7, 215	7, 215

1980). It is thus conceivable that one or more BJW variables have a mediating effect, and this issue deserves future examination. The beta coefficient for the Suprapersonal Values declined in value while the pattern of results for the other five values remained stable at Step 2 of the regression analysis, when the four justice-related variables were entered together. In order to specify the impact that each of these had, we conducted a set of four additional regression analyses that controlled for these variables. The results are presented in Table 5.

The three justice-related variables that were significant predictors in Step 2 again influence the relation of flourishing to the Suprapersonal Values, and the effect is present when controlling for each of them. Adding Personal BJW, Justice Centrality, and General BJW separately produces similar increases in

the variance explained by the regression model, and controlling for them has an identical impact upon the six value variables associated with flourishing.

In respect to justice-related variables (Table 4), we have thus observed that Personal BJW and Justice Centrality consistently predict flourishing across models. Justice Sensitivity is consistently unrelated in this regard, while General BJW is only marginally related and close to insignificant.

CONCLUSION

On the basis of our findings, we may draw certain initial conclusions concerning values, BJW, and the psychological well-being of adolescents.

First, the Bulgarian adolescents we studied are more mature than expected, being

focused on central values (Existence and Suprapersonal Values) and social goals (Interactive Values). They recognize the importance of health and social security, acknowledge the importance of knowledge and maturity, and take into account the value of affection and belonging. They place hedonism and pleasure, which are very typical for their age, in the background. They are also less focused on power and prestige as preconditions for development. Regardless of the lack of significant gender differences in most functional values, differences do exist regarding Excitement and Normative Values. Males place a greater value on pleasure and sexuality, while females are more focused on daily duties and obligations and are more respectful and/or obedient.

Second, adolescents moderately accept BJW. Males and females differ in respect to Justice Centrality and Justice Sensitivity insofar as females suffer more strongly from injustice and are more sensitive to unfairness.

Third, the results clearly show that functional values and BJW are predictors of psychosocial well-being in adolescence, with the strongest predictors being Existence Values followed by Interactive Values. Adolescents who enjoy positive self-esteem, meaningful engagements, and productive and rewarding relationships with others place a greater value upon their health, personal stability, and having their survival needs met. They also ascribe greater importance to the Interactive Values of belongingness, sharing love and affection, and having social support. They endorse a stronger Personal BJW and report a higher personal significance for justice.

Our study was limited by the fact that the sample was small and predominantly male in composition (66%). Future research should thus reexamine our findings with larger samples that include a larger percentage of females and also take into consideration other important predictors of psychological well-being, such as personality traits, social networks, and so forth. We would thus have more solid evidence that BJW contributes to psychological well-being among adolescents, and that BJW is conceptually and

empirically distinct from related individual differences variables.

Our findings provide evidence which indicates that values and BJW are associated with good psychological well-being. The central and social goals of Bulgarian adolescents make important contributions to their social adjustment, along with their satisfaction with their own fairness and their belief that they are usually treated fairly. Such views give them a sense that their lives are meaningful and predictable, and that they are protected from worries about the future. This encourages investment in long-term goals, including education, work competence, finding a mating partner, having a family, and the various social behaviors that are part of growing up and making the transition to adulthood.

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POSITIVE PERSONALITY CHANGES IN ADOLESCENTS ATTENDING A DUAL EDUCATIONAL SYSTEM VOCATIONAL PROGRAM

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Abstract. *This article presents the results of a study concerning the effects of an educational program modelled after the German Dual Educational System upon the personalities of adolescents who had previously dropped out or were expelled from school and were unemployed. 32 students between 16-18 years of age, 21 of whom were female and 11 male ($M = 17.16 \pm 0.73$), were tested twice – at the beginning of their program of studies and at the end of the first year. We employed the Zung Self-Rating Depression Scale, the Zung Self-Rating Anxiety Scale, and the Gießen-Test (Giessen Test) to evaluate the personality characteristics of social resonance, dominance/subordination, self-control, underlying mood, permeability, and social potency/impotency.*

The results indicate that there was a significant reduction in mean group scores on the anxiety and depression scales, and a significant increase in mean group scores on the dominance/subordination and social potency/impotence scales. The positive changes in personality characteristics that took place suggest that the Dual Educational System model can be used effectively not only for vocational education and training, but also for the positive personal development of adolescents aged 16-18.

Keywords: dual educational system; vocational training; personality traits; adolescents.

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Maria Soleva – Introduction, Methodology, Data processing, Results, References.

Ivanka Asenova – Abstract, Introduction, Theoretical background, Discussion, Conclusions.

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INTRODUCTION

Virtually no one today questions that education is one of the most crucial determinants of success for both individuals and society. Education provides individuals with the possibility to find a job more easily, to earn more, to have greater access to healthcare, and to have the chance for a healthier and better life (Heckman 2007). The benefits of education have traditionally been associated with the development of cognitive abilities insofar as it makes possible an accumulation of knowledge, an improvement in skills, and the cultivation of critical thinking (Rutter 1983), which can then be effectively applied in one's profession and in life. Numerous studies have confirmed the fundamental role of education from this perspective (see Falch and Massih 2011).

However, investigating the role of education, particularly one's school experience, in the development of psychological factors other than cognitive abilities, such as personality traits, has seldom drawn the attention of researchers (Heckman 2007). This is rather remarkable in light of the fact that education has always been regarded as one of the most continuous and intensive efforts of societies in the history of humankind to improve the positive psychological functioning and well-being of people.

Although only a small number of studies have investigated the effect of school on subjects' personality traits, several intervention studies have been directed towards children of preschool age. For example, findings from the Perry Preschool Project intervention program, which aimed to promote cognitive skill development in children at risk, revealed that the benefits of the program were attributable to a permanent improvement in non-cognitive skills rather than cognitive abilities (Heckman et al. 2010). Two other projects revealed similar results. The STAR project found that children who were educated in small kindergarten classes exhibited positive personality changes, as measured in the fourth grade (Dee and West 2008), while the PATHS program, which was focused on improving non-cogni-

tive skills, demonstrated the malleability of personality traits during childhood (Bierman et al. 2010).

Dahmann and Anger (2014) present a brief overview of several studies targeted at adolescents. Two significant examples include a program in Portugal aimed at students 13-15 years of age that improved their performance in school by increasing motivation, self-esteem, and study skills (Martins 2010), and the National Guard Youth Challenge program in the United States. The latter is directed at youths 16-18 years of age who have either dropped out or been expelled from school and are unemployed, and it has succeeded in raising levels of discipline as well as emotional stability (Bloom et al. 2009). In addition, a report on the consequences of increasing the number of years of compulsory schooling in Australia indicates that the change has led to elevated levels of conscientiousness and internal locus of control. Finally, the results of a 4-wave longitudinal study examining the relationship between educational experiences and personality trait development in a large German sample of young adults indicate that educational experiences are associated with changes in each of the Big Five personality traits, namely, increases in extraversion, agreeableness, conscientiousness, openness, and decreases in neuroticism (Dahmann and Anger 2014). Such findings reveal that education and schooling experiences may shape personality trait development during childhood, adolescence, and young adulthood. Moreover, they suggest that what is important in enacting changes in personality traits is not merely attending school, but rather the experiences the individual accumulates within the school context.

To the best of our knowledge, however, no studies examining the role of the educational system in shaping an individual's personality traits have been conducted in Bulgaria to date.

The goal of the present study is to examine the influence of education modelled after the German Dual Educational System upon personality development in a Bulgarian sample of young adolescents who had dropped out or were expelled from school and were unem-

ployed. This type of education, which is innovative for Bulgaria, is characterized by curricula that include standard theoretical training as well as an internship at a local company, where theoretical knowledge is applied in practice within a particular profession. It also provides a number of advantages for both students and the country's economy. Perhaps the greatest benefit for students is that while they are gaining practical experience in the occupation they acquire during their studies, they also receive a salary that averages between 1/3 and 1/2 of those typical for their profession in the company where they are hired as interns. The positive economic impact upon countries that utilize this model of education is that it leads to a reduction in youth unemployment, with all the accompanying benefits. The countries in which this educational system has been successfully implemented on a large scale – Germany, Austria, and Switzerland – enjoy the lowest levels of youth unemployment in Europe.

Education modelled on the German Dual Educational System was first undertaken in Bulgaria during the 2009-2010 school year within the framework of a joint project involving the German Society for Engineering and Cooperation, the German-Bulgarian Industrial Chamber of Commerce, and the Bulgarian Ministry of Education, Youth, and Science. Vocational high schools in three different cities in the country thus began educational programs in cooperation with local businesses for students who had previously dropped out or were expelled from school and were unemployed. Education using this model continues to be provided today (Nikolaeva 2016).

In this report we present the results of a study conducted during the 2014-2015 academic year with students trained using the Dual Education System at the vocational training center at Pirin-TEX clothing manufacturers in Gotse Delchev, Bulgaria. It was assumed that one year of education using this model would lead to positive personality changes in students in light of the specifics of this educational program and the general character of the sample. On the one hand, the cognitive load on the students is not overly high, and

they acquire both a profession and an income during the period of training. On the other, the sample consisted of young adolescents who had dropped out or were expelled from school, did not complete secondary education, were unemployed and sought further training.

METHOD

SUBJECTS

A total of 32 normally developing Bulgarian students between 16 and 18 years of age, 21 of whom were girls (mean age 17.16 ± 0.73), voluntarily participated in the study. The participants were first-year students in a 3-year program conducted by the Center for Professional Training at the Pirin-TEX clothing company, Gotse Delchev, Bulgaria, that implemented the German Dual Educational System model. All participants were adolescents that had previously dropped out or been expelled from school, were unemployed, and applied for admission to a dual-training model.

MEASURES AND PROCEDURE

Three self-assessment tests were employed to measure any personality changes that might have taken place in the subjects after completing one year in the program. The Zung Self-Rating Depression Scale and the Zung Self-Rating Anxiety Scale, both of which consist of 20 items, with each item rated on a 4-point scale, were utilized to evaluate levels of depression and anxiety. Overall assessment was based upon the total raw scores, which ranged from 20 to 80.

The Gießen-Test (Geissen Test) was used to evaluate the personality traits of social resonance, dominance/subordination, self-control, underlying mood, permeability, and social potency/impotency. This test consists of 40 items, each of which is formulated as a bipolar statement and rated on a 7-point scale. The overall evaluation was based upon total raw scores.

All participants were tested twice using all three tools – at the beginning of their program of studies and at the end of the first school year.

RESULTS

A paired samples *t*-test was employed to compare the differences between the mean scale scores for the two assessments of the personality variables that we studied. An overview of the results from the two assessments on the anxiety and depression scales are presented in Table 1.

Comparison of the two mean scores on the anxiety scale revealed a statistically significant difference ($t/31/ = 3.616, p < 0.001$) and a moderate effect size (Hedges' $g = 0.545$). Comparison of the two mean scores on the depression scale indicated a statistically significant difference ($t/31/ = 5.574, p < 0.000$) and a large effect size (Hedges' $g = 0.959$). The levels of these personality states declined

in both cases, suggesting an improvement in the emotional personality state across the two assessments.

Table 2 presents the results of a comparison of the two mean scores of the Gießen-Test scales.

Significant differences were found between the two mean scores of the two assessments regarding three of the scales – Dominance ($t/31/ = 2.995, p = 0.005$, Hedges' $g = 0.625$); Self-Control ($t/31/ = 2.960, p = 0.006$, Hedges' $g = 0.491$); and Social Potency ($t/31/ = 5.574, p = 0.021$, Hedges' $g = 0.498$). The levels of these personality states increased in all three cases, indicating that the group studied displayed significant change regarding these personality traits across the two personality assessments.

TABLE 1
MEAN ANXIETY AND DEPRESSION SCORES, FIRST AND SECOND ASSESSMENTS

	Anxiety Scale		Depression Scale	
	Mean	SD	Mean	SD
First Assessment	38.12	5.42	43.37	5.45
Second Assessment	35.46	4.29	38.15	5.44
$t(p)$	$t_{/31/} = 3.616 (p < 0.001)$		$t_{/31/} = 5.574 (p < 0.000)$	
Hedges' g	0.545		0.959	

TABLE 2
MEAN GIESSEN-TEST SCALE SCORES, FIRST AND SECOND TESTING SESSIONS

	Social Resonance	Dominance	Self-Control	Underlying Mood	Permeability	Social Potency
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
First Testing Session	28.09 (4.39)	23.81 (3.61)	23.43 (5.55)	23.15 (5.09)	20.65 (4.94)	18.75 (3.95)
Second Testing Session	28.25 (5.20)	26.06 (3.60)	25.84 (4.18)	24.18 (4.04)	21.81 (3.80)	20.68 (3.73)
$t_{/31/} (p)$	0.227 (0.822)	2.995 (0.005)	2.960 (0.006)	1.049 (0.302)	1.281 (0.210)	2.424 (0.021)
Hedges' g	0.033	0.625	0.491	0.224	0.263	0.498

DISCUSSION

We used the introduction of the German Dual Educational System for vocational education in our country as a quasi-natural experiment to test our hypothesis concerning the impact of education on non-cognitive skills. For this purpose we conducted a 2-wave short-term longitudinal study of a set of personality characteristics in 32 Bulgarian adolescents who entered educational programs that employed this model. It is important to note that all participants in this study had dropped out or were expelled from school and were unemployed before beginning these programs.

The results confirmed our assumptions concerning the effects of the educational system on the personality traits of adolescent students, providing evidence that school experience and education contribute to personality changes at this period of age. These results confirmed the findings of previous studies regarding the impact of education and school experience upon the students' personalities (Bierman et al. 2010; Dahmann and Anger 2014; Jackson 2011; Heckman et al. 2010). Our finding clearly showed that education in accordance with the German Dual Educational System of vocational education and training increased students' self-control and social potency while making them more dominant and less anxious and depressed. This could be observed even within the course of one academic year.

We assume that the significant positive personality change we observed, which occurred within a period of only 7-8 months, is primarily a result of the interaction between the specifics of the educational model used and the characteristics of the students themselves, as noted above. It is highly probable that the specifics of the education program, together with the related changes in the students' lives, brought about a sense of security, meaning in life, and future perspectives that lead to positive changes in their personality.

A limitation of the present study is the relatively small sample size insofar as it impacts the statistical power of the comparisons. Replications with larger samples are thus needed

to ensure the validity of the current findings. Nevertheless, the present study lends further support to the assumption that educational contexts can constitute a powerful factor in the development and shaping of the personality during adolescence.

CONCLUSION

We have provided the first evidence in Bulgaria of the malleability of personality characteristics in adolescence through education, and have thereby contributed to the literature concerning the impact of education upon non-cognitive skills. Our results indicated that the educational system plays a role in shaping the personality traits of adolescents, even in the short-term. This finding draws attention to the need for the effective implementation of educational policies that take into consideration the impact of educational changes upon personality traits.

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PERSONALITY TRAITS AND FAMILY ENVIRONMENT: ANTECEDENTS OF STUDENT AGGRESSION

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Abstract. *This article presents findings from a survey of the most common forms of aggression in students, along with some of the most significant antecedents of the formation and manifestation of their aggressive behavior. The study utilizes both personological and sociocognitive approaches, including Bandura's social learning theory, in a survey of 992 students from four different grades (4th, 6th, 8th, and 10th) in six Bulgarian towns (Sofia, Veliko Tarnovo, Burgas, Radnevo, Mezdra, and Haskovo). We examined the effects that a range of personality traits (anger, revengefulness, suspiciousness, rancor, striving for control), which are related to trans-situational manifestations of aggressiveness, have upon three main forms of aggression (physical, verbal, indirect). We also investigated the effects of the family environment (parental problem behaviors, the relationship between parents and the parent-child relationship) in the same regard. The dynamics of the effects of personality traits were presented in respect to students' grade and gender. We designed and employed a questionnaire consisting of simplified scales and items that were comprehensible even to the youngest respondents in order to make it possible to compare data obtained from students over a wide range of ages. The findings show that revengefulness is the strongest antecedent of students' overall levels of aggression among the personality traits studied. A family environment characterized by parental problem behaviors, arguing, neglect, and violent interactions between parents and/or between parents and their children is also revealed to be a significant antecedent of aggressive behavior among students. Certain implications for preventing aggression and for aggression-reduction program for students are discussed.*

Keywords: school aggression; family environment; family relationships; personality traits; forms of aggression; antecedents of aggression.

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INTRODUCTION

aggression and violence are long-standing and long-studied problems that concern large numbers of young people. They attract the attention and mobilize the efforts both of teachers, psychologists, and scholars, and of institutions concerned with education and the development of human resources. A combination of different conceptual approaches and empirical research may well be able to provide recommendations for preventive measures and for the establishment of programs for children and adolescents aimed at reducing aggression and violence.

A variety of elements have been found to influence the development of aggressiveness and aggressive behavior in children. These include such personality traits as anger, revengefulness, suspiciousness, rancor, and striving for control, as well as such social factors as family and school environment, friends, media messages, movies, computer games, and, very importantly, social networking sites. A large number of characteristics related to these factors also play an important role in the formation of aggression and violent behavior in children and adolescents, including the type of family in which the child is raised, parental styles, the socioeconomic background of the family (level of parental education, occupation, and economic standing), the neighborhood where the family lives, and so forth.

All of these issues complicate the nature of the problem of aggression and highlight the need for systematic research concerning its various elements. It would be very useful in this to create an extensive research database that would make it possible to gain a comprehensive overview of approaches used to reduce aggression and violence among children and adolescents, both in and out of school. Moreover, a decrease in aggressiveness and aggressive behavior in young people could provide the basis for an increase in activities related to the personal development of students, including their ability to acquire knowledge and succeed in their studies.

The phenomenon of aggression and violence among children and adolescents at

school is widespread and steadily growing, and it has been widely discussed not only on a national level, but worldwide as well. On the one hand, ongoing contemporary social development has led to the appearance of such phenomena in many countries. On the other, the transfer of behavioral patterns, including aggressive responses – and particularly among young people – is fostered by high levels of mobility and Internet-based communication by means of social networking platforms and various other software applications.

The key importance of aggression-related problems requires that comprehensive and representative studies be conducted in Bulgarian schools. The results of such research, along with the results of similar research in other countries, should be taken into consideration in discussions of the actual scope of, and possible solutions to, the problems involved. Personality characteristics, together with all the other social factors that contribute to the formation and manifestation of aggressiveness in young people, should be taken into account when developing and establishing prevention and intervention programs in this area.

THEORETICAL BACKGROUND

Albert Bandura's social learning theory has emerged as one of the most widely used conceptual frameworks for investigating aggressiveness, especially among children and adolescents. This theory, which is behavioral in nature, has come to share important points with sociocognitive approaches in examining aggression and other types of social behavior. While Bandura focused his research efforts in respect to the biological determinants of aggressiveness on the individual preconditions and factors that motivate manifestations of aggressive behavior, his primary concern involved the impact of learning reactive and instrumental forms of aggressiveness that were then imitated (Bandura 1973). Learning in this regard is based predominantly upon observation of aggressive behavior and its consequences, such as insulting or attacking a person in order to gain, for example, prestige or money.

Bandura maintains that the principal and most important factor for learning and manifesting aggressive behavior is being rewarded for manifesting such behavior. It is widely accepted that having a positive outcome from a given form of social behavior, which may include attaining such personally desired goals as money, possessions, popularity, and property, fosters more effective learning of that behavior. In respect to children, such goals might comprise opportunities to play or receiving a toy. Bandura and his colleagues demonstrated in a number of studies for the first time that the best conditions for learning aggressive behavior are situations in which a young individual has an opportunity to observe such behavior. An impressive amount of subsequent and field research has also displayed the bond between learning aggressive behavior and observing aggression and violence in movies and publications.

A very significant finding is that observing aggression produces similar results in both children and adults. For example, individuals learn from observing aggressive behavior that such behavior is approved by others or is associated with attaining positive outcomes, and this is true in respect to observing both actual behavior, and watching television programs that contain scenes or elements of aggression. In addition, observing such behavior makes it possible for individuals to store in their memory information both about the forms of aggression and techniques of aggressive response that they can use in particular situations, and about the responses they can expect from others.

We should note that Bandura pioneered research interest in one of the important social problems of the contemporary world – television violence. His ideas were supported by the development of one of the most popular experimental paradigms for modeling aggressive behavior in children that was based upon observing aggression towards a Bobo doll. During this experiment, various forms of aggression toward the human-sized doll were presented to a group of children either live or in a video recording. The children were afterwards left for a period of time in

a room where they could play with toys, and a source of frustration was created when the toys were then removed. The children who had observed the model of aggressive behavior then demonstrated a high level of aggression, repeating the same forms of aggression that they had observed. Furthermore, the children who had memorized aggressive reactions reproduced them in their behavior months later (Bandura 1973). Many other identical experiments came up with similar results, systematically developing a range of ideas focused on social learning, especially in their relation to television violence and its influence to children.

Various conceptual and research approaches have been employed in studying aggressiveness (see Zografova 2001, 2008), with the steadily expanding personological perspective being one of the most useful in identifying personality categories and methodological solutions. Caprara and colleagues have developed a personality profile of aggressiveness by means of longitudinal studies (Caprara et al. 1996). They have examined every personality trait that has been put forward as related to aggressive behavior, and have identified irritability, rancor, emotional sensitivity, and tolerance of aggression as marking individual attitudes concerning the areas and levels at which the individual allows aggression and violence to occur.

Moral disengagement was identified within the framework of the personological approach as an additional factor (Caprara et al. 1996). Although such disengagement is a personality phenomenon, it nevertheless reflects the influence of the social environment as well as the expectations of the groups to which the individual belongs. The contemporary personological approach takes into consideration the influence of the social context, culture, and a variety of macro-level factors, with the most recent models combining situational influences and personality differences. Depending upon the strength of situational pressure, a greater or lesser influence of personality differences can be predicted, which is to say that the stronger the situational pressure, the weaker the differences on the

personality level, and conversely. When environmental/situational requirements are new or unclear, personality characteristics become less important in terms of individual behavioral responses.

The sociocognitive approach, which has been developed in recent decades, also addresses the problems of aggressiveness in the area of social behavior. Cognitive factors are regarded as among the most important predictors of human aggressiveness, and both classical theories as well as a number of studies based upon the behavioral paradigm have been broadened by being complemented with the cognitive determinants of aggressiveness. The sociocognitive approach has influenced not only definitions, but also the scope of research methods for measuring aggression. Those who accept social learning theory, as well as those who support the frustration-aggression hypothesis, view the cognitive aspect of aggressive behavior as a key component of research that seeks to provide explanations for aggressiveness (Berkowitz 1993). It is important to note, however, that cognitive determinants have been elements of a variety of models long before the spread of information models.

Baron and Richardson define aggression as any behavioral manifestation that aims to harm another human being who is motivated to avoid it (Baron 1977; Baron and Richardson 2004). The sociocognitive approach argues that certain cognitive determinants become elements of the structure of the personality at the very beginning of individual development as individuals learn behavioral scenarios that are activated later in life under the influence of stimuli or relevant situations (Huesmann and Eron 1989). Briefly stated, these scenarios are kept in the memory and become active when a relevant context or social situation occurs, in which the individual utilizes such scenarios as patterns for finding solutions to given problems. In this regard, the process of decision-making related to a manifestation of aggressive behavior is based upon memorized scenarios of information-processing. When facing a problem, one makes an assessment of the environmental factors and checks whether

their memory provides an appropriate response to the situation. If one is able to recall a possible behavior in such a situation, they are very likely to produce the same behavior (Huesmann and Eron 1989).

Such scenarios are learned and memorized from such varied sources as the media, video-games, and real-life stories. They are integrated into the early stages of individual development, and later come to guide and regulate the adolescent's social behavior. For example, the child not observes and remembers aggressive patterns of behavior, but also perceives the social acceptability of this behavior, that is, the attitudes of the people and groups closest to them in the corresponding normative context. The outcomes of a specific behavior are also remembered, particularly when it has been successful and rewarded in some way, such as by consequently becoming a leader of a group.

Other important factors related to learning a specific type of behavior include the family environment, relationships between members of the family, as well as the norms and values of the mainstream culture, a specific subculture, or a reference group. Another group of factors consist of individual characteristics, such as specific social experience, emotions, ambitions, and goals.

Craig Anderson and Brad Bushman, who have developed the information processing model, propose the following definition of aggression:

Human aggression is any behavior directed toward another individual that is carried out with the proximate (immediate) intent to cause harm. In addition, the perpetrator must believe that the behavior will harm the target, and that the target is motivated to avoid the behavior (Anderson and Bushman 2002:28).

Information processing models have advanced substantially in recent decades due to the great influence of information technologies upon human development from very early in life. These models include assessment and affective processes which have an impact upon aggressive behavior as well as the role of scripts that have been memo-

rized, normative beliefs, and situational influences upon individual responses (Huesmann 1998; Anderson and Bushman 2002; Crick and Dodge 1994; Dodge and Coie 1987). Society's responses to individual behavior also constitute important factors insofar as these responses influence the establishment of individual schemas/scripts (Dodge 1993). In spite of the differences between the various models we have mentioned, they all acknowledge the key importance of the development of information processing skills that complement the development of social knowledge (schemas, scripts) in an individual. It is thus accepted that scripts and normative beliefs guide behavior from a very young age.

An integrated model of factors that influence aggressive behavior, including both individual differences and social influence, has subsequently been proposed, with the influence of each factor being addressed in accordance with four main points:

- 1) Attention to and assessment of given stimuli as they are influenced by mood, story learning, schemas, and normative beliefs.
- 2) Activation and recall of scripts relating to the "aggressive resolution" of problems.
- 3) Assessment of scripts on the basis of internalized schemas and normative beliefs in order to decide which behaviors are appropriate and/or socially acceptable.
- 4) Interpretation of responses from the environment. Young people look for, and usually find, a social environment that tolerates their behavior. When they face disapproval, they tend to regard it as associated with their personality or certain personality trait(s) rather than their behavior (Huesmann 1998).

The affective component plays a key role at every stage of information processing. Emotions, especially anger, are important determinants not only of hostile aggression, but also of instrumental aggression (Anderson and Bushman 2002, see for detailed analysis, Zografova, 2005).

On the one hand, the relations between the sociocognitive approach, social learning theory, and the personological approach are evident through emotional and cognitive processes as well as behavioral phenomenology, in daily life. On the other, research approaches employed by contemporary social psychology are interwoven with each other insofar as they account for the factors at work by means of different conceptual frameworks. The sociocognitive approach takes into consideration all key factors related to aggressiveness – cognitive, emotional, and personological (personality characteristics) (Anderson and Bushman 2002).

Aggression may be manifested in different ways and take many forms, such as direct or indirect, verbal or non-verbal (physical), proactive or reactive, displaced, and so forth. Hostile (expressive) and instrumental aggression are regarded as the two major and contrasting types of aggression behavior as such (See Baron and Richardson 2004). Hostile acts of aggression are provoked by negative emotions (anger, hostility, and so forth), while instrumental acts of aggression are planned and used as means to achieve goal that are not inherently linked to aggression, for instance, power or money.

Research concerning aggression at school and among adolescents has focused on such different types of aggression as physical, verbal, and indirect aggression, which our study addresses as major forms of the phenomenon. A number of studies concerning problem behaviors, including aggressive behavior in childhood and adolescence, reveal an association of increased manifestations of aggression with increasing age (see Papazova 2003 for details). Some popular longitudinal studies have shown that perceptions of aggressive patterns of behavior in early childhood may be associated with delinquent and even criminal behavior over a period of many decades.

Our survey investigates Bulgarian students in primary, middle, and secondary schools in order to investigate current dynamics in the development of antisocial behavior among youth and adolescents.

METHODS AND PROCEDURES

The main objective of the study was to examine key personality traits and characteristics of the family environment as antecedents of aggression among students. This investigation consisted of the following three stages:

- 1) Identifying and analyzing the forms of aggression among students (verbal, physical, indirect).
- 2) Analyzing key personality traits (anger, revengefulness, suspiciousness, rancor, striving for control) as antecedents of aggression among students.
- 3) Analyzing characteristics of the family environment (problem behavior within the family, relationship between parents, parent-child relationship, perceived economic standing of the family) as factors influencing aggression among students.

The data and analyses presented here are elements of a larger study.¹ Its research model and analytical approaches address a number of personality, cognitive, individual, and social factors in respect to the formation and manifestation of aggressive behavior in students' daily lives and at school. It presents both a broad and detailed picture of the forms of problem behavior and manifestations of aggression (verbal, physical, indirect) in respect to systems of relationships at both home and school – between students/classmates, between teachers and students, between students and their parents, and between parents. In addition to the family and school environments, the impact of such other key social factors as the media (films, shows, computer games, virtual social networks) and extra-curricular activities have been examined. The effects of key personality traits (anger, revengefulness, suspiciousness, rancor, striving for control) and cognitive charac-

teristics (basic beliefs about self and others, cognitive behavioral mechanisms, models of identification) were also investigated. Differences in aggressiveness in respect to such socio-demographic characteristics as gender, grade, and location were also analysed in terms of how they affect the beliefs and behavior of students in several Bulgarian cities and towns – Sofia, Burgas, Haskovo, Veliko Tarnovo, Mezdra, and Radnevo. A number of studies in the field of psychology (Bandura 1999; Marshall and Brown 2006; Caprara et al. 1996; Baron and Richardson 2004; Vitaro et al. 2006; Kalchev 2010; Zografova 2001) have demonstrated the roles of various environmental and personality factors in respect to aggressiveness and the manifestations of aggressive behavior.

The research model in Figure 1 below illustrates the factors concerning aggressiveness and the aggressive behavior of students that are presented and studied in the present discussion.

A survey was conducted in December 2017 among 992 students in 18 randomly selected schools in the country. The distribution by schools is as follows:

- 1) Six professional schools and high schools – one class from the 8th and 10th grades
- 2) Six primary schools – one class from the 4th and 6th grades
- 3) Six secondary schools – one class from the 4th, 6th, 8th, and 10th grades

The survey locations were also randomly selected from throughout the country – two large cities (Sofia and Burgas), two medium-size cities (Veliko Tarnovo and Haskovo), and two towns (Mezdra and Radnevo).

The distribution of respondents by gender, grade, and location is given in Table 1 below:

¹ The study was conducted within the larger research framework "A Study of Aggression and Bullying in School – Forms, Factors, and Motives," which was funded by the Ministry of Education and Science, Sofia, Project Agreement № Д01-295 / 27.09.2017.

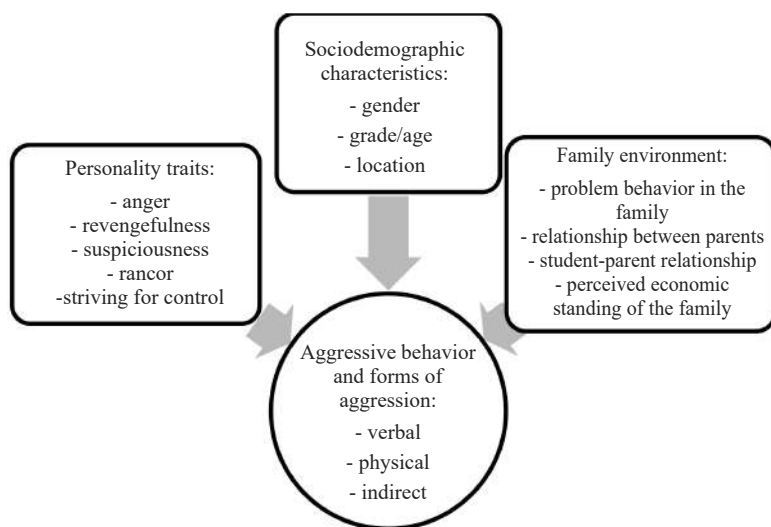


FIGURE 1. RESEARCH MODEL

TABLE 1
FREQUENCY AND PERCENTAGE DISTRIBUTION OF RESPONDENTS BY GENDER, GRADE AND LOCATION

Gender						
Boys			Girls			Total
483 (49%)			496 (51%)			979
Grade						
4th grade	6th grade		8th grade	10th grade		Total
230 (23%)	273 (28%)		257 (26%)	219 (22%)		979
Location						
Burgas	V. Tarnovo	Mezdra	Radnevo	Sofia	Haskovo	Total
188 (19%)	185 (19%)	119 (12%)	167 (17%)	150 (15%)	170 (17%)	979

Approximately the same number of boys and girls participated in the study. The students were also almost evenly distributed across grades and locations.

For the purposes of the survey, a school aggression questionnaire was developed by a team of researchers from the Institute for Population and Human Studies at the Bul-

garian Academy of Sciences (IPHS-BAS). Clearly formulated and even simplified scales and items were included in the questionnaire in order to make them comprehensible even to the youngest respondents. This would make it possible to compare data obtained from students over a wide range of ages.

² The total number in this table and others differs from the total of 992 students who took the questionnaire because 16 participants did not complete the second page.

An online version of the questionnaire with brief instructions was also prepared, and a hyperlink to it was sent to the responsible persons at the schools selected. The two-page long form contained a total of 70 items with a different number of response options. Completion of the questionnaire took approximately 20 minutes, and respondents were guaranteed anonymity.

A well-defined procedure following the principles of the Code of Ethics for participation of children in research activities was observed:

- 1) Establishing contact with the principals (or other responsible persons) at the schools selected for the survey in order to:
 - a. Select specific classes from each school to be included in the study (if possible, classes with more frequent acts of aggression and bullying).
 - b. Receive informed consent from the parents of the students surveyed.
 - c. Have a member of the research team organize instructional videos concerning procedures for the survey with the assistance of:
 - i. The principal or other responsible person in the school administration.
 - ii. The head teachers of the classes selected.
 - iii. The computer science teachers of the classes selected.
 - iv. The school psychologist or pedagogical counsellor.
 - v. All teachers who are head teachers in other problem classes as well as all teachers who wish to participate in the survey.
- 2) Making instructional videos (average length 20 minutes), focusing on the specifics for completing the online school aggression questionnaire.

The number of incomplete questionnaires was reduced to a minimum as a result of the pre-fieldwork procedure, which included 18 coordinated video instructions. Only 16 of the 992 participants did not complete the second page of the questionnaire, which increased the reliability of the data that was obtained online.

Statistical processing of the survey data was conducted with SPSS version 25, using descriptive statistics (including percentage and frequency distribution), linear regression, one-way ANOVA, post hoc testing, and independent samples *t*-testing.

RESULTS

The results below reveal the manifestations of verbal, physical, and indirect aggression in students' daily lives as well as differences in forms of aggression associated with their gender and grade/age.

In respect to *verbal aggression*, many respondents (31%) indicated that they had shouted, insulted, and cursed others more than once. However, a similar percentage of the sample insisted that they had never engaged in such behavior (30%), while about 25% stated that they had done so only once. In addition, the percentage of students who confessed that they had often shouted, insulted, and cursed other people was not large (13%). In all, approximately 70% of the students have displayed verbal aggression towards other people at least once.

An independent samples *t*-test was employed in order to determine whether there were any statistically significant gender differences regarding verbal aggression on the part of the students. The results are presented in Table 2.

TABLE 2
GENDER DIFFERENCES IN STUDENTS' VERBAL AGGRESSION (N = 978)

	Gender	N	M	SD	t	p
Verbal Aggression	Boys	483	2.37	1.011	2.804	0.005
	Girls	495	2.19	1.049		

Independent Samples *t*-Test, *p* < 0.05

Statistically significant gender differences in this regard were found, with boys being verbally aggressive more often than girls. One-way ANOVA and post hoc testing were employed to examine these differences, and the results are presented in Table 3.

Significant differences in verbal aggression by grade (age) were also found. Differences are observed between all grades studied, but the 8th and 10th grades are characterized by similar results. A higher grade (greater age) is thus associated with more frequent manifestations of verbal aggression (shouting, insulting, cursing others).

The results obtained for *physical aggression* show that most students (55%) claimed that they had never been involved in physi-

cal fights. Significantly smaller percentages of students indicated that they had been involved in fights just once (23%), more than once (16%), or often (6%). Almost half of the sample of students (45%) have thus participated in fights one or more times.

An independent samples *t*-test was used to establish whether there were any statistically significant gender differences in respect to physical aggression among students. The results are displayed in Table 4.

Significant differences were found, with boys being involved in fights significantly more often than girls. One-way ANOVA and post hoc testing were employed to examine these differences, with the results being displayed in Table 5.

TABLE 3
SCHOOL GRADE DIFFERENCES IN VERBAL AGGRESSION (N = 978)

	Grade	M	SD	Grade	M	SD	F	p
Verbal Aggression	4th	1.67	0.880	6th	2.20	0.974	52.216	0.00
				8th	2.60	0.992		
				10th	2.65	0.990		
	6th	2.20	0.974	4th	1.67	0.880		
				8th	2.60	0.992		
				10th	2.65	0.990		
	8th	2.60	0.992	4th	1.67	0.880		
				6th	2.20	0.974		
	10th	2.65	0.990	4th	1.67	0.880		
				6th	2.20	0.974		

One-Way ANOVA and Games-Howell Post Hoc Test, $p < 0.05$

TABLE 4
GENDER DIFFERENCES IN STUDENTS' PHYSICAL AGGRESSION (N = 978)

	Gender	N	M	SD	t	p
Physical Aggression	Boys	483	2.03	0.98	10.47	0.00
	Girls	495	1.44	0.77		

Independent Samples *t*-Test, $p < 0.05$

TABLE 5
DIFFERENCES IN STUDENTS' PHYSICAL AGGRESSION BY SCHOOL GRADE (N = 978)

	Grade	M	SD	Grade	M	SD	F	p
Physical Aggression	4th	1.58	0.86	8th	1.82	0.95	2.78	0.04

One-Way ANOVA and Games-Howell Post Hoc Test, $p < 0.05$

It is evident that manifestations of physical aggression (participation in fights) cannot be differentiated by school grade. A statistically significant difference is found only between the 4th and 8th grades insofar as physical aggression is more obvious in 8th grade students. Manifestations of physical aggression have similar values in the students of the other grades studied.

In respect to *indirect aggression*, most students (57%) indicate that they have never gossiped about someone. 26% of the sample mentioned that they had done so once, 13% more than once, and 4% often. 43% of the students have thus gossiped about someone else.

75% of the respondents insisted that they have never turned their classmates or friends against someone else. Only 17% have done so once, 7% have done so more than once, and 2% often. Only 25% of the sample thus reported that they had never sought to turn their classmates or friends against someone else.

These results indicate that students are less likely to involve their classmates or friends in gossip than to gossip about someone themselves. Consequently, manifestations of indirect aggression are reported as occurring more seldom than manifestations of direct (physical and mostly verbal) aggression. In addition, there are no statistically significant gender

differences concerning indirect aggression on the part of students ($p > 0.05$).

WE employed one-way ANOVA with post hoc testing to establish whether there were any significant differences in students' indirect aggression by school grade (see Table 6).

Significant differences concerning manifestations of indirect aggression were found between 4th/6th and 10th graders. We observed a general tendency in our sample for higher grade/age to be associated with increased manifestations of indirect aggression.

In summary, while verbal aggression is the prevalent form of aggression in our sample of students, they reported that even this form of aggression does not take place often in daily life.

PERSONALITY TRAITS AND STUDENT AGGRESSION

The effects of key personality characteristics (anger, revengefulness, suspiciousness, rancor, striving for control) on the overall level of aggression on the part of students, including verbal, physical and indirect aggression, as well as the interplay of personality traits, gender, and/or grade, have been analyzed and the results are presented below in Tables 7-11.

Linear regression results concerning the effects of the personality characteristics studied on the overall level of aggression among students are given in Table 7.

TABLE 6
SIGNIFICANT GRADE DIFFERENCES IN STUDENTS' INDIRECT AGGRESSION (N = 978)

	Grade	M	SD	Grade	M	SD	F	p
Indirect Aggression	10th	1.63	0.77	4th	1.42	0.59	5.22	0.001
				6th	1.44	0.59		

One-Way ANOVA and Games-Howell Post Hoc Test, $p < 0.05$

TABLE 7
EFFECT OF ALL PERSONALITY TRAITS STUDIED ON THE OVERALL LEVEL OF STUDENTS' AGGRESSION (N = 978)

Predictor(s)	Adj.R ²	β	F	p
anger, revengefulness, suspiciousness, rancor, striving for control	0.33	0.58	100.95	0.00

Linear Regression, $p < 0.05$

These results show that these personality characteristics we have studied are significant predictors of the overall level of aggression (verbal, physical, indirect) among our sample. Together they explain approximately 34% of the overall aggression variances among students, and higher levels of the personality traits reported are moderately to strongly associated with higher levels of overall aggression.

The main effect of each personality trait on the overall level of verbal, physical and indirect aggression among students was also examined in order to compare the fit of the models. The results are presented in Table 8.

Although the main effect of each trait is significant, it is somewhat weaker than the overall effect of all five characteristics taken together. Revengefulness displays the strongest predictive power, however, which is almost as strong as the effect of the traits as a whole. Revengefulness is followed by anger and striving for control, while suspiciousness

and rancor are found to be the weakest predictors of aggression among our sample.

The effect of all personality characteristics studied on the overall level of verbal, physical, and indirect aggression among students from different grades has also been analysed. The results are presented in Table 9 below.

The results show that these traits when taken together comprise are a significant and strong predictor of verbal, physical, and indirect aggression among students in all grades. The traits were found to have the most significant explanatory power in the 4th grade, followed by the 6th grade, with a drop in the 8th grade and a new increase in the 10th.

An analysis of the main effects of each personality trait on the overall level of aggression is presented in connection with the students' grade in school. The results are presented in Table 10.

The results show that revengefulness is the strongest predictor of the overall level of aggression in all grades, followed by anger.

TABLE 8
MAIN EFFECTS OF THE PERSONALITY TRAITS STUDIED ON THE
OVERALL LEVEL OF AGGRESSION (N = 978)

Predictor(s)	β	<i>t</i>	<i>p</i>
Anger	0.19	6.83	0
Suspiciousness	0.13	4.78	0
Rancor	0.10	3.45	0.001
Revengefulness	0.33	11.96	0
Striving for control	0.19	6.95	0

Linear Regression, $p < 0.05$

TABLE 9
EFFECT OF ALL PERSONALITY CHARACTERISTICS STUDIED ON THE OVERALL LEVEL OF
AGGRESSION AMONG STUDENTS FROM DIFFERENT GRADES (N = 978)

Predictor(s) anger, revengefulness, suspiciousness, rancor, striving for control	<i>Adj.R</i> ²	β	<i>F</i>	<i>p</i>
4th grade	0.37	0.63	29.65	0
6th grade	0.34	0.60	29.31	0
8th grade	0.20	0.47	14.27	0
10th grade	0.28	0.55	18.50	0

Linear Regression, $p < 0.05$

TABLE 10
MAIN EFFECTS OF THE PERSONALITY TRAITS STUDIED ON THE OVERALL LEVEL OF
AGGRESSION AMONG STUDENTS FROM DIFFERENT GRADES (N = 978)

Grade	Predictor(s)	β	t	p
4th grade	Anger	0.179	3.315	0.001
	Suspiciousness	0.117	2.102	0.037
	Rancor	0.135	2.452	0.015
	Revengefulness	0.401	6.998	0.000
	Striving for control	0.166	3.038	0.003
6th grade	Anger	0.233	4.484	0.000
	Suspiciousness	0.124	2.489	0.013
	Rancor	0.038	0.726	0.469
	Revengefulness	0.316	5.919	0.000
	Striving for control	0.258	4.997	0.000
8th grade	Anger	0.160	2.646	0.009
	Suspiciousness	0.110	1.877	0.062
	Rancor	0.085	1.422	0.156
	Revengefulness	0.310	5.191	0.000
	Striving for control	0.069	1.197	0.232
10th grade	Anger	0.180	2.889	0.004
	Suspiciousness	0.116	1.951	0.052
	Rancor	0.094	1.490	0.138
	Revengefulness	0.301	5.009	0.000
	Striving for control	0.205	3.413	0.001

Linear Regression, $p < 0.05$

Striving for control is found to be a significant predictor in the 4th, 6th, and 10th grades, with suspiciousness being a significant, but weaker predictor only in the 4th and 6th grades. Rancor is a significant predictor of aggression only among 4th graders.

The results of our analysis of the effects of all the personality traits we have upon the general level of aggression (verbal, physical, and indirect) in respect to the gender and grade of the students are presented in Table 11.

The results illustrate that these traits taken together comprise a significant and strong predictor of the overall level of aggression in all grades depending on gender. Analogously to what was noted above, these traits taken together show the most significant explanatory

power in the 4th grade (35% for boys and 45% for girls), followed by the 6th grade (38% for boys and 35% for girls), with a relative drop in the 8th grade (27% for boys and $R^2 = 21\%$ for girls) and a new increase in the 10th grade (34% for boys and 29% for girls). Higher levels of these characteristics as reported by students are associated with a significantly increased overall level of aggression.

In respect to gender, the model explains aggression among 4th grade girls better than aggression among 4th grade boys. The opposite tendency has been found for the higher grades, with the given set of personality characteristics being a stronger predictor of aggression among boys than among girls in the 6th, 8th, and 10th grades.

TABLE 11
EFFECT OF ALL PERSONALITY CHARACTERISTICS STUDIED ON THE OVERALL LEVEL OF
AGGRESSION AMONG STUDENTS DEPENDING ON GENDER AND GRADE (N = 978)

Predictor(s) anger, revengefulness, suspiciousness, rancor, striving for control		<i>Adj. R</i> ²	<i>β</i>	<i>F</i>	<i>p</i>
Grade	Sex				
4th grade	Boys	0.32	0.60	12.95	0
	Girls	0.43	0.67	16.49	0
6th grade	Boys	0.38	0.61	16.12	0
	Girls	0.35	0.59	13.48	0
8th grade	Boys	0.27	0.52	7.48	0
	Girls	0.20	0.45	7.53	0
10th grade	Boys	0.33	0.58	10.88	0
	Girls	0.27	0.53	7.89	0

Linear Regression, $p < 0.05$

The results of our survey show the significance of the relationship between certain personality traits and aggressive behavior. We have adopted the complex approach taken in this research in the effort to complete the picture of the various factors that influence the formation and manifestation of aggression.

Our investigation of the role of another important antecedent of aggression, a student's family, which comprises a child's closest social environment, is presented in Tables 12-17 below.

FAMILY ENVIRONMENT AND STUDENT AGGRESSION

The family environment is one of the key determinants both of aggressiveness as a personality trait, and of aggression as behavior. The family is the primary reference group for children and adolescents, with basic beliefs, norms, values, and attitudes being learned in the family long before a child comes under the influence of other environmental factors. We thus have analyzed problem behaviors in the family, the relationship between parents, student-parent relationships, and the perceived economic standing of the family as key components of the influence of the family envi-

ronment upon the overall development and functioning of the child.

In respect to *parental problem behaviors*, we have studied psychoactive substance abuse or addiction (PAS, including drugs and alcohol) as well as the manifestations of verbal and physical aggression between parents within families. We have analyzed such behavior in connection with the manifestations of various forms of aggression among students, and the results are presented in Table 12.

The *t*-test results indicate significant differences in the manifestations of verbal, physical, and indirect aggression between students who have a family member abusing PAS and those who do not. Those who do are physically, verbally, and indirectly more aggressive, with the most salient differences being found in respect to physical aggression.

We have also studied how the students in our sample perceive *the relationship between their parents*, and whether they have witnessed manifestations of verbal and physical aggression in this regard. We measured the perceived level of understanding between parents on the basis of our respondents' corresponding evaluations on a scale ranging from "they perfectly understand each other" to "they cannot stand each other." We also

analyzed the effect of the level of understanding between parents on the various forms of aggression their children display. The results are presented in Table 13.

The results show that the level of understanding between parents has a significant, albeit weak effect on manifestations of verbal, physical and indirect aggression on the part of the of students. Lower levels of understanding between parents are associated with more

obvious manifestations among students of the forms of aggression we have studied, particularly verbal aggression.

We measured respondents' observations in this regard by a multiple response item. We examined manifestations of aggression between children who had observed and reported aggressive behavior between their parents and those who had not, and the results are presented in Table 14.

TABLE 12
DIFFERENCES IN VERBAL, PHYSICAL AND INDIRECT AGGRESSION BETWEEN STUDENTS WHO REPORTED/NOT REPORTED PAS ABUSE OR ADDICTION IN THE FAMILY (N = 978)

	PAS Abuse or Addiction in the Family (Reported/Not Reported)	N	M	SD	t	p
Verbal Aggression	PAS Abuse or Addiction – Reported	108	2.64	1.018	3.860	0.000
	PAS Abuse or Addiction – Not Reported	870	2.23	1.028		
Physical Aggression	PAS Abuse or Addiction – Reported	108	2.18	1.057	4.730	0.000
	PAS Abuse or Addiction – Not Reported	870	1.67	0.898		
Indirect Aggression	PAS Abuse or Addiction – Reported	108	1.69	0.716	3.047	0.003
	PAS Abuse or Addiction – Not Reported	870	1.47	0.630		

Independent Samples *t*-Test, $p < 0.05$

TABLE 13
THE EFFECT OF THE LEVEL OF UNDERSTANDING BETWEEN PARENTS ON VERBAL, PHYSICAL, AND INDIRECT AGGRESSION AMONG STUDENTS (N = 978)

Independent Variable	Dependent Variables	Adj.R ²	β	F	p
Understanding between Parents	Verbal Aggression	0.02	0.16	26.20	0
	Physical Aggression	0.01	0.11	11.42	0.001
	Indirect Aggression	0.01	0.12	13.31	0

Linear Regression, $p < 0.05$

TABLE 14
SIGNIFICANT DIFFERENCES IN VERBAL, PHYSICAL AND INDIRECT AGGRESSION BETWEEN STUDENTS WHO REPORTED/NOT REPORTED MANIFESTATION OF AGGRESSION BETWEEN THEIR PARENTS

	Aggression between Parents (Reported/Not Reported)	N	M	SD	t	p
Verbal Aggression	Aggression between Parents – Reported	377	2.62	0.979	8.542	.000
	Aggression between Parents – Not Reported	601	2.06	1.010		
Physical Aggression	Aggression between Parents – Reported	377	1.91	0.985	4.741	0.000
	Aggression between Parents – Not Reported	601	1.62	0.879		
Indirect Aggression	Aggression between Parents – Reported	377	1.67	0.710	6.659	0.000
	Aggression between Parents – Not Reported	601	1.38	0.570		

Independent Samples *t*-Test, $p < 0.05$

These results show that manifestations of aggression between parents comprise a significant factor in predisposing their children to commit aggressive acts. Students whose parents are aggressive towards each other are significantly more aggressive in comparison to students whose parents are not. These results are most salient in respect to verbal aggression among students.

We also examined whether *the student-parent relationship* had any effect upon our respondents' behavior, including their manifestations of aggression. This addressed understanding/amicability between students and their parents, perceived parental practices, parental sanctions, and manifestations of aggression on the part of students towards their parents.

The *level of understanding between students and their parents* was evaluated by the participants in the study on a scale ranging from "we perfectly understand each other" to "we cannot stand each other." The effects of this level of understanding upon manifestations of different forms of aggression among students is presented in Table 15 below.

The level of understanding between students and their parents clearly has a significant, although somewhat weak effect upon manifestations of verbal aggression, followed by indirect and physical aggression. A worsening of the relationship between students and their parents is associated with an increasing likelihood of aggression by the students, especially verbal and indirect aggression.

We have also studied how students perceive certain parental practices, such as *advice* about *how to cope with aggressive provocations* at school. Our sample reports that their

parents most frequently advise them to inform a teacher (47%) when someone insults or hits them at school. Students also report that they have been advised to tell their parents (38%), attempt to speak to the one who has been abusive towards them (33%), and do nothing (21%). 13% of the respondents indicate that their parents have instructed them to respond to an aggressive provocation with aggression in return. We should note that the prevailing parental advice concerns adaptive strategies for handling aggressive provocation, although it is not uncommon for parents to encourage the use of dysfunctional coping strategies. Approximately 20% of our respondents remarked that their parents had advised them to do so.

We also investigated whether *parental sanctions* influenced different forms of aggression among our sample.

58% of the students report that their parents have punished them in some way at home. The most frequently used forms of punishment involve a withdrawal of privileges or being deprived of favorite pursuits and leisure time activities (using a cell phone or computer, watching television, having spending money, going out with friends, and so forth). It was clear from 16% of the responses that parents have used various methods of physical, verbal, and psychological aggression as means of punishment. The percentages of responses relating to verbal aggression and neglect by parents are almost even, with a smaller percentage indicating the use of physical aggression. Students' free responses under the option "Other" overlapped to a large extent with various responses provided by the multiple response set, and they did not pro-

TABLE 15
THE EFFECT OF THE STUDENT-PARENTS UNDERSTANDING ON MANIFESTATIONS OF
VERBAL, PHYSICAL, AND INDIRECT AGGRESSION AMONG STUDENTS (N = 978)

Independent Variable	Dependent Variables	Adj.R ²	β	F	p
Understanding between Students and Their Parents	Verbal Aggression	0.06	0.25	66.06	0
	Physical Aggression	0.02	0.14	20.11	0
	Indirect Aggression	0.05	0.22	51.23	0

Linear Regression, $p < 0.05$

vide additional information about the parental practices of punishment.

Table 16 below presents the results obtained concerning the impact of parental sanctions upon manifestations of the three forms of aggression among students that we have studied.

The findings indicate that parental punishment that includes various forms of aggression (shouting/insulting, ignoring/neglecting, and/or beating) leads to increased manifestations of verbal and indirect aggression on the part of students, although not physical aggression ($p > 0.05$). The results do indicate, however, that there is a significant difference in levels of aggression among students who have been punished by their parents in an aggressive manner and those who have not. Students who have been punished in an aggressive manner are considerably more verbally and indirectly aggressive than students who have not.

In respect to *aggression towards parents*, 72% of students claim that they have never displayed verbal or physical aggression towards their parents. Nevertheless, more than

25% of our sample report that they have expressed some form of physical or verbal aggression towards a parent, with shouting at (23%) and insulting parents (10%) being the most frequently reported manifestations. Small numbers state they have thrown things (2%), pushed or hit a parent (1%), or intentionally hurt a parent physically (1%). As was expected, cases of verbal aggression towards parents are considerably more numerous than cases of physical aggression, although there are a few cases of serious violence that have resulted in bruising and injury.

Finally, we have examined the association between students' *perception of the economic standing of their family* and the manifestation of various forms of aggression in their daily lives. Our respondents evaluated their families in this respect on a scale ranging from "My family has a lot of money" to "My family is poor." The results concerning the statistically significant differences in aggression among students regarding the perceived economic standing of their families are presented in Table 17.

TABLE 16
SIGNIFICANT DIFFERENCES IN VERBAL AND INDIRECT AGGRESSION AMONG STUDENTS
DEPENDING ON PARENTAL PUNISHMENT, INCLUDING DIFFERENT FORMS OF AGGRESSION (N = 978)

	Punishment Incl. Different Forms of Aggression (Reported/Not Reported)	N	M	SD	t	p
Verbal Aggression	Aggressive Punishment – Reported	123	2.48	1.011	2.278	0.023
	Aggressive Punishment – Not Reported	869	2.25	1.035		
Indirect Aggression	Aggressive Punishment – Reported	123	1.62	0.725	2.101	0.037
	Aggressive Punishment – Not Reported	869	1.47	0.628		

Independent Samples t-Test, $p < 0.05$

TABLE 17
SIGNIFICANT DIFFERENCES IN MANIFESTATIONS OF PHYSICAL AGGRESSION AMONG
STUDENTS DEPENDING ON THE PERCEIVED ECONOMIC STANDING OF THE FAMILY (N = 978)

	Perceived Economic Standing of the Family	M	SD	Perceived Economic Standing of the Family	M	SD	F	p
Physical Aggression	My family has a lot of money	1.98	1.087	My family has enough money	1.70	0.905	4.982	0.007

One-Way ANOVA and Games-Howell Post Hoc Test, $p < 0.05$

The findings show that the perceived economic standing of the family exerts a significant influence on manifestations of physical aggression among students. Students who believe that their family has a lot of money are physically more aggressive than students who perceive their family as having enough or as being poor. We observed no influence between the perceived economic standing of the family and either verbal or indirect forms of aggression ($p > 0.05$).

DISCUSSION

Verbal aggression is one of the basic forms of aggression and one of the most widespread manifestations of aggressiveness. That has been supported by our survey data. We found that boys use this form of aggression much more frequently than girls. In addition, higher grade (age) is associated with a greater number of verbally aggressive acts.

Physical aggression, or participating in fights, was reported by less than half of our sample, with the rest indicating that they have had such an experience rarely or only once. Unsurprisingly, boys are involved in fights more often than girls. Grade/age is not a very significant factor aside from the fact that 8th grade students report a higher level of physical aggression than 4th graders. It should be noted that school as a specific public space and collective presence in the classrooms, including teachers, continues to erect barriers that prevent frequent manifestation of direct physical aggression. While such barriers are obviously well perceived by more than 50% of the students, they are poorly grasped by the rest. This serves to explain why even a single physical conflict among students can provoke an acute social response, media coverage, and public discussion. A cautious, systematic, and specifically targeted approach to thwart any physical abuse between students or against teachers is needed, not simply crisis intervention.

Manifestations of *indirect aggression* were found to be even more rare than those of verbal and physical aggression, particularly in the primary grades. This is because behav-

ioral intentions are expressed in a direct and spontaneous manner at an earlier age rather than through such covert acts as gossiping or turning someone against someone else. The learning and use of indirect aggression gradually expands in line with advancing grade/age, with our survey data indicating that 10th graders utilizing it significantly more often than 4th and 6th graders.

PERSONALITY TRAITS AS ANTECEDENTS OF STUDENT AGGRESSION

We have also examined the effects of such key *personality characteristics* as anger, revengefulness, suspiciousness, rancor, and striving for control. Their roles as determinants of aggression have been confirmed in many studies throughout the world (Caprara et al. 1996; Bandura 1999; Huesmann and Eron 1989; and others), including studies published by Bulgarian researchers (Kalchev 2003, 2010; Zografova 2001). In the present study we have examined both the primary and multiple effects of these traits on the overall level of aggression of students, and our findings support the results of previous research. They show that these traits, particularly revengefulness, have a significant and strong predictive power regarding aggressive behavior.

We identified certain interesting effects of *gender and grade/age*, including some that were unexpected. A multi-factor regression model that combines four personality characteristics shows a slightly higher predictive power for the overall level of aggression of 4th graders than for higher grades. Although personality traits are formed during individual development, our sample manifested certain traits sufficiently early to influence the behavior of students in lower grades. The main results show that revengefulness is the most significant personality antecedent of aggressive behavior, with rancor, which is most noticeable among 4th grade girls, being the least significant. It is interesting to note that the total effect of the personality characteristics we studied is weakened in the 6th grade, but strengthened again in the 10th. This is most likely due to the irregular dynamics of personality development in different age ranges.

In our sample, the *significant role of the personality* is essential even at the very early age of 4th graders. This means that socializing entities – family, school, and the broader community – are responsible for the formation of pro-social values and behavior.

The early unlocking of an emotion such as revengefulness paves the way for persistent and trans-situational manifestations of models of aggressive behavior insofar as scenarios with this distinctive type of content are easily memorized and replayed in subsequent situations. The fact that rancor has been found to be a weaker antecedent of aggression suggests that aggressive patterns of behavior have not become habitual and have not entered the deepest strata of the personality. This inference points to the need for early preventive work in order to avoid the integration of aggressive patterns into the structure of the personality. Future research should distinguish reactive from proactive aggression in efforts to search for and identify both the differences and similarities in their antecedents, as well as the specific interventions required to reduce aggressive behavior (Vitaro et al. 2006). Personality qualities and traits are still developing in adolescents and older students, and socialization is a complex process influenced by such various agents as family, school, friends, and the wider social environment that determines the specific development of each individual into a personality. Within the school environment, social comparison with one's peers highlights the need to deploy socio-psychological opportunities for communication and interaction with others. The competitiveness that accompanies everyday within an educational environment readily provokes and releases aggressive tendencies.

THE FAMILY ENVIRONMENT AS AN ANTECEDENT OF STUDENT AGGRESSION

One of the most important factors for individual socialization and the development of the personality is the family, which comprises the child's closest social environment. However, data about family environment and relationships are typically collected among adult

respondents, and very little data is available about children's beliefs and opinions concerning their experiences in the family. In order to rectify this shortcoming, we have examined the influence of problem behaviors within the family, such as drug/alcohol abuse and addiction; the perceived level of understanding between parents, including verbal and physical aggression; child-parent relationships, including parental sanctions and practices for coping with aggressive provocations; as well as the impact of the perceived economic standing of the family upon formation and manifestation of different forms of aggression among students.

It is not surprising that the data show a significant association between *parental problem behaviors* and aggression among the students in the sample, especially physical aggression. We have also found such associations with verbal and indirect forms of aggression, although they are not as salient. Physical aggression tends to be the most obvious in students whose family environment is characterized by some type of problem behaviors. This is clearly a matter of serious social and psychological problems within the family that require resolution. Problems of this type quite often remain encapsulated within the family itself, which results, in turn, in increasing the pressure brought to bear on children insofar as they are placed into the position of being unable or unwilling to discuss their "family problems" with a specialist.

Manifestations of aggression among students, particularly verbal aggression, are found to increase together with a deterioration of *the relationship between their parents* in the sense of misunderstanding and a lack of amicability. Not only do unresolved parental issues have a negative impact upon the mentality and behavior of adolescents, the school environment immediately provides opportunities for manifesting aggressiveness or other abnormal behavior. Observed patterns of aggressive behavior between parents at home are readily learnt in early childhood and reproduced by children both in daily life and at school towards their classmates and teachers, even in the upper grades.

The *parent-child relationship* is clearly a precondition for certain actions and behaviors by the child/adolescent outside of the home (Simons et al. 2001). Our results show that a deterioration in the parent-child relationship results in an increased manifestation of aggression towards teachers and classmates, particularly in its verbal and indirect forms. It is thus necessary to design and implement an approach appropriate for gaining an understanding of and improving family relationships on the part of the family members themselves in order to reduce manifestations of aggression at both home and school.

Our results concerning *perceived parental practices for coping with aggressive provocations* show that almost half of the students have been advised by their parents to consult a teacher when someone insults or hits them at school. More than 1/3 were advised to speak with the parents themselves, and about 1/3 were told to talk to the student who had abused them. Approximately 1/5 were told to do nothing, while less than 1 in 8 were advised to respond to aggression in kind. Although parental advice concerning adaptive strategies for dealing with situations of aggressive provocation prevails, approximately 1/5 of the students indicate that their parents advised them to employ dysfunctional coping strategies.

Parental practices that enhance dysfunctional coping strategies and promote aggressive behavior in children are a serious issue that needs special attention. Such practices pave the way to developing scenarios in childhood about how to solve problems that are stored in memory and reproduced in certain situations later in life. Lösel and colleagues nevertheless recommend that we complement investigations concerning sociocognitive processes with such issues as the temperament and neurophysiological characteristics of individuals (Lösel et al. 2007).

One of the most dysfunctional parental practices that can be turned against the parents themselves involves teaching children to seek revenge for any aggressive behavior to which they have been subjected. Although there are only a small number of cases involving these types of dysfunctional practices in our sam-

ple, they are likely to result in an increase in verbal aggression towards teachers and physical aggression towards classmates. It is also important to emphasize that the more often parents advise their children to seek help from a teacher, the less likely they are to manifest verbal and physical aggression towards teachers and classmates.

Other research results indicate that increased support from family members is associated with decreased manifestations of aggressive behavior. Although strong family influences cannot be expected in mid-adolescence due to the developmental changes underway at that time (Reis et al. 2007), parents often remain highly involved in countries where the educational system employs broad psychological approaches to support students. They are, and should be, the third party involved in school programs together with students themselves as well as teaching staff and psychologists.

In respect to *parental sanctions*, our results show that the two most common parental punishments are forbidding children to watch television and use a PC and taking away their cell phone. It is also not uncommon for parents to deprive children of the privilege of going out with friends. In this regard, we should take into consideration research that reveals that adolescents spend more than half of their time together with friends and classmates, and that this percentage grows in junior high school (Rogers 2015). Only a small percentage of respondents reported that they had been beaten by their parents, while more than 40% reported that they had not been punished at home.

Clearly, parental punishment practices are dominated by restrictions upon their children's favorite daily activities, particularly in the domain of communication, that is, activities that relate to electronic media and social contacts. Data analysis indicates that student behavior is particularly influenced by sanctions that involve parental aggression, which commonly result in higher levels of verbal and indirect aggression. However, there is no evidence that this leads to an increase in manifestations of physical aggression.

The use of punishment is a rather complex practice that often has unexpected results, and may have no results at all. For a given punishment to be as efficient as possible, its severity should correspond to the seriousness of the offence, and it should be administered immediately and without delay. However, since punishment is a form of negative sanctioning, it cannot always be as efficient as the positive sanctioning of behavior, especially in early childhood. The latter includes rewarding a child's desirable behavior, not directing attention to their undesirable actions; focusing on emotional and moral support, not instrumental support; discussing the positive and negative aspects of a child's behavior with the child and finding solutions together; and so forth.

Manifestations of aggressiveness by parents towards their children are thus directly related to aggressive behavior among students. Parents who act violently towards their children by shouting at them, insulting them, ignoring them, beating them, and so forth, influence their behavior in a disruptive way that leads to an increase in displaced aggression towards classmates, and less often towards teachers. The phenomenon of displaced aggression is common in cases where obstacles and barriers exist that prevent children from responding impulsively, immediately, and purposefully to the primary source of aggressive provocation, such as their parents.

Concerning *students' aggression towards their parents*, data analysis shows that approximately 25% of our student respondents have been verbally aggressive towards their parents, while there were only a few cases of severe aggression involving physical violence. About 2/3 of our sample report that they have engaged in none of the forms of aggression we studied towards their parents. In general, students are aware of their own behavior towards their parents, along with codes of socially accepted conduct.

Although early childhood beliefs about the *economic standing of the family* are ambiguous, they become increasingly more specific as the child becomes involved with a larger community in school. Due to the process of

social comparison with peers and peer families, adolescents become ever more aware of the socioeconomic characteristics of their parents through immediate reference to the most tangible family assets and possessions, such as money and property. Our results show that students who perceive their families as possessing good economic standing (having enough or a lot of money) manifest more severe forms of aggression, that is, physical aggression. One possible explanation for this is that parents who are better off financially tend to dedicate more time to their businesses and careers than to their children, and they provide more financial (instrumental) stimuli to their children in the effort to compensate for any attentional and emotional deficits that result from job-family misbalance. They may thus be less restrictive and more liberal regarding the socialization of their children, including some of their problem behaviors.

CONCLUSION AND PRACTICAL IMPLICATIONS

A basic principle in the development of school policy to prevent aggression and bullying, or at least reduce it, involves the implementation of a general, school-wide approach that resides upon coordinated and consistent efforts to create a more secure school environment. It is necessary to clearly demarcate borders, form values, and establish norms and procedures that do not permit manifestations of violence and bullying either at school, or at home.

The most effective approaches involve programs that are applied universally to all students in a given grade or school as a whole, together with specialized programs that target certain students and are conducted outside the classroom. These approaches are primarily cognitive in nature, but they also include developing behavioral forms and social skills along with training and consultation (Wilson and Lipsey 2007). They are to support students in building and maintaining friendships, participating more productively in team work, and reacting positively to new social situations as they arise (Smokowski et al. 2004).

Approaches directed to the school community as a whole reflect the fact that aggressive behavior and violence are a common responsibility. Successful management of this problem depends upon the participation of school staff, parents, and highly engaged students in undertaking coordinated measures. Our research supports the conclusion that adopting this type of unified approach is the most effective way to ensure greater security and well-being for students.

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UTILIZING DELIMITED OCCUPATIONAL THERAPY MODEL TO DEVELOP SOCIAL SKILLS IN CHILDREN WITH ASPERGER SYNDROME

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Abstract. *Asperger Syndrome is a severe developmental disorder affecting children that is marked by significant difficulties concerning social interaction as well as limited and unusual patterns of interest and behavior. The children so affected take longer to develop social skills, and require more time and repetition to attain a given level of learning. Nevertheless, every child with Asperger Syndrome is able to learn, develop, and become an active member of society, and occupational therapists are often asked to organize and implement intervention programs for the purpose of attaining these goals. Against this background, this study presents the practice of delimited occupational therapy, which resides upon theoretical concepts associated with the environment, the self, work, the interaction between these key factors, and the participation of the child in a range of occupations. Specific tools are needed to evaluate the main behavioral characteristics associated with Asperger Syndrome and identify the correlations between the behavioral patterns that a child presents and the various neurological and psychological factors that underlie them. Delimited occupational therapy emphasizes that particular neurological, psychological and behavioral intervention strategies are needed to support the performance of a child with Asperger Syndrome and promote their participation in different activities. The results of the article illustrate the positive contribution of delimited occupational therapy in promoting the development of social skills in children with Asperger Syndrome*

Keywords: Asperger Syndrome; delimited occupational therapy; social skills; intervention strategies.

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INTRODUCTION

Asperger Syndrome describes children with deficits in social transactions, as well as limited, repetitive, and stereotypical patterns of behavior, interests, and activities. It comes to be associated with significant impairment in social, professional, and other operational domains, but it resides at the mild pole of the autism spectrum. In addition, criteria for confirming another specific pervasive developmental disorder or schizophrenia are not met (Baldwin et al. 2014). As a term, it reflects Hans Asperger's (1944, in Wing 1981) classification of a number of children who presented with symptoms similar to those Kanner had described a year earlier, which he referred to as comprising early infantile autism. Asperger also used the term autism to describe these children, and he referred to the group of symptoms in question as comprising autistic psychopathology (see Giles 2014). Autistic psychopathology is now known as Asperger Syndrome, following Wing's (1981) formulation. Although Asperger presented his observations only one year after Kanner's description of early childhood autism, there was no authoritative English translation of his work until 1992 (Frith 1992). Asperger Syndrome was identified as a separate diagnostic category when it was added to the ICD-10 (World Health Organization 1992; see Chiang et al. 2014) and the DSM-IV (American Psychiatric Association 1994).

The diagnostic criteria for Asperger Syndrome listed in the DSM-IV are: a) a qualitative decrease in social transaction; b) limited, repetitive, and stereotypical patterns of behavior, interests, and activities; and c) the absence of a significant general delay in language, the development of cognitive functions, the development of age-related self-service skills, adaptive behavior (other than social interaction), and curiosity for the environment in childhood. The ICD-10 uses the term Asperger Syndrome to describe a disorder of uncertain disease validity which in some cases, if not all, it is a mild variation of autism. It includes the same diagnosis criteria as the DSM-IV, adding that these individu-

als are very clumsy. Other criteria have also been formulated and used internationally by reliable researchers for diagnosing Asperger Syndrome in order to more closely describe the clinical picture of affected children (Ohan et al. 2015).

We should note at this venture that there is an ongoing debate concerning the extent to which Asperger Syndrome differs from high functioning autism (Dell'Osso et al. 2016) and, consequently, whether it should be used as a separate diagnostic category (Smith et al. 2015). The strength of this debate is underscored by the fact that Asperger Syndrome was removed from the DSM-5 as a diagnostic classification (American Psychiatric Association 2013). However, the aim of the present discussion is not to address whether Asperger Syndrome should be regarded as a distinct diagnostic category. It rather focuses on a particular group of autistic symptoms manifest in early childhood in order to determine the usefulness of delimited occupational therapy for ameliorating their effect and promoting a better quality of life for the children in question.

OCCUPATIONAL THERAPY INTERVENTION

Cognitive behavioral therapy, which resides upon a combination of the basic principles of behavioral and cognitive psychology (Taylor 2017), comprises the reference framework that will be used in this article as we discuss evaluating and remedying the difficulties facing children with Asperger Syndrome. This approach is both problem-focused and action-oriented. The role of the occupational therapist is to help the child find and implement effective strategies for reducing their symptoms and attaining the therapeutic goals that have been identified (Schultz-Krohn and Pendleton 2017).

Cognitive behavioral intervention aims not to diagnose, but rather to examine the child as a whole and draw conclusions concerning what needs to be treated (Field et al. 2015). It initially identifies critical behaviors (Hayes et al. 2011), and then evaluates them for excess or deficit (Hollon and Beck 2013) in respect to the duration and intensity of their manifesta-

tion. If a given critical behavior is judged to be beyond acceptable limits, then intervention is aimed at reducing it; if it is instead assessed as having not attained a proper level, then the goal of intervention is to reinforce or strengthen it. When the intervention is concluded, the occupational therapist evaluates whether or not it has succeeded in attaining its objectives (Quinn et al. 2014).

MODEL OF OCCUPATIONAL THERAPY

INTERVENTION

This model of intervention is based upon a combination of project analysis and bounded ergotherapy, with the aim of supporting the occupational therapist in the process of intervention. The project analysis model, which addresses the context of the intervention as well as the target population, assists the therapist in defining the goals of his intervention through the selection of projects that are of therapeutic importance for the client. The therapist makes an initial assessment of the client in order to determine his needs and difficulties, after which a second evaluation is conducted through the use of specific tools, the results of which aid in organizing an intervention plan. This plan includes both the long and short-term objectives of the program of intervention, which are always discussed

with the client and, in the case of children with Asperger Syndrome, with the parents as well. Once the objectives have been established, interventions are implemented along with regular evaluations for the purpose of either confirming the attainment of targets, or revealing the need to change them. The client may also be referred to another specialist upon completion of the program depending upon the details of the initial assessment (Taylor et al. 2017).

The delimited occupational therapy model, presented in Figure 1 below, is based upon theoretical concepts related to the child, the environment, work, the interaction between these key factors, and the involvement of the child in various occupations (Chu and Reynolds 2007).

This illustration is intended to facilitate an understanding of the child's problems at different levels of dysfunction (neurological, psychological, behavioral). It highlights the interactions between different environmental factors, the requirements of a particular task, the level of the child's participation in various occupations, the meanings these have in different situations, and the importance of support from the family (Chu and Reynolds 2007). The model also implies that assessment tools are needed to evaluate the main

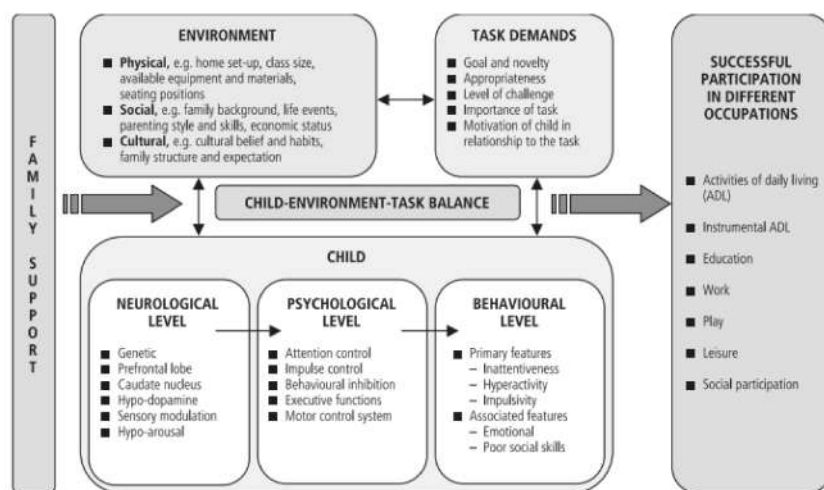


FIGURE 1. DELIMITED OCCUPATIONAL THERAPY INTERVENTION (CHU AND REYNOLDS 2007).

behavioral characteristics associated with the Asperger Syndrome and to determine the various neurological and psychological correlations for the behavioral patterns presented. In respect to management, it emphasizes that a child with Asperger Syndrome requires the implementation of neurological, psychological, and behavioral intervention strategies in order to support his performance and promote participation in different types of activities (Chu and Reynolds 2007).

OCCUPATIONAL THERAPY INTERVENTION FOR A CHILD WITH ASPERGER SYNDROME

EVALUATION

The occupational therapist will initially evaluate the child using specific assessment tools in order to determine his needs and difficulties. This evaluation is intended to provide the occupational therapist with information sufficient for locating underlying malfunctions so that an intervention program centered on both the child and the family can be planned and organized. Insofar as the occupational therapist must take into consideration how Asperger Syndrome affects the child at school, in social life, and in the home, the assessment will include interviews with the child's parents and teachers.

The evaluation will address the strengths and weaknesses in the neurological, psychological, and behavioral characteristics of the child, and the results will determine both the short and long-term objectives of the intervention in accordance with the project analysis model. The intervention will be undertaken together with regular evaluations in order to confirm whether the objectives have been attained, or whether they need to be modified.

GOALS

Upon the basis of the assessment, the occupational therapist establishes treatment goals for ameliorating the child's symptoms. The general objectives of intervention include the following:

- 1) Reduce disruptive behavior during activity.
- 2) Increase the range of attention.
- 3) Develop the child's social skills.
- 4) Develop problem solving skills.
- 5) Develop self-regulatory skills, including specific training in tolerance skills regarding emotional distress.

INTERVENTION DESIGN

PSYCHOMOTOR AREA

CONTROLLING STIMULI

Controlling stimuli is intended to control the effects of undesirable behavior. After the occupational therapist identifies the causes of the unwanted behavior, he seeks to alter or remove them in order to prevent such behavior on the part of the child. In order to achieve this goal, the occupational therapist must provide specific instructions (Ismael et al. 2018).

In order to reduce the probability of the child being distracted when performing a task, the area where he performs the related activity should be well-lit and not contain objects that will distract them. The space should be organized to include only the things that are required for completing the task (Nielsen et al. 2017).

It is also very important that the occupational therapist speak with authority to the child. A command should not take the form of a question, such as "Do you want to sit quietly in your chair?" It should rather be direct, consistent, and complete, such as "Sit quietly in your chair" (Cornell et al. 2018).

GRADUAL INCREASE IN ATTENTION SPAN

To achieve this goal, the child must begin by performing a relatively easy activity that helps him understand that he can successfully complete an activity, such as arranging and completing images or performing mental exercises. He can then be gradually induced to perform more complex tasks (Lauth-Lebens and Lauth 2016). A clock, alarm clock, or timer can help the child grasp the concept of time and focus his attention on a given activity (Becker et al. 2016).

TRAINING IN SOCIAL SKILLS

Children with Asperger Syndrome often lack social skills, frequently finding it difficult to conclude and maintain good relationships with other children. Their impulsive behavior may lead them at times to not comply with the rules of a game and disrupt their peers' play.

The development of social skills in such children is very important insofar as it helps them develop empathy, manage their anger and aggression, formulate and accept positive feedback, seek help and support, express protest, comply with rules, and so forth. Peers and role playing serve an important function in the development of social skills (Precin et al. 2017).

Occupational therapists can help children cultivate social skills through theatrical play therapy, in which children watch how adults interact with each other and try to imitate their behavior. Occupational therapists also provide children who have Asperger Syndrome with opportunities to interact with other children, express themselves freely, and learn through the game being played (Bratton et al. 2005).

Precin et al. (2017) maintain that theatrical play is more effective in helping a child with Asperger Syndrome make friends than merely telling him how to do so insofar as playing roles fosters the acquisition of the needed knowledge and skills. Role playing, which has been used by occupational therapists for many years, is an active learning experience that can be a part of the child's everyday life (Rodger and Polatajko 2014).

The occupational therapist needs to take the following points into consideration prior to the beginning of role playing (Tomchek et al. 2017):

- 1) Ensure that a child's role in the game is valued as an activity and not eliminated.
- 2) Select activities that are meaningful and well-suited to the group.
- 3) Ensure that the team develops social skills.
- 4) Ensure that an activity does not detract from the actual experience and thereby diminish the meaning of the activity for the group.

- 5) Investigate how to facilitate transferring the skills developed in this way to the everyday life of the group.

- 6) Encourage flexible and creative problem solving.

A group of children involved in role playing must know the objective of the game when it begins since the team can improve its chances of success if it has a specific goal in mind. The occupational therapist initially has to take the lead and help develop the script. Children may initially feel uncomfortable or nervous, but letting them know the "premeditated game" slowly will help them feel more comfortable and they will soon begin developing scenarios on their own.

As the team develops through the game, the occupational therapist will add more complex scenarios and include teaching problem-solving as part of the game. The therapist will both utilize a given script more than once to reinforce the message through repetition, and also temporarily stop role playing at various points to discuss what is taking place. Using action and discussing together will help the group understand and anticipate different situations.

Bratton et al. (2005) state that playing with a toy can comprise a form of psychological therapy in the sense that it can be used to help children who have emotional, behavioral, social, or psychological problems with expressing their difficulties and develop strategies for coping. Theatrical play permits children with Asperger Syndrome to express themselves through the activity of the game rather than through the use of language. This can enhance their understanding of the world, foster their development of problem solving abilities and social skills, and help reduce stress (Baric et al. 2017). Occupational therapists who utilize play should complete specialized postgraduate education and supervision for this purpose.

*COGNITIVE DOMAIN**TRAINING IN PROBLEM-SOLVING*

Educating children with Asperger Syndrome to solve problems helps them to both assess difficult situations and deal with them as ef-

ficiently as possible. An important element in such training is the “Stop-Think-Act” technique, which teaches the child to control their impulsive behavior so that they think and evaluate the problem before acting. This technique consists of six steps (Quinn et al. 2014):

- 1) The problem is initially defined: *“I have to think of exactly what to do.”* “Stop! Think first! What’s the problem here?”
- 2) The child then approaches the problem: *“I need to think carefully about all the alternatives.”* “What can you do here? How is it going now?”
- 3) Then focuses his attention: *“I only have to think about what I will do now.”* “Concentrate on what you have to do!”
- 4) Then chooses the best solution or most appropriate response: *“Hmm... What’s the best solution?”* “Well, that’s what I will do.”
- 5) Then checks his behavior: *“Did I do it right?”* “Was I lucky? How did I do it?”
- 6) Finally, he learns to reinforce himself: *“Yes, I did it right.”* “Bravo.” And if he has made a mistake: *“Okay, when I make a mistake, I’ll be more careful the next time, and then I’ll do it better.”* “I didn’t do it, but at least I tried.”

In order to complete the process through which the child will learn to successfully follow all the steps, occupational therapists may initially use cards to remind the child of what to do.

COGNITIVE-FUNCTIONAL INTERVENTION (COG-FUN)

The ergotherapy approach to improving underlying executive deficits within a given project, or Cog-Fun (Quinn et al. 2014), is considered to be effective when used with children with Asperger Syndrome (Ismael et al. 2018). The Cog-Fun approach is directed at the cognitive, emotional, and environmental barriers to participation as they interact within a project’s execution framework.

The primary goal of employing Cog-Fun in a therapeutic intervention is to promote ef-

ficiency in project performance through the acquisition of executive strategies. In order for a child to integrate such strategies, the latter must be elements of a given project and language environment, be presented through enjoyable and entertaining activities, and be experienced as tools that are worthy of the child’s efforts. The implementation of learning strategy relies upon environmental support, particularly a positive family therapeutic environment.

This integrative approach, which is based upon well-established models of practical therapy, employs three key mechanisms for change – acquisition of an executive strategy, therapeutic regulation, and environmental support and procedural learning. The first of these comprises a metacognitive learning process consisting of a number of stages that are based upon the multiframe therapy approach to cognitive restoration (Rodger and Polatajko 2014). The child first experiences the need for an executive strategy in a variety of activities. For example, the need to suspend – a “break” strategy – is experienced in running and stopping with Red Light and Green Light, while the need for recruiting may be experienced in play by having to push a large ball. The child is thus motivated to invoke the strategy and create a tangible symbol of it, such as stop-sign, “power on,” or an action figure from the child’s world of play. This can be translated into multiple activities and frames within the home with the assistance of the occupational therapist, who helps the child and parents choose game activities and project goals, practice executive strategies, and transfer them to operational goals. Activities and goals are designed to be enjoyable for the child as they exploit resources for motivation as well as cognitive resources concerning goal-oriented behavior.

The second mechanism of change, or the possibility of therapeutic organization, involves a positive, safe, family-centered therapeutic environment. An acceptable social framework, derived from the intentional relationship model, is established through the therapeutic use of self, interpersonal logic, therapeutic communication, and family centrality (Bonsaksen et al. 2013).

The third mechanism of change, or the use of environmental supportive elements and procedural learning, is based upon the neuro-functional approach to cognitive rehabilitation (Guiles 2011). This involves practitioners utilizing behavioral learning and environmental resources in an effort to minimize frustration during the child's learning process. These principles are employed in order to boost motivation and self-efficacy within a relatively short period of time and, when necessary, assist with the most demanding instances of metacognitive learning.

Such ecological intervention employs a protocol tailored to the unique type of executive malfunction associated with a child with Asperger Syndrome. A cognitive-functional intervention program focuses on the acquisition and transfer of cognitive strategies for delivering work within the child's natural environment. This type of intervention has recently been adapted for treating preschool children with Asperger Syndrome, who have subsequently shown improvement regarding both the attainment of project goals as well as the underlying executive functions (Quinn et al. 2014). Its theoretical foundations include the dynamic interaction approach (Toglia 2005) and other similar learning applications that reside upon strategies for treating people with cognitive disorders. Related intervention has been provided separately to parents of two children being treated for Asperger Syndrome, but it has not been adapted for use in group intervention.

DYNAMIC INTERACTION APPROACH

Toglia's (2005) dynamic interaction approach to cognitive rehabilitation highlights the interactions between the individual, their obligations, and the environment regarding problems with project performance. Intervention involves the transfer of strategies that have been successfully implemented to a wider range of activities and situations – with an emphasis on the metacognition strategies of self-control and self-assessment – in order to either create or restore balance in the functioning of a given project (Josman 2005).

CONCLUSIONS

This article has presented an occupational therapy program that resides upon the conception of cognitive behavioral therapy. It is based upon the project analysis model, which assists the occupational therapist in defining the objectives and results of intervention by selecting projects that are important for the client. It also utilizes the practice of delimited occupational therapy, which employs theoretical concepts related to the self, environment, work, the interaction between these key factors, and the involvement of the child in various tasks.

In implementing this type of program, the occupational therapist must first evaluate the child, which may include interviews with the child's parents and teachers, clinical observation (assessing the neurological basis of Asperger Syndrome), semi-structured interviews, the use of various tools, such as classroom observation tools, and a consideration of such environmental factors as school and family. The results thus obtained are to be supplemented as necessary by information provided by such other professionals as child psychiatrists, psychologists, and family therapists.

Upon this basis, the intervention is to be designed in respect to the sector of difficulty. For example, the psychomotor sector requires pulse control activities and a gradual increase in the range of attention and social skills training, while the cognitive field requires problem-solving, Cog-Fun, and dynamic interaction approaches. In the author's judgment, the use of this type of treatment program with children with Asperger Syndrome leads to significant positive changes in respect to perception, the development of social skills, the process of integration in general, and forming relationships with the broader environment that result in an improved quality of life. This position is based upon involvement with specific children in the school environment and in wider social inclusion settings, including observation of behavioral changes after the employment of such treatment; contact with either families or colleagues dealing with

specific children; and the utilization of such research tools as questionnaires. The use of such tools can support the design of therapeutic interventions that improve the behavior of these children in a more general sense.

For these reasons, together with the theoretical analysis above, it is evident that the type of therapeutic programs discussed here assist children with Asperger Syndrome in improving their behavior, becoming members of a wider social whole, and having positive experiences within the school environment, which in turn generate prospects for even better management in the future. This also leads to a better quality of life in respect to their roles within the family and in regard to the formation of friendships and relations with their peers.

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A COMPLEX METHOD FOR STUDYING SOCIO- PSYCHOLOGICAL FACTORS IN RISKY BEHAVIOR ON THE ROAD

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Abstract. *The aim of this study is to develop a complex method for assessing the socio-psychological factors that influence risky driving behavior. Recent theoretical work and empirical studies conducted in a number of countries in the field of transport psychology have been investigated, including primary factors directly related to the contemporary stage of social development in respect to risky behavior on the road. The high levels of stress in contemporary life exert a strong influence upon the need to mobilize human potential for dealing with such challenges. The present article examines a series of socio-psychological factors that influence driver behavior, and they provide the basis for seven scales that are useful for measuring such behavior. These scales describe attitudes towards problem driving, attitudes towards compliance with traffic regulations, attitudes towards drink driving, the influence of family and friends, problematic behavior on the road, route planning and searching for road information. The questionnaire developed for measuring these scales has been tested for the reliability and validity of the parameters used.*

The complex methodology presented here for evaluating the socio-psychological factors that influence risky driving behavior constitutes a tool for analyzing changing environmental conditions that affect drivers. It resides upon contemporary achievements in the field of transport psychology throughout the world and is now being developed in Bulgaria for the first time. The results obtained from utilizing that method in our study promise to be useful in preventing risky behavior by updating driver training as well as preparing programs for working with potentially dangerous drivers.

Keywords: Road safety; risky behavior; drivers; attitudes; traffic psychology.

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Contribution:

Antoaneta Hristova – Theoretical background, Methodology, Results & Discussion, Data analysis, Conclusions, References.

Kalina Krumova – Abstract, Theoretical background, Statistical processing, Data analysis Conclusions, References.

Borian Andreev – Data processing and statistical analysis.

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INTRODUCTION

The problem of deaths and injuries resulting from road accidents is acknowledged to be a global phenomenon. The International Federation of Red Cross and Red Crescent Societies describes the situation as “a worsening global disaster that destroys life and livelihoods, hinders development and leaves millions vulnerable” (Jacobs et al 2000; Ameratunga et al. 2006). In 1990, traffic accidents ranked ninth on a list of over 100 causes of death or disability, and estimates are that they will reach sixth place among the highest causes of mortality by 2020 (Jacobs et al. 2000). Injuries from traffic accidents are also expected to rise from being the ninth leading factor among global causes of trauma in 1990 to third place by 2020 if proper action is not taken (Kopits and Cropper 2005; Ameratunga et al. 2006).

Leonard Evans maintains that, among human factors, a driver’s behavior (what the driver does) has a much greater impact upon safety than a driver’s ability (what the driver could do) (Evans 1996). He thus argues that the problem of road accidents is caused not by drivers who do not know what to do, but rather by drivers who do things they know they should not do. After examining the extensive body of road safety studies, Evan concludes that changes in driver behavior provide the greatest opportunity for reducing traffic accident casualties. However, successfully dealing with risky driving requires a good knowledge of the factors that contribute to it (Fernandes et al. 2007).

Research in traffic psychology has established that there is a close link between driver behavior and an individual’s socio-economic and demographic characteristics. It is known that such variables as age, sex, and miles traveled are connected with driving behavior (Rothengatter 1997; Ward and Lancaster 2003; Iversen and Rundmo 2004), and that a high incidence of road accidents is associated with young males who drive a high number of miles annually (Parker et al 1995; Hennessy and Wiesenthal 2005).

Vereeck and Vrolix have demonstrated that social readiness to comply with the law has a

significant effect upon reducing road fatalities (Vereeck and Vrolix 2007). They argue that social norms take precedence over laws in this regard, and that a strong, widely-shared readiness to comply with traffic regulations leads to rigorous compliance and safer traffic. This, in turn, creates a safer environment in which each violation becomes more visible and less tolerated. Aberg (1993) uses planned behavior theory to explore attitudes toward drink driving, and he finds that a readiness to drive after consuming alcohol is influenced by such factors as attitudes, social norms, sanctions assessment, and a propensity to drink (Aberg 1993). For such reasons, it is important to identify the main socio-cultural factors related to driving as a component of road safety and highlight both the main determinants of human behavior and the environment that underpin drivers’ risky behavior.

Among socio-psychological factors, organizational culture plays a leading role in the behavior of experienced drivers. Arnold notes that organizations are complex systems with their own distinct values, principles, and relationships (Arnold 2005). In this respect, Öz et al. (2010) employ the Hofstede organizational culture scale to investigate the relations between organizational culture and driver behavior. They have subsequently developed a scale of the climate within transport companies that reflects the roles of three factors – general security management, specific safety practices, and pressure in respect to work and time. Drivers with a low level of stress at workload but pressure upon time are found to commit a significantly lower level of errors than drivers who are under pressure. In addition, drivers with high levels of overall security within a given organization report significantly higher safety driving skills than those with low levels of overall security. We may thus regard organizational factors as having a particular impact on the behavior and productivity of professional drivers, and on their participation in traffic incidents as well.

Researcher have explored and grouped factors, including stress reactions, speeding, the number of traffic violations, and involve-

ment in accidents, that influence driver behavior in respect to different groups of drivers (taxi drivers, drivers of vans, truck drivers, and automobile drivers) (Öz et al. 2010). The results reveal differences between different driver groups in terms of both risky driving and stressful reactions on the road (aggression, fatigue, and seeking excitement). Non-professional drivers drive faster than drivers of taxis, minibuses, and heavy goods vehicles. There is evidence that minibus drivers have more violations than heavy truck drivers, and that they are also more aggressive than non-professional drivers. In addition, there is evidence that high category vehicle drivers are more fatigued than non-professional drivers.

Numerous studies have also examined social determinants at the national level. Some have demonstrated that similar types of drivers exhibit different driving behavior, display different levels of skill efficiency, and comprise different accident risks in two countries (Finland and Russia) with approximately the same climate characteristics, but with different rules and practices concerning traffic safety, various forms of public awareness, and different types of government policies (Leviakangas 1998; Svedung and Rasmussen 1998). Gaygisiz (2010) examines the link between quality of government and road mortality in a sample of 46 countries using quality indicators that measure six aspects of governance. For example, democracy measures the extent to which country's citizens can participate in the election of a government, as well as freedom of expression, freedom of association, and freedom of the media. Political stability and the absence of violence refer to a possibility that the government may be destabilized or abolished by unconstitutional means, including politically motivated violence and terrorism. Governmental efficiency is a measure of the quality of public and state institutions; the degree of their independence from political pressure; and the quality of policy formulation and implementation, including the willingness of governments to act in this regard. Regulatory quality measures governmental ability to formulate and imple-

ment trusted policies and regulations that both permit and encourage the development of the private sector.

The rule of law indicates the extent to which citizens observe social norms, trust in the enforcement of contracts, honor property rights, and respect the police and the judiciary. Corruption control measures the extent to which public authority is used for personal gain, as well as the state's dependence on elites and private interests. Our study's results in this respect reveal that governmental indicators and deaths from road accidents are strongly interrelated. Briefly stated, the better the management of a country, the lower the death rate from road accidents. But although governance, including laws and policies, can make people behave appropriately and safely in traffic, that does not necessarily affect the way they think in general. Policies in fact often fail when they are not supported by both the "high" and "low" levels of system and culture.

Social and cultural factors form the exogenous variables in transport psychology, including the usual environmental components of transport culture, such as economics, demography, and ecology (Page 2001; Hofstede 2001). These cannot be changed by short-term safety policies, but they do have an indirect impact upon the levels of mobility and safety by interacting with the factors that affect everyday road traffic. Economic, social, and cultural factors are the most important variables in road safety (Gaudry and Lassarre 2000).

One of the baseline studies concerning attitudes towards road safety (Lee and Humphrey 2011) is aimed at the creation of a high-quality database that makes it possible to repeat research in the future in order to measure long-term trends. The questionnaire employed for this purpose contains approximately 80 items that are based primarily on *Social Attitudes towards Road Safety in Europe* (SARTRE), a survey conducted among 1000 drivers in each of 23 European countries. This questionnaire examines eight topics of problems, including how drivers regard road safety within the context of the social environment; their perception of risk; attitudes

and behavior towards speeding; attitudes and behavior towards alcohol and driving; attitudes and behavior towards the use of a safety belt; views concerning legislation and policies on both national and European levels; and a socio-demographic personal profile. The results of this study possess a two-fold character. First, they provide clarity concerning the attitudes and behavior of society as a whole and, second, they seek to determine how attitudes and behavior vary across subgroups in respect to gender, age, and income.

The main objective of the SARTRE research is to compare the road safety attitudes of drivers from different countries (SARTRE 1995), and this goal has been formulated in respect to planning for a common European policy on movement and legislation. If nationality is an important factor for drivers in terms of attitude and behavior, then this would necessarily have consequences for European policies in the field of road safety. The SARTRE findings are based upon representative surveys that were conducted in 1991, 1996, and 2002. Researchers employed identical questionnaires in each survey, with the same methodological criteria, in order to reveal both differences and similarities in opinions, attitudes, and behavior among European drivers.

Young drivers worldwide comprise the main sample in statistics concerning deaths and injuries in traffic accidents (Lotan and Toledo 2007; Williams 2003). Numerous studies have shown that parents play a significant role in the formation of driving attitudes and skills in their children. Carpentier and colleagues have explored the relative importance of the family climate for young drivers (Carpentier et al. 2013), using an online questionnaire to investigate a group of young people aged 17-24 who hold a temporary or permanent driving license. The elements of the family environment they examine are related to three sociocognitive determinants – attitudes, locus of control, and peer pressure – in order to establish the extent to which these determinants influence the risky behavior of young drivers. The questionnaire consists of five components that measure socio-demographic data, the family environment concerning road safety,

and partnership as external determinants; attitudes and locus of control as internal determinants; problematic driving; and social desirability. The items on the behavioral risk scale are derived from a number of questions concerning behavior on the road that serve to reveal several types of dangerous driving, one example being “drivers put everyone at risk when they do not observe safe following distance.” The Peer Pressure Scale contains items that measure an individual’s tendency to take into account the influence exercised by their peers. The results show that the climate within the family is a significant predictor of risky driving behavior.

Theories of social knowledge place a significant emphasis upon parents as role models for their children, and their influence over young drivers has come to be highlighted in recent years. Because of their educational responsibility, parents are able through family socialization to influence their children’s behavior while driving. Consequently, the socialization of adolescents has been investigated through the study of various behaviors related to traffic safety. The most widely used assessment method for this purpose, the Family Climate for Road Safety (FCRS), examines values, perceptions, priorities, and family driving behavior in respect to road safety. This multifactor instrument was created upon the basis of several parent-child parenting scales regarding driving (Beck et al. 2005; Hartos et al. 2004) as well as a number of existing tools for examining safety climate (Cox and Cheyne 2000; Glendon and Litherland 2001; Lee 1998; Lee and Harrison 2000; Mearns et al. 2003; Neal and Griffin 2006; Seo et al. 2004; Zohar and Luria 2005). The FCRS questionnaire consists of 54 items in 7 subscales that help reveal the impact of the climate within the family upon road safety – modeling, feedback, communication, monitoring, responsibility for road safety, messages, and restrictions. It addresses the two main mechanisms of direct and indirect parental impact, and is also relevant to Bandura’s social learning theory. Its utilization in a series of studies has proved its reliability and validity (Taubman - Ben-Ari and Katz - Ben-Ari 2013).

The results show that more successful positive parenting models are associated with message clarity and better communication between generations, while positive models weaken as family commitment to road safety declines. Stated otherwise, as communication improves and messages become more clear within the family, the greater is the positive feedback, with good safety practices being more strongly encouraged. Such interconnections between factors indicate that although they all are associated with the impact of the climate within the family upon traffic safety, they are separate entities to some extent, and their multi-dimensionality contributes to a more holistic understanding the contribution of parents to their children learning to drive a vehicle skillfully and safely.

In addition, our study reveals systemic gender differences, whereby women show a more positive relationship with the family climate than men. Positive FCRS factors are also related to such other common family assets as engagement, autonomy, communication, and problem solving. A lack of family interest in road safety is associated with a poor parent-youth relationship as a whole. Young drivers who regard their parents as positive role models are encouraged to drive safely, are capable of clear and easy communication, account for fewer on-road risks, drive less aggressively, and display a greater personal commitment. The findings of the present study are consistent with scholarly publications which reveal that communication problems within the family cause serious anxiety (Beck et al. 2005), and that parents serve as important models for young leaders (Bianchi and Summala 2004; Ferguson et al. 2001; Lahatte and Le Pape 2008; Miller and Taubman - Ben-Ari 2010; Prato et al. 2009; Wilson et al. 2006).

The most commonly used tool for studying driver behavior is the Driving Behavior Questionnaire (DBQ) (Batool 2012), which is a self-assessment tool for investigating behavior during driving. The DBQ contains 58 items divided into two scales – attitudes and behavior – with responses being indicated on a 5-step Likert scale for the attitude test

and a 7-step scale for the behavior section. Example items include “If you are a careful driver, you are allowed to exceed the speed allowed by law”; “Driving without a seat belt does not always increase the risk of crash injury”; and “I welcome rigorous rules and regular checks on vehicle performance.” We have chosen to make use of both the FCRS and the DBQ in the present study because of their universal character and proven validity. Their usefulness in successfully measuring the attitudes and behavior of drivers has been widely recognized in a number of scientific studies.

While a number of measuring instruments have been developed to test driving behavior, the Driver Attitude Questionnaire (DAQ) (Parker et al. 1996), which is based upon the theory of planned behavior, remains the dominant tool available for assessing drivers’ attitudes (Rowland et al. 2010). It comprises a 20-item self-report questionnaire designed to explore attitudes towards various aspects of driving, including driving under the influence of alcohol, non-observance of safe following distance, dangerous overtaking, and speeding (Parker et al. 1996). The validity of the DAQ has been demonstrated in a number of studies (Parker et al. 1996; Conner and Lai 2005; Wishart et al. 2006; Rowland et al. 2010).

Road safety studies have also employed the DAQ in a number of different conditions (Meadows 2002) and in general training programs for drivers (Burgess and Webley 2000). Since its development, this questionnaire has been one of the most widely used tools for research concerning risky driving (Parker et al. 1998; Stradling et al. 1999; Stradling and Meadows 2000; Wills et al. 2006). At the same time, however, all of these researchers emphasize the importance of taking cultural factors into account when applying the tool in different countries and using different languages. Blockey and Hartley remark that an instrument can function differently even in two countries that the same language (Blockey and Hartley 1995).

Social norms and interactions between road users play important roles explaining

the emergence and continuation of high level of deaths and trauma in accidents. Studying the social characteristics of road accidents is fundamental for establishing their underlying causes insofar as observed patterns of social characteristics concerning traffic accidents among different groups of road users can be attributed to the cultural differences between these groups. Hofstede defines culture as a “collective mind programming that distinguishes members of one group or category of people from others” (Hofstede 2001). But although cultural characteristics are difficult to measure, it is nevertheless possible to study the effects of cultural factors upon traffic accidents. The national characteristics of culture are measured primarily by two instruments, namely, Hofstede’s dimensions of culture (Hofstede 2001) and Schwartz’s theory of cultural values (Schwartz 1994, 2006). Schwartz’s theory maintains that the value system at the cultural level may be described by seven universal value categories – conservatism, autonomy (intellectual and affective), hierarchy, egalitarianism, harmony, and mastery. The relationship between these categories reflects the fundamental contradictions that each society must resolve, namely, autonomy vs. conservatism (first bipolar dimension); hierarchy vs. egalitarianism (second bipolar dimension); and harmony vs. mastery (third bipolar dimension).

The first bipolar dimension, conservatism vs. autonomy, indicates the extent to which individuals are either essentially autonomous, or primarily included in internal groups. In a conservative type of culture, individuals are viewed not as autonomous units, but rather as elements of the group to which they belong. The opposing type of cultures are those in which the person is defined as an autonomous, albeit group-related entity. What may be termed values of autonomy, which may relate either to ideas and thoughts (intellectual autonomy), or to feelings and emotions (affective autonomy), are predominant in these societies (Schwartz 1994).

The second bipolar dimension, hierarchy vs. egalitarianism, expresses the ways in which members of a particular society

coordinate their actions. Such values as social power, wealth, authority, and influence, which uphold the legitimacy of the hierarchical organization of the society and its resources, predominate in hierarchical cultures. The opposing type of cultures emphasize common interests and goals, together with the need for individuals to cooperate in order to attain them. The most common idea in this regard is that other people are in principle my equal. This resolution of the problem is based upon the values of egalitarianism (Schwartz and Ros 1995).

The third bipolar dimension, harmony vs. mastery, refers to the relationship between man and his natural and social environment. A number of cultures resolve this issue by highlighting the need to adapt to the world and accept it, thereby emphasizing harmonious interaction with the surrounding environment. The opposing alternative is marked by the need to actively change the world, bring it into line with the human will, and continually control its parameters. The values of independence, success, autonomy, ambition, and fearlessness, which comprise the value category of mastery (Schwartz and Ros 1995), are predominant in such cultures.

Krassimira Baychinska (1996, 1998, 1999, 2000, 2002, 2005, 2006, 2010, 2011) was the first scholar to conduct research concerning the cultural values of Bulgarian society. Baychinska explored the conservative and modernizing tendencies in Bulgaria in 1995 and 2005, employing Schwartz’s methodology and theory, and made predictions concerning their future development. The results of the 1995 survey indicate that Bulgarians place very little importance upon egalitarian values (next to last place in Europe), but a great deal of importance upon the values of hierarchy (first place in Europe). The Bulgarian cultural model thus naturally comes closer to the Eastern European model than to the Western European.

The data provided by Antoaneta Hristova’s recent study confirm the continuing dominance in Bulgaria of values of mastery, which are aimed at changing the natural and social environment – independence, success, au-

tonomy, and ambition (Hristova 2016). This distinguishes Bulgaria from other Eastern European countries today. Egalitarianism, which replaces hierarchical preferences, is in second place. This is surprising result insofar as it reveals that a significant change has occurred in the Bulgarian value structure over the past 10 years. Conservatism is third, followed by intellectual and affective autonomy, which are separated by no significant difference. Harmony followed by hierarchy occupy the last two places in the ranking. For the purposes of the present study, it thus becomes important to examine how social values in relation to the dominant cultural values of mastery, egalitarianism, conservatism, and affective autonomy influence attitudes and behavior on the road.

The aim of the present study is to develop a methodology for assessing the socio-psychological factors that determine risky driving behavior.

TASKS

- 1) Develop scales that measure attitudes towards risky behavior.
- 2) Develop scales regarding attitudes that come from risky behavior.
- 3) Select a methodology that outlines the socio-cultural context of the study.
- 4) Determine the levels of reliability and validity of the scales as well as the internal consistency of the methodology.
- 5) Verify the degree of interdependence between these scales and Carpentier's Social Desirability Scale.

HYPOTHESES

- 1) The more those surveyed place a value upon hierarchical organization and law, the more they develop the attitude of complying with traffic regulations (Gaygisiz 2010).
- 2) People who appreciate a harmonious relationship with the environment are tolerant of drink driving (Carpentier et al. 2013).
- 3) Independence expressed in terms of affective and intellectual autonomy is

more often related to behavior in violation of traffic regulations.

- 4) Some of the attitudes and behavioral scales regarding safe driving will correlate with the social desirability scale. It is likely that socially desirable responses can be acquired in connection with the influence of the environment (family and peers) upon attitudes towards risky behavior on the road.

SAMPLE

Our pilot study included 67 participants who voluntarily completed the self-assessment questionnaire that we developed. The sample consists of 37 men and 30 women between 21 and 71 years of age ($M = 37.4$, $SD = 11.6$), of whom 30% have a secondary education and 70% a higher education. 75% of the persons surveyed come from the city of Sofia, with the remaining 25% coming from Plovdiv, Pleven, Burgas, and other cities. All of the participants have a driving license. 79% of those surveyed drive daily or at least 2-3 times a week and are identified as active drivers, with the remaining 21% driving 2-3 times a month or less. 21% of the sample have registered traffic violations in the past 3 years, and the remaining 79% have reported a violation within the last 3 years. Offenses most often recorded include speeding, improper parking, driving without a seat belt, and drink driving. 13% of the sample have had their driving licenses suspended for a variety of offenses, such as speeding, drink driving, and road accidents. 3% have caused a major traffic accident and 29% have caused a minor accident. 49% of those surveyed have been victims in a traffic accident caused by another driver.

METHODS

The following scales have been adapted and tested for the purposes of the study: attitudes towards problem driving, attitudes towards compliance with traffic regulations, attitudes towards driving after drinking, the influence of family and friends, problematic behavior on the road, route planning, searching for road

information, attitudes towards regulations, and social desirability.

RESULTS

Based on the review of the literature, a methodology was developed to assess the socio-psychological factors that determine risk behavior of the road. It is oriented to two types of measurements – determining attitudes towards road safety and assessing the level of risk behavior of the persons in our sample.

ATTITUDES TOWARDS RISKY BEHAVIOR

Non-Compliance Scale: Attitude toward behavior associated with the acceptability of non-compliance with safe driving rules in a general sense. The scale consists of 4 items (table 1).

The value of Cronbach’s alpha ($\alpha = 0.61$) indicates that the scale possesses good internal consistency. Excluding any of the items in recalculating the coefficient does not improve the reliability of the scale (fig. 1).

TABLE 1
NON-COMPLIANCE SCALE

Item	Variable and Items	M	D
No	Non-Compliance with Regulations (Cronbach’s alpha = 0.61)	6.03	1.83
1.	It is quite acceptable to drive with worn out tires.	1.38	0.58
2.	Waiting time at traffic signals is often too long, so it is quite acceptable to drive through red lights if there is no other traffic.	1.43	0.68
3.	The more other drivers don’t follow the rules, the more I don’t.	1.50	0.65
4.	When I see other people breaking the rules, I feel I should, too.	1.70	0.64

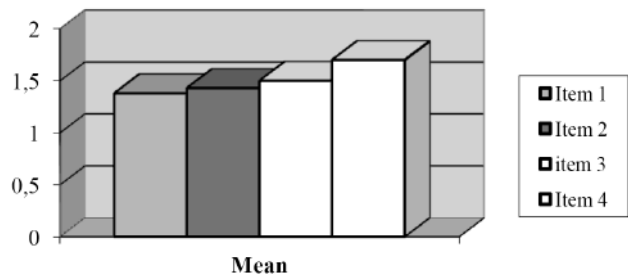


FIGURE 1. MEAN VALUES BY ITEMS OF NON-COMPLIANCE WITH RULES SCALE

The average values on the non-compliance with regulations scale indicate a relative desire to comply with the rules ($M = 6.03$). The highest value ($M = 1.70$), which approaches average on the scale, is that of Item 4 (“When I see other people breaking the rules, I feel I should, too”).

Attitudes towards Problem Driving Scale: Acceptance of behavior that some-

what violates the rules of traffic safety as represented by specific examples. The scale consists of 6 items (4 straight and 2 inverse) (table 2).

The value of Cronbach’s alpha ($\alpha = 0.60$) indicates good internal consistency. Removing any item(s) does not improve the reliability or internal consistency of the scale (fig. 2).

TABLE 2
ATTITUDES TOWARDS PROBLEM DRIVING SCALE

Item	Variable and Items	M	D
Nº	Problem Driving (Cronbach's alpha=0.60)	10.65	2.77
1.	Drivers are not required to use a safety belt over short distances.	1.62	0.87
2.	You can drive safely even if you have exceeded the limit for drinking with one glass of alcohol.	1.48	0.84
3.	If you are a safe driver, it is acceptable to exceed the speed limit.	2.68	0.95
4.	Driving too close to the car in front places all road users at risk.	1.41	0.64
5.	The use of even a small amount of drugs by the driver can be life-threatening to all road users.	1.29	0.63
6.	Using mobile phones for short calls is not dangerous when driving.	2.17	0.85

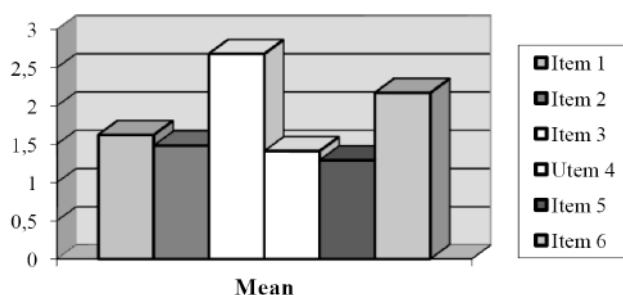


FIGURE 2. MEAN VALUES OF ATTITUDES TOWARDS PROBLEM DRIVING SCALE

The values for Item 3 ($M = 2.68$) ("If you are a safe driver, it is acceptable to exceed the speed limit) and Item 6 ($M = 2.17$) ("Using mobile phones for short calls is not dangerous when driving) are well above the average. The results thus indicate that exceeding the speed limit and using mobile phones for short calls are not regarded as risky behavior.

Drink Driving Scale: Attitudes towards drinking before driving. The scale consists of 6 items (3 straight and 3 inverse) (table 3).

The value of Cronbach's alpha ($\alpha = 0.64$) indicates good internal consistency. Removing any item(s) does not improve the reliability or internal consistency of the scale (fig. 3).

TABLE 3
DRINK DRIVING SCALE

Item	Variable and Items	M	D
Nº	Drink Driving(Cronbach's alpha=0.64)	20.53	2.94
1.	People should be free to judge how much they can safely drink before driving.	3.80	0.54
2.	People I know sometimes drive when they might be over the limit without this being a problem.	3.00	0.92
3.	It is difficult to know how much alcohol you can drink and still be safe on the road.	3.03	1.21
4.	Most drunk drivers cannot correctly judge that they exceed the permissible norm.	3.53	0.72
5.	Drivers should not drink any alcohol before driving.	3.53	0.72
6.	One or two drinks do not increase the risk of traffic accidents.	3.63	0.66

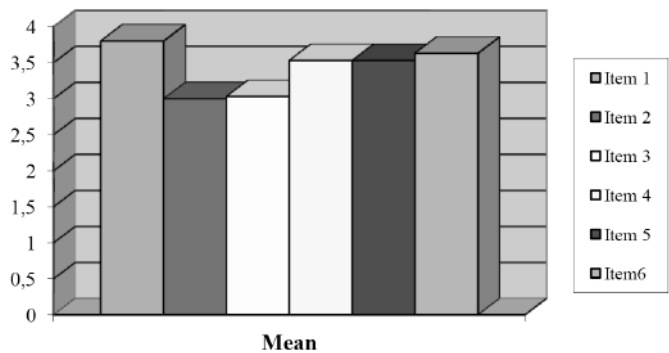


FIGURE 3. MEAN VALUES OF DRINK DRIVING SCALE

The mean values show an increased tolerance to alcohol use before driving. The scale thus expresses the conflict noted in the literature between knowledge and driving practice. On the one hand, drivers assign almost equal values to Items 4 and 5 (“Most drunk drivers cannot correctly judge that they exceed the permissible norm” and “Drivers should not drink any alcohol before driving”). On the other, the very high average values of Item 1 ($M = 3.80$) (“People should be free to judge how much they can safely drink before driv-

ing”) and Item 6 ($M = 3.63$) (“One or two drinks do not increase the risk of traffic accident”) highlight a high tolerance towards using alcohol before driving.

Peer Pressure Scale: *The influence of how one’s friends drive upon one’s own driving behavior. The scale consists of 3 items (table 4).*

The value of Cronbach’s alpha ($\alpha = 0.58$) indicates good reliability and internal consistency. This 3-item scale is thus a good tool for assessing the degree of influence of friends’ risky driving (fig. 4).

TABLE 4
PEER PRESSURE SCALE

Item	Variable and Items	M	D
№	Peer Pressure (Cronbach’s alpha=0.58)	7.72	1.78
1.	My friends regularly use their mobile phones while driving.	2.89	0.71
2.	My friends exceed the speed limit on a regular basis.	2.88	0.76
3.	My friends wouldn’t mind if you had a drink before driving.	1.95	0.93

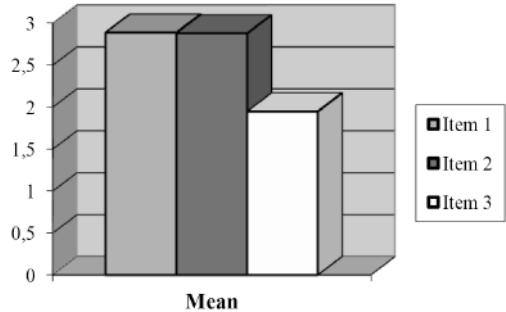


FIGURE 4. MEAN VALUES OF PEER PRESSURE SCALE

The average value of the three items ($M = 7.72$) is marked by very high values for the first two. This indicates that mobile phone use and driving over the speed limit are affected by applied by the examples set by one's friends.

Family Influence on Driving Behavior Scale: The influence of family relations upon driving behavior. It consists of 4 subscales:

Communication Subscale: Measures whether parents explicitly state their personal opinions concerning the importance of road safety outside of the context of driving. The subscale consists of 4 items (table 5).

The value of Cronbach's alpha ($\alpha = 0.80$) indicates high reliability and internal consistency (fig. 5).

TABLE 5
COMMUNICATION SUBSCALE

Item	Variable and Items	M	D
№	Communication (Cronbach's $\alpha=0.80$)	11.06	2.74
1.	My parents talk to me about potential hazards on the road.	3.17	0.65
2.	We talk at home about how to prevent or avoid dangerous situations on the road.	2.55	0.95
3.	We talk freely in my family about different driving situations.	2.62	0.95
4.	We talk openly in my family about mistakes on the road or near accidents.	2.72	0.89

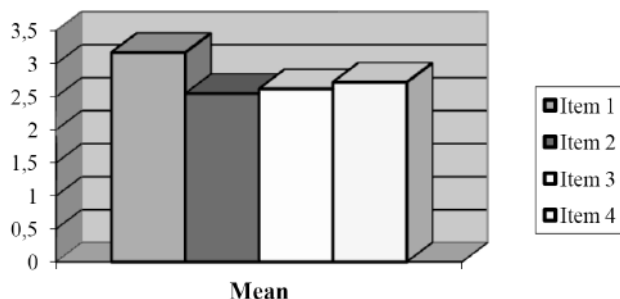


FIGURE 5. MEAN VALUES OF COMMUNICATION SUBSCALE

All average values of the items included in the subscale are above the average for the subscale. This indicates that the family frequently comments on road safety. The high value of Item 1 ($M = 3.17$) ("My parents talk to me about potential hazards on the road") indicates that parents emphasize warning about dangers.

Modelling Subscale: Evaluates the examples parents provide to their children through their own way of driving and respecting traffic regulations. The scale consists of 3 items (2 straight and 1 inverse) (table 6).

The value of Cronbach's alpha ($\alpha = 0.65$) indicates good reliability and internal consistency (fig. 6).

TABLE 6
MODELLING SUBSCALE

Item	Variable and Items	M	D
№	Modelling (Cronbach's $\alpha=0.65$)	9.10	1.92
1.	My parents comply with all traffic regulations, even when they're in a hurry.	3.01	0.85
2.	My parents talk about safe driving, but they don't drive so safely themselves.	2.90	0.90
3.	My parents comply with traffic regulations even if they're tired or stressed.	3.19	0.75

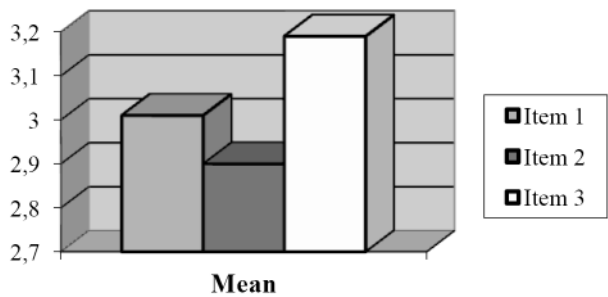


FIGURE 6. MEAN VALUES OF THE MODELLING SUBSCALE

The values of the three items are well above the average for the subscale, which indicates that parents provide positive examples concerning safe driving.

Feedback Subscale: *Relates to the positive comments parents provide about their*

children's driving. The scale consists of 3 items (table 7).

The high value of Cronbach's alpha ($\alpha = 0.78$) indicates that the three items reliably measure parent-child feedback (fig. 7).

TABLE 7
FEEDBACK SUBSCALE

Item	Variable and Items	M	D
№	Feedback (Cronbach's alpha=0.78)	9.52	1.91
1.	My family warn me of possible risks while driving.	3.15	0.75
2.	My family is proud of me when I drive safely.	3.22	0.78
3.	My family takes an interest in how I drive.	3.15	0.75

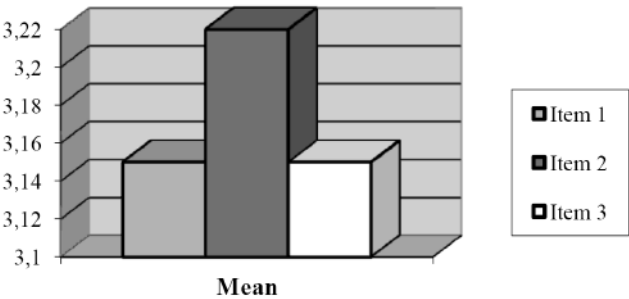


FIGURE 7. MEAN VALUES OF THE FEEDBACK SUBSCALE

The average values for the three items are well above the average for the subscale. This indicates that Bulgarian parents provide positive feedback concerning how their children drive. Item 2 ($M = 3.22$) ("My family is proud of me when I drive safely") has the highest value.

Limits Subscale: *Measures whether the family encourages observing speed limits and supports reducing risky driving. The scale consists of 3 items (table 8).*

The value of Cronbach's alpha ($\alpha = 0.60$) indicates that this subscale possesses good reliability and internal consistency (fig. 8).

TABLE 8
LIMITS SUBSCALE

<i>Item</i>	<i>Variable and Items</i>	M	D
№	Limits (Cronbach's alpha=0.60)	9.60	1.77
1.	My parents are prepared to accept me getting home late because I didn't exceed the speed limit.	3.37	0.74
2.	My parents take every traffic violation very seriously, even when it doesn't result in an accident.	2.82	0.80
3.	My parents make it clear that driving safely is more important than getting somewhere on time.	3.42	0.83

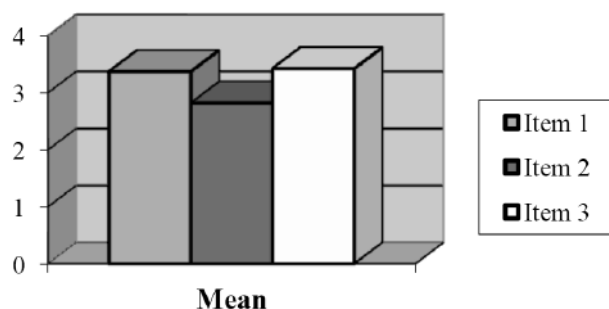


FIGURE 8. MEAN VALUES OF THE LIMITS SUBSCALE

The three items have values above the average for the subscale. The most common practice is to support safe driving rather than expecting children to arrive precisely on time.

Risky Driving

Being above the Regulations Scale: A 6-item scale for assessing the degree of risk in actual driving behavior (table 9).

The value of Cronbach's alpha ($\alpha = 0.67$) indicates good internal consistency (fig. 9).

TABLE 9
BEING ABOVE THE TRAFFIC REGULATIONS SCALE

<i>Item</i>	<i>Variable and Items</i>	M	D
№	Being above the Traffic Regulations (Cronbach's alpha=0.67)	10.98	3.13
1.	How often do you drive your car without checking its mechanical condition?	2.04	1.07
2.	How often do you cross an intersection knowing that the traffic lights have already changed against you?	1.80	0.83
3.	How often do you drive your car using your mobile phone without a hands free?	2.10	0.95
4.	How often do you drive against one-way traffic?	1.74	0.83
5.	How often do you drive at night with inadequate head lights?	1.35	0.57
6.	How often do you park your vehicle in a no parking zone?	1.93	0.79

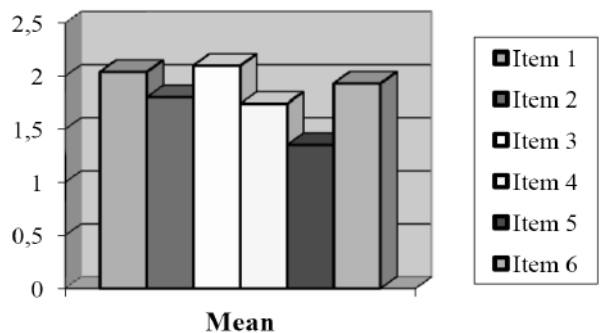


FIGURE 9. MEAN VALUES OF BEING ABOVE THE RULES SCALE

The values for Item 1 ($M = 2.04$) (“How often do you drive your car without checking its mechanical condition?”) and Item 3 ($M = 2.10$) (“How often do you drive your car using your mobile phone without a hands free?”) are above the average for the scale. They are thus the most common types of behavior on this scale.

Defending Your Own Space Scale: Measures the frequency of behaviors in which the

driver defends her own style of driving, which others perceive as neurotic and risky. The scale consists of 4 items (table 10).

Values are reversed for Item 2, with 1) frequently, 2) sometimes, 3) rarely, and 4) never (fig. 10).

The value of Cronbach’s alpha’s for this scale as a whole ($\alpha = 0.25$) is low. We utilized the two criteria of gender and age in analyzing the reason for this. The results indicate that

TABLE 10
THIS IS MY SPACE SCALE

Item	Variable and Items	M	D
Nº	This is my space (Cronbach’s alpha=0.33)	9.20	1.82
1.	How often do you sound your horn to indicate your annoyance at something that’s happening on the road?	2.20	0.94
2.	How often do you stop at a stop sign?	3.58	0.85
3.	How often do you stay in a lane that you know will be closed until the last moment before forcing your way into the other lane?	1.95	0.67
4.	How often do you pull out so far out at an intersection that a driver with the right of way has to stop and let you out?	1.46	0.66

TABLE 10A
GENDER CLARIFICATION OF THE THIS IS MY SPACE SCALE

Sex	Age	Cronbach’s alpha	N of Items
Men	21 to 36 years of age	0.476	4
	37 to 71 years of age	0.016	4
Women	21 to 36 years of age	0.203	4
	37 to 71 years of age	0.276	4

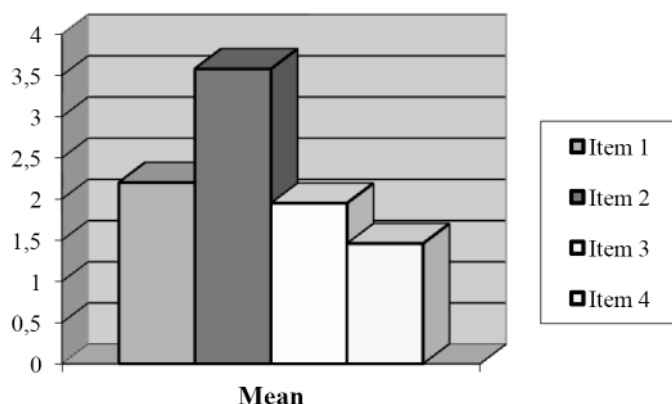


FIGURE 10. MEAN VALUES OF THE THIS IS MY SPACE SCALE

the reliability of the scale is highest among young men between 21 and 36 years of age, with the lowest level being for men between 37 and 63 years of age. There are no large difference for women in respect to these two age groups. The value of Cronbach's alpha's may be associated with the small number of individuals who participated in the study. We thus believe that there are no clear grounds for excluding this scale from the methodology, and that a larger sample should be used to check its reliability.

Disturbing Other Road Users Scale: Measures the frequency of behaviors which the driver regards as marking her own driving style, but which others perceive as neurotic,

aggressive, and risky. The scale consists of 6 items (table 11).

The value of Cronbach's alpha ($\alpha = 0.71$) indicates that the scale possesses very good internal consistency (fig. 11).

All values are below the range of the scale. The value ($M = 1.87$) of Item 2 ("How often do you show open hostility to given behavior on the part of the other users of the road?") indicates that drivers display open hostility to others on the road relatively often. The value ($M = 1.57$) of Item 1 ("How often do you drive so close to the car in front that it would be difficult to stop in an emergency?") indicates that drivers are more likely to not observe safe following distance.

TABLE 11
DISTURBING OTHER ROAD USERS SCALE

Item	Variable and Items	M	D
Nº	Disturbing Other Road Users (Cronbach's alpha=0.71)	10.21	2.88
1.	How often do you drive so close to the car in front of you that it would be difficult to stop in an emergency?	1.57	0.72
2.	How often do you show open hostility to given behavior on the part of other users of the road?	1.87	0.71
3.	How often do you overtake a slow driver on the inside?	1.69	0.84
4.	How often do you speed, blow your horn, or pass to get ahead of female drivers?	1.72	0.76
5.	How often do you become angered by a certain type of driver and indicate your feeling by whatever means you can?	1.64	0.71
6.	How often do you disregard speed limits on neighborhood streets?	1.70	0.72

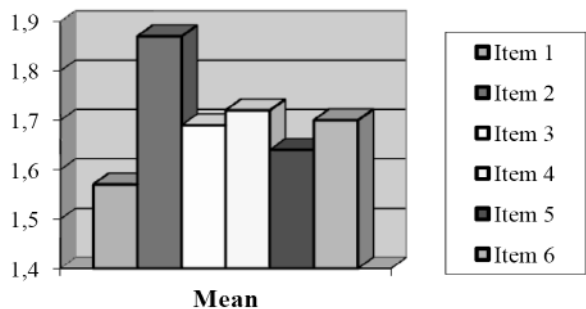


FIGURE 11. MEAN VALUES OF THE DISTURBING OTHER ROAD USERS SCALE

CULTURAL VALUES

The present study has employed Schwartz’s value survey questionnaire, which describes the value system at a cultural level by means of seven universal value categories. These categories are conservatism, autonomy (intellectual and affective), hierarchy, egalitarianism, harmony, and mastery. The relationship between these categories reflects the three fundamental contradictions that each society must resolve: autonomy against conservatism (first bipolar dimension); hierarchy against egalitarianism (second bipolar dimension); harmony against mastery (third bipolar dimension).

Tables 12 through 22 show the significant Pearson correlations between Schwartz’s cultural values and attitudes towards risky behavior on the road.

VALUE CATEGORY: HIERARCHY

Description of the category: Values validating the legality of the hierarchical organization of society and its resources.

Values included in the category: Authority, modesty, influence, social power, wealth.

TABLE 12

CORRELATION OF NON-COMPLIANCE WITH TRAFFIC REGULATIONS WITH THE CULTURAL VALUE OF HIERARCHY

Rule Non-Compliance	Hierarchy
	0.322**
Pearson correlation	
*p <= 0.01	
**p <= 0.05	

The Pearson correlation shows that the more legality and hierarchy are valued, the more that an attitude involving compliance with traffic rules is formed.

VALUE CATEGORY: HARMONY

Description of the category: values highlighting the harmonious interaction with the environment.

Values included in the category: Care for the environment, unity with nature, beauty in the world.

TABLE 13

CORRELATION OF THE ATTITUDE TOWARDS DRINK DRIVING WITH THE CULTURAL VALUE OF HARMONY

	Harmony
Driving after drinking alcohol	0.312*
Pearson correlation	
*p <= 0.01	
**p <= 0.05	

The Pearson correlation indicates that there is a relationship between the value of interacting harmoniously with the environment and driving after drinking.

VALUE CATEGORY: INTELLECTUAL AUTONOMY

Description of the category: Values aimed at preserving the independence of ideas and the right of an individual to follow her own reasoning.

Values included in the category: Creativity, curiosity, tolerance.

The data in Table 14 shows that the value of preserving one's right to follow their own independent way of thinking correlates with driving after drinking. Self-confidence and self-assessment as a control mechanism thus imply risk-taking.

TABLE 14

CORRELATION OF THE ATTITUDE TOWARDS
DRINK DRIVING WITH THE CULTURAL
VALUE OF INTELLECTUAL AUTONOMY

	Intellectual Autonomy
Driving After Drinking Alcohol	0.263*
Pearson correlation *p <= 0.01 **p <= 0.05	

VALUE CATEGORY: CONSERVATISM

Description of the category: Values focusing on preserving the status quo and preventing actions or tendencies that may disrupt group solidarity or traditional order.

Values included in the category: Family and national security, respect for tradition, social order, courtesy, efficiency, piety, devotion, modesty, courtesy, self-discipline *, moderation *, respectfulness (to parents and adults).

The Pearson correlation indicates that people who are more conservative are more family-oriented, as may be expected. This is associated with family attitudes that encourage observing the speed limit.

TABLE 15

CORRELATION OF THE ATTITUDE TOWARDS
LIMITS WITH THE CULTURAL VALUE OF
CONSERVATISM

	Conservatism
Limits	0.368**
Pearson correlation *p <= 0.01 **p <= 0.05	

**VALUE CATEGORY: INTELLECTUAL
AUTONOMY**

Description of the category: Values aimed at preserving the independence of one's ideas and their right to follow their own reasoning.

Values included in the category: Creativity, curiosity, tolerance.

The high correlation between the value of preserving the independence of ideas and accepting the limitations imposed by the family is interesting. One possible interpretation is that people who appreciate intellectual autonomy do so on the basis of that were created within the family environment as norms of behavior. These principles also include traffic rules.

TABLE 16

CORRELATION OF THE ATTITUDE TOWARDS
LIMITS WITH THE CULTURAL VALUE OF
INTELLECTUAL AUTONOMY

	Intellectual autonomy
Limits	0.325**
Pearson correlation *p <= 0.01 **p <= 0.05	

VALUE CATEGORY: EGALITARIANISM

Description of the category: Values that supporting transcending selfish interests for the sake of others.

Values included in the category: Equality, freedom, honesty, loyalty, responsibility, social justice, peace in the world.

There is a high Pearson correlation between family constraints on road safety and accepting the principles of egalitarianism. One possible interpretation of this correlation resides upon the assumption that people with such values are more closely related to norms formed within the family environment.

TABLE 17

CORRELATION OF THE ATTITUDE TOWARDS LIMITS
WITH THE CULTURAL VALUE OF EGALITARIANISM

	Egalitarianism
Limits	0.343**
Pearson correlation *p <= 0.01 **p <= 0.05	

VALUE CATEGORY: MASTERY

Description of the category: Refers to situations in which people value success and advancement through self-validation and proactive questing by changing nature and the social world to show personal interests and / or interests of the group to which they belong.

Values included in the category: independence (self-confidence and personal choice of individual goals and intentions), fearlessness (risk-taking), ambition, hard work, striving for success and competence.

The Pearson correlation indicates that those who recognize the public value of changing the environment in the name of development, improvement, and profit, and are thereby regarded as “masters,” are strongly influenced by the people around them in terms of their driving behavior.

TABLE 18
CORRELATION OF THE ATTITUDE TOWARDS
PEER PRESSURE WITH THE CULTURAL
VALUE OF MASTERY

	Mastery
Peer pressure	0.308*
Pearson correlation *p <= 0.01 **p <= 0.05	

*VALUE CATEGORY: AFFECTIVE
AUTONOMY*

Description of the category: Values confirming individual independence in pursuing a positive affective experience.

Values included in the category: enjoying life, varied pleasures in life.

The correlation between the desire to pursue your own positive emotions and the behavior of not obeying the rules of the road is logical in that these two characteristics explain each other. The same applies to behavioral non-observance of traffic regulations and value of intellectual autonomy, that is, if one values their own opinion highly, they do not strictly obey traffic regulations.

TABLE 19
CORRELATION OF BEING ABOVE THE
RULES WITH THE CULTURAL VALUE OF
AFFECTIVE AUTONOMY

	Affective autonomy
Being above the Rules	0.260*
Pearson correlation *p <= 0.01 **p <= 0.05	

*VALUE CATEGORY: INTELLECTUAL
AUTONOMY*

Description of the category: Values aimed at preserving the independence of ideas and the right of an individual to follow her own reasoning.

Values included in the category: Creativity, curiosity, tolerance.

TABLE 22
CORRELATION OF BEING ABOVE THE
RULES WITH THE CULTURAL VALUE OF
INTELLECTUAL AUTONOMY

	Intellectual Autonomy
Being above the Rules	0.281*
Pearson correlation *p <= 0.01 **p <= 0.05	

A scale specifically designed to measure social desirability during driving was developed in connection with research task 5 above. The scale consists of 5 items (table 23).

The value of Cronbach's alpha ($\alpha = 0.65$) indicates that the scale possesses good reliability and internal consistency. In addition, the data indicate that there is a correlation between social desirability and some of the scales that have been developed to measure risk behavior on the road, as stated in Hypothesis 4 (table 24).

The values obtained for the correlations between social desirability and the scales developed for measuring risky behavior on the road demonstrate Hypothesis 4 above.

TABLE 23
SOCIAL DESIRABILITY SCALE

<i>Item</i>	<i>Variable and Items</i>	M	SD
Nº	Compliance with Regulations(Cronbach's alpha=0.65)	14.70	2.65
1.	I keep calm in congestion.	2.78	0.86
2.	I observe the traffic regulations even if is unlikely to be offended.	3.12	0.84
3.	I am a conscientious driver in traffic.	3.15	0.80
4.	I don't drive a vehicle at a speed exceeding the legal limit.	2.28	0.89
5.	I maintain proper following distance.	3.37	0.72

TABLE 24
SIGNIFICANT CORRELATION COEFFICIENTS BETWEEN SOCIAL DESIRABILITY AND
ATTITUDES TOWARDS RISKY BEHAVIOR ON THE ROAD

	Driving after Drinking	Communication	Limits	Peer Pressure
Social desirability	0.643**	0.477**	0.552**	0.340**

$p < 0.001$, $p < 0.01$

CONCLUSION

Problem areas were defined on the basis of the literature that are related to the influence of socio-psychological factors upon risky behavior on the road. In addition, nine scales were developed that describe attitudes and behaviors related to risky driving behavior. The Schwartz questionnaire was also utilized to determine the relations between cultural values and the influence of the culture of the environment upon driving behavior. A 4-step Likert scale was used for this purpose, with the middle degree ("do not know" or "neither") dropped. A scale modified in this manner entails a forced choice in defining one's attitudes and behavior.

The method we developed and employed in the pilot possesses good design validity and reliability. The response data produced by the various individual items present a picture that describes problematic behavior on the road. This includes driving after alcohol use, speeding, using a mobile phone while driving, and following the bad examples of friends.

The results obtained from employing Schwartz's culture categories confirmed our hypothesis that they are interrelated with the scales we developed. Our data also confirm the arguments and claims in the literature that socio-cultural factors exert an important influence upon patterns of behavior on the road (Gaudry and Lassarre 2000).

All three major bipolar contradictions that society must resolve are reflected in attitudes and behavior concerning driving. More frequent risk behaviors in driving are primarily associated with such values as (intellectual and affective) autonomy, egalitarianism, and mastery. These results have a direct relevance to future traffic safety policies and accident prevention.

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A MULTIDIMENSIONAL METHOD FOR ASSESSING PERSONALITY CHARACTERISTICS RELATED TO RISKY DRIVING BEHAVIOR

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Abstract. *A study of contemporary theory and research in the field of transport psychology reveals that certain personality characteristics have a direct link with risky behavior on the road. The purpose of the present discussion is to construct a complex method for assessing precisely which personality characteristics are important for the process of safe driving. Our analysis of a variety of theoretical and empirical data has indicated that seven personality traits influence driving, namely, emotional stability, anxiety, locus of control, anger, aggression, risk taking, and sensation seeking. We have explored these traits through a self-report personality questionnaire consisting of seven major scales that we constructed for this purpose. This article presents the procedures used for constructing and selecting the items for each of the scales in question. The results of a pilot study ($N = 67$), the main purpose of which was to verify the reliability of this instrument, are also presented. The results we provide for the study as a whole ($N = 1440$) may serve as a basis for establishing appropriate training programs for drivers who are systematic violators. This is the real work of prevention, which may lead to effectively reducing the number of road traffic accidents.*

Keywords: risky driving behavior; personality characteristics; assessment method.

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Contribution:

Zornitsa Totkova – Abstract, Introduction, Theoretical background, Methodology, Results & Discussion, Data processing and graphics, Results & Discussion, Conclusions, References.

Rositsa Racheva – Theoretical background, Methodology, Results & Discussion, Conclusions.

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1. INTRODUCTION

Modern studies in the field of transport psychology in Bulgaria lag behind those in other countries, both inside and outside the European Union, by a considerable extent. For example, in-depth studies of the link between drivers' psychological profiles and risky driving behavior are not available in Bulgarian scholarly literature. The need for research in the field has become more tangible in recent years due to increased public intolerance towards aggressive driving as well as the very high number of those injured and killed in automobile accidents in the country. Moreover, road safety is one of the main priorities of the European Union, and various strategies and policies have been implemented to raise the level of road safety across Europe. Although this have led to an improvement of the situation in recent years², the numbers of injuries and deaths on the road remains very high (Hristiova and Krumova 2019).

Numerous studies in the field of transport psychology worldwide have demonstrated that certain personality characteristics are directly related to the driving process, including risky driving behavior. Detailed analysis shows that the personality characteristics most commonly associated with such behavior are emotional stability, anxiety, aggression, anger, locus of control, sensation seeking, and risk taking (Totkova and Racheva 2018). These personality characteristics have been found to correlate significantly with both risky driving behavior and a higher probability of involvement in road accidents.

In respect to emotional stability, researchers who have investigated the relationship between the Big Five Factor Model of the personality and risky driving behavior agree that it comprises the dimension most directly associated with the ability to regulate one's emotions, which has a direct influence upon the behavior of road users. The results of such studies indicate that people with low levels of emotional stability exhibit both anxious

and aggressive driving styles more often than others (Taubman-Ben-Ari and Yehiel 2012; Dahlen and White 2006; Dahlen et al. 2012). In addition, they are more often involved in traffic accidents (Smith and Kirkham 2011; Brandau et al. 2011), including fatal accidents (Lajunen 2001 and Parker 2001).

Anxiety is related to risky driving behavior because of the impact it exerts upon cognitive functioning. There is evidence of a non-linear relationship between anxiety and risky driving behavior insofar as average levels of anxiety do not affect drivers' behavior, while very low or high levels have an adverse affect upon it and lead to risk behavior (Olstedal and Rundmo 2006). Low levels of anxiety are associated with very low safety concerns, while high levels interfere with cognitive factors (Totkova and Racheva 2018).

Aggression is also a key personality characteristic related to the driving process, being associated with a number of dangerous types of activity. There is a direct link, for instance, between aggression as a personality trait and anger and aggressive reactions while driving (Britt and Garrity 2006). Certain researchers have demonstrated that drivers with high levels of aggression are associated with increased numbers of traffic violations and accidents, not least because they tend to underestimate the degree of danger inherent in their actions (Hennessey and Wiesensthal 2002; King and Parker 2008; Maxwell et al. 2005).

Other researchers who have investigated the relationship between anger and aggression have found that the manifestation of anger as a personality characteristic often passes into a feeling of anger (Spielberger 1988; Arnett et al. 1997; Deffenbacher et al. 1994), and that anger strongly correlates with increased levels of aggression and risky driving behavior (Deffenbacher et al. 2002). In this regard, anger as manifested in the driving process is associated with a predisposition to experience anger more often and more intensely than others do.

² For relevant documents, see https://ec.europa.eu/transport/road_safety/.

Locus of control is a personality characteristic that has also been linked to risky driving. An external locus of control has been shown to be associated with increased involvement in automobile accidents (Lajunen and Summala 1995), driving under the influence of alcohol (Cavaiola and DeSordi 2000), driving errors (Breckenridge 1991), and an intention to commit violations (Yagil 2001). An internal locus of control is associated with the use of a seat belt (Hoyt 1973), cautious driving behavior (Montag and Comrey 1987), greater vigilance (Lajunen and Summala 1995), and quicker braking when a potential traffic danger is perceived (Rudin-Brown and Parker 2004).

Sensation seeking is a personality trait that is a strong predictor of risky driving. It is directly related to traffic violations and aggressive driving behavior (Schwebel et al. 2006), and to a greater probability of involvement in accidents (Hilakivi et al. 1989; Jonah 1997; West and Hall 1997). High levels of sensation seeking lead to an underestimation of the potential risks of accidents, a negative attitude towards road safety, and to more frequent involvements in risk situations while driving (Ulleberg and Rundmo 2003).

Researchers associate risky driving behavior that may well be dangerous for the driver and/or other road users with a propensity to take risks (Dula and Geller 2003), noting that risk behaviors are directly associated with perceiving whether a given level of risk is high or low (Horwarth 1988; Brown and Groeger 1988). The accepted idea is that drivers who perceive the risk of an accident as low drive more recklessly than those who perceive the risk of an accident in the same situation as a high and consequently drive more cautiously (Harre 2000). Studies have demonstrated that drivers who have been involved in a road accident are more likely to take risks while driving (Iversen 2014).

An analysis of the literature indicates that drivers who are prone to risky behavior on the road, commit traffic violations, and display the highest probability of being involved in traffic incidents are character-

ized by high levels of anger, aggression, risk taking, impulsivity, social irresponsibility, and sensation seeking (Arnett et al. 1997; Donovan and Jessor 1985; Underwood et al. 1999; Dahlen et al. 2012; Dahlen and White 2006). Other researchers have demonstrated that anxiety, locus of control, and aggressive driving behavior are also significant characteristics in this regard (Arnett et al. 1997, Ulleberg 2002; Jonah 1997; Jonah et al. 2001; Rosenbloom 2003; Arthur and Doverspike 1992; Iversen and Rundmo 2002; Panek et al. 1978; Signori and Brown 1974; Riccio-Howe 1991; James and Nahl 2000; Dula and Ballard 2003). Insofar as these characteristics are those most often associated with risky driving and correlate significantly with a higher probability of being involved in road accidents, creating a multidimensional method for measuring such traits will be fruitful for further research concerning traffic safety. The results of these studies can help support efforts to develop scientifically-based programs aimed at both prevention and intervention that are targeted to traffic offenders and risky drivers.

The conclusions drawn after our literature review underline the importance of personality characteristics in respect to the driving process. Although a number of methods currently exist for assessing the personality traits described above, an instrument designed specifically for the purpose of evaluating the roles they play regarding driving behavior has not been available. The aim of the two studies presented below is to construct a complex method for assessing the personality characteristics significant to the driving process, with the support of in-depth theoretical and empirical analyses.

2. STUDY 1

The main purpose of our pilot study was to identify potential problem areas and weaknesses concerning the construction of the method, the instructions for the participants, and the evaluation scales in order to make any necessary changes prior to implementing the tool thus developed in the full study.

2.1. METHOD

2.1.1. CONSTRUCTION OF THE METHOD

The procedure for constructing the method we have used included a review of multiple existing questionnaires and scales for assessing the personality characteristics described above, and the various groups of items we selected have been derived from a number of different instruments not written in Bulgarian. For the purposes of correct translations into Bulgarian, as well as the development of a method suitable for the Bulgarian sample, the following procedures were employed:

1. Right and reverse translations in formulating the items.
2. Expert evaluation (three psychologists and one road safety expert).
3. Evaluation consistency (approximately 90%).

The majority of items on the Bulgarian questionnaire were compared to the original versions and edited to eliminate any inconsistencies in order to achieve the highest possible level of correspondence between the original items and the translations. A smaller number of items were significantly modified to match the cultural specificities of the country. The method constructed also included items that were not elements of existing instruments, but were added in order to logically complete the method constructed for assessing the personality characteristics of drivers. The continuation of this section below describes how the scales for each of the characteristics to be investigated were constructed.

The *Emotional Stability Scale* was constructed after a thorough analysis of the following instruments widely used to assess this characteristic: the Big-Five Factor Markers, Factor IV Emotional Stability (Goldberg 1992); the Big Five Aspect Scales, Neuroticism, Combined Volatility and Withdrawal (DeYoung et al. 2007); the Temperament and Character Inventory, HA1: Neuroticism (TCI) (Cloninger et al. 1993); the Revised NEO Personality Inventory, 5 NEO Domains, Neuroticism (NEO PI-R) (Costa and McCrae 1992); the 16 Personality Factors Questionnaire, Emotional Stability (Factor C) (16PF) (Cattell

1956); the Characteristics of the Preliminary IPIP Scales, 7 Factors (Saucier 1997); and others. The total of 21 items were distributed in two subscales – Emotional Stability, which measures the capacity for emotional regulation and affection, and Neuroticism, which evaluates negative psychological experiences, unrealistic beliefs, and poorly expressed coping strategies. Sample items included “I easily overcome my failures,” “My mood changes frequently,” and “I panic easily.”

The *Anxiety Scale* was constructed after a thorough analysis of the following instruments designed to assess this characteristic: the Computerized Adaptive Assessment of Personality Disorder (CAT-PD), Anxiousness Scale (Simms et al. 2011); the 16 Personality Factors Questionnaire, Anxiety Factor O: Apprehension (16PF) (Cattell 1956); the HEXACO Personality Inventory, Anxiety – Factor E (Lee and Ashton 2004); the Behavioral Activation and Inhibition Systems, BIS/BAS Scale (Carver and White 1994); and the Revised NEO Personality Inventory, N1: Anxiety (NEO PI-R) (Costa and McCrae 1992). A total of 13 items were selected. This scale was intended to measure emotional tension and excitability, which are expressed in a strong and unpleasant feeling of distress in response to a threatening situation and are often accompanied by various physiological changes (sweating, trembling, shortness of breath, accelerated heartbeat, etc.). Sample items included “I’m not worried about things that have already happened” and “Most of the time I’m nervous or tense.”

The *Anger Scale* was constructed on the basis of the Deffenbacher Driving Anger Scale (Deffenbacher et al. 1994). The items describe actual road situations and measure the degree of anger that one experiences while driving. The total of 22 items selected were distributed in five subscales – Illegal Driving (measures the degree of anger when other drivers violate traffic rules), Discourtesy (measures the degree of anger when others engage in discourteous driving behavior), Obstructions (measures the degree of anger when there are various road obstructions), Slow Driving (measures the degree of anger

when other drive slowly), and Police Presence (measures the degree of anger when there is a police presence on the road). Sample items included “A driver is slow when parking and holds up traffic” and “The driver behind you sounds the horn for no apparent reason.”

The *Sensation Seeking Scale* was constructed after a thorough analysis of the following instruments: the Arnett Inventory of Sensation Seeking – AISS (Arnett 1994); the Sensation Seeking Scale – SSS (Zuckerman 1971); the Sensation Seeking Scale – SSS (Zuckerman et al. 1978); the Scales for Risk Propensity, Environmentalism and Variety Seeking (Schüssler and Axhausen 2011); and the Brief Sensation Seeking Scale – BSSS (Hoyle et al. 2002). Items were derived from Zuckerman’s Sensation Seeking Scale (1971), with the addition of items related to the driving process. The total of 18 items were divided into 3 subscales: Thrill and Adventure Seeking (measures the desire to participate in sports and activities that involve speed and danger); Disinhibition (measures the desire for continual social and sexual contacts); and Experience Seeking (measures the desire for experiences that diverge from one’s usual way of life and produce new feelings and sensations). Sample Items included “I would like to drive a car on a race track,” “I want to experience new and exciting things,” “I like betting for money.”

The *Risk Taking Scale* was constructed after a thorough analysis of existing instruments designed to assess this characteristic. These include the Risk-Taking Index – RTI (Nicholson et al. 2005); the Domain-Specific Risk-Taking (DOSPERT) Scale (Weber, Blais, and Betz 2002); the Domain-Specific Risk-Taking (DOSPERT) Scale for Adult Populations (Blais and Weber 2006); the Scales for Risk Propensity, Environmentalism and Variety Seeking (Schüssler and Axhausen 2011); and the Risk Orientation Questionnaire – ROQ (Rohrmann 1997). This scale, which was designed to assess the extent to which a person is prone to take risks on the road, was constructed on the basis of items derived from the Domain-Specific Risk-Taking (DOSPERT) Scale and the Domain-Specific Risk-Taking

(DOSPERT) Scale for Adult Populations. Of the 17 total items, 12 were straight and 5 reversed. Sample items included “I rarely use a seat belt” and “I avoid streets that are usually busy.”

The *Locus of Control Scale* was constructed after a thorough analysis of the following instruments: the Traffic Locus of Control Scale – T-LOC (Özkan and Lajunen 2005); the Nowicki-Strickland Locus of Control Scales – N-SLOC (Nowicki and Strickland 1973); the Reid-Ware Three-Factor Internal-External Scale (Reid and Ware 1974); the Levenson IPC Scale (Levenson 1973); the Rotter Internal-External Locus of Control Scale (Rotter 1966); the James Internal-External Locus of Control Scale (James 1963); and the Traffic Locus of Control Scale – Romanian Version (Măirean et al. 2017). The scale was constructed on the basis of items derived from the Traffic Locus of Control Scale and the Traffic Locus of Control Scale – Romanian Version, primarily because these instruments measure the locus of control within the context of the driving process.

This scale measures an individual’s beliefs concerning the source of an action and control over that action. The total of 17 items were divided into 2 subscales – External Locus of Control and Internal Locus of Control. External locus of control indicates that a person transfers responsibility for their actions to others, luck, chance, and so forth, while internal locus of control indicates the individual takes responsibility for their actions and seeks to avoid any negative results. Sample items included “A traffic accident may occur because of an error I have made,” “Road accidents are caused by the irresponsibility of other drivers,” “I hope that luck is on my side in a risky situation on the road,” and “If roads were of better quality, there would be fewer traffic accidents.”

The *Aggressive Driving Scale* was constructed after a thorough analysis of the following instruments designed for assessing this characteristic: the Aggressive Driving Behavior Questionnaire – ADBQ (Brill et al. 2009); the Aggressive Driving Scale – ADS (Krahé and Fenske 2002; Krahé 2005); the

Aggressive Driving Behavior Scale (Houston et al. 2003); the Driving Behavior Survey – DBS (Clapp et al. 2011); Aggressive Driver Behaviors (Miles and Johnson 2003); Aggressive Driving Attitudes (Miles and Johnson 2003); and the Type-A Behavior Pattern (Miles and Johnson 2003). Items were derived from the Driving Behavior Survey (DBS), the Aggressive Driving Behavior Scale, the Driver Anger Expression Inventory, Aggressive Driver Behaviors, Aggressive Driving Attitudes, and the Type-A Behavior Pattern. The total of 29 items were distributed in 6 subscales – Conflict Behavior (measures the propensity for conflict behavior on the road, most often expressed in intolerance and disregard for other drivers); Verbal Aggression (measures the propensity for verbal insults to other road users); Physical Aggression (measures the propensity for physical abuse with other traffic participants); Vehicle Aggression (measures instrumental aggression, where the vehicle is used as a means to threaten and disturb other drivers); Aggressive Driving Behavior (measures aggressive behavior on the road, expressed in intentional breaking of traffic rules, non-compliance with other drivers, verbal insults, etc.); and Type-A Behavior (measures behavioral patterns in driving, as expressed in impatience, intolerance, and irritability). Sample items include “I hit the wheel when I get nervous,” “Even if I don’t have the right of way at an intersection, I’ll pass if the other driver is going too slow,” “There are too many traffic rules,” and “I become furious when the car in front of me is moving too slowly.”

2.1.2. SAMPLE

67 drivers volunteered to participate in the pilot study and completed the questionnaire we had constructed. The sample consisted of 37 men and 30 women ranging from 21 to 71 years of age ($M=37.4$, $SD=11.6$). 30% of the participants had completed their secondary education and 70% possessed a university degree. 75% of the participants were from the capital, Sofia, with the remaining 25% coming from various other areas in Bulgaria (Plovdiv, Pleven, Burgas, etc.). All of

the participants possessed a driver’s license, 79% drove every day or at least 2-3 times per week, and 21% drove 2-3 times per month or rarely. 21% of the participants had committed registered traffic violations within in the past 3 years, while the remaining 79% reported no violations in the same period of time. The most frequently recorded violations included speeding, improper parking, driving without a seat belt, and drink driving. 13% of the sample had had their license suspended for a variety of offenses, including improper parking, speeding, driving after alcohol use, and involvement in road accidents. 3% had caused a serious road accident, while 29% had caused a minor accident. 49% of those surveyed had been victims of an accident caused by another driver.

2.1.3. PROCEDURE AND MEASURES

The participants completed a self-assessment questionnaire for the purpose of measuring 7 key personality characteristics – emotional stability, anxiety, aggression, anger, locus of control, sensation seeking, and risk taking. The questionnaire consisted of a total of 153 items (including various demographical and driving background questions), with the responses indicated on a 4-step Likert scale ranging from 1) “completely disagree” to 4) “completely agree.” The possibility for a neutral response (“neither agree nor disagree”) was intentionally excluded.

2.2. RESULTS AND DISCUSSION

Results concerning the reliability of each scale are presented below. The items for each scale are represented only numerically due to confidentiality requirements.

The first personality characteristic measured was emotional stability, and the scale consisted of two subscales – Emotional Stability (13 items) and Neuroticism (6 items). Results for the reliability of the *Emotional Stability Scale*, as well as the consistency of the items, are presented in Table 1.

The value of Cronbach’s alpha for the Emotional Stability subscale ($\alpha = 0.855$) and the Neuroticism subscale ($\alpha = 0.649$) are both good. When an items is removed from each

TABLE 1
EMOTIONAL STABILITY SCALE: ITEM-TOTAL CORRELATIONS

Emotional Stability Scale				
<i>Emotional Stability Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
ES 1	3.01	0.70	0.592	0.840
ES 2	2.45	0.83	0.212	0.865
ES 3	3.35	0.65	0.323	0.855
ES 4	2.50	0.79	0.340	0.856
ES 5 (-)	2.90	0.83	0.713	0.830
ES 6 (-)	3.09	0.77	0.719	0.831
ES 7 (-)	2.96	0.73	0.559	0.842
ES 8 (-)	2.96	0.68	0.813	0.826
ES 9 (-)	2.98	0.76	0.697	0.832
ES 10 (-)	3.29	0.66	0.501	0.845
ES 11 (-)	3.32	0.69	0.295	0.857
ES 12 (-)	2.92	0.82	0.581	0.840
ES 13 (-)	3.28	0.60	0.393	0.851
Cronbach's Alpha				0.855
<i>Neuroticism Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
N 1 (-)	2.70	0.87	0.197	0.673
N 2 (-)	2.35	0.92	0.266	0.652
N 3 (-)	2.09	0.69	0.386	0.606
N 4 (-)	2.25	0.82	0.456	0.577
N 5 (-)	2.20	0.79	0.380	0.606
N 6 (-)	2.33	0.86	0.641	0.498
Cronbach's Alpha				0.649

of the two subscales, the values of internal consistency rise ($\alpha = 0.865$ and $\alpha = 0.673$ respectively). These results indicate the internal consistency of the items in the two subscales is very good and the reliability of the scale as a whole is high.

The second personality characteristic measured was anxiety, with the scale consisting of 13 items. The reliability results for the *Anxiety Scale* and item consistency are presented in Table 2.

The results indicate very good internal consistency of the items in the anxiety scale ($\alpha = 0.855$). The consistency increases when one of the items is removed ($\alpha = 0.865$).

The third personality characteristic measured was locus of control, and the scale consisted of two subscales, Internal Locus of Control (7 items) and External Locus of Control (15 items). The reliability results for the *Locus of Control Scale* and item consistency are presented in Table 3.

TABLE 2
ANXIETY SCALE – ITEM-TOTAL CORRELATIONS

Anxiety Scale				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Anx 1	3.01	0.70	0.592	0.840
Anx 2	2.45	0.83	0.212	0.865
Anx 3	3.35	0.65	0.323	0.855
Anx 4	2.50	0.79	0.340	0.856
Anx 5 (-)	2.90	0.83	0.713	0.830
Anx 6 (-)	3.09	0.77	0.719	0.831
Anx 7 (-)	2.96	0.73	0.559	0.842
Anx 8 (-)	2.96	0.68	0.813	0.826
Anx 9 (-)	2.98	0.76	0.697	0.832
Anx 10 (-)	3.29	0.65	0.501	0.845
Anx 11(-)	3.32	0.69	0.295	0.857
Anx 12 (-)	2.92	0.82	0.581	0.840
Anx 13 (-)	3.28	0.60	0.393	0.851
Cronbach's Alpha				0.855

TABLE 3
LOCUS OF CONTROL SCALE – ITEM-TOTAL CORRELATIONS

Locus of Control				
<i>Internal Locus Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
InLoC 1	2.73	1.14	0.475	0.780
InLoC 2	2.49	1.23	0.671	0.736
InLoC 3	2.79	0.99	0.715	0.731
InLoC 4	2.55	1.07	0.704	0.730
InLoC 5	3.16	0.80	0.446	0.782
InLoC 6	3.23	0.81	0.163	0.821
InLoC 7	3.53	0.87	0.501	0.772
Cronbach's Alpha				0.794

TABLE 3

<i>External Locus Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
ExLoC 1	3.63	0.51	0.403	0.562
ExLoC 2	3.03	0.86	0.389	0.548
ExLoC 3	2.83	0.80	0.444	0.540
ExLoC 4	3.47	0.73	0.128	0.596
ExLoC 5	3.10	0.81	0.211	0.583
ExLoC 6	2.70	0.89	0.363	0.553
ExLoC 7	2.95	0.77	0.498	0.531
ExLoC 8	3.07	0.73	0.520	0.530
ExLoC 9	1.73	0.77	0.033	0.612
ExLoC 10	1.89	0.92	0.239	0.578
ExLoC 11	1.9231	0.83	0.209	0.583
ExLoC 12	1.8615	0.84	0.165	0.592
ExLoC 13	2.0000	0.68	-0.129	0.631
ExLoC 14	3.5231	0.73	0.014	0.613
ExLoC 15	3.4154	0.76	0.026	0.613
Cronbach's Alpha				0.596

The analysis reveals very good internal consistency for the items in the Internal Locus of Control subscale ($\alpha = 0.794$), with the value of Cronbach's alpha increasing when one of the items is deleted ($\alpha = 0.821$). The consistency of the items in the External Locus of Control subscale is lower ($\alpha = 0.596$), but the value of Cronbach's alpha increases when one of the items is removed ($\alpha = 0.631$). Some of the items were subsequently edited to increase their weights and achieve better results. The results generally indicate good internal consistency for the items in each subscale and high reliability for the scale as a whole.

The next personality characteristic measured was sensation seeking. The *Sensation Seeking Scale* consisted of three subscales: Thrill and Adventure Seeking (9 items), Experience (5 items), and Disinhibition (4 items).

The results for the reliability of the subscales are presented in Table 4.

The results of the pilot study indicate very good internal consistency for the items in two of the subscales. The value of Cronbach's alpha for the Thrill and Adventure subscale is $\alpha = 0.827$, increasing to $\alpha = 0.838$ when one item is deleted, while the value of Cronbach's alpha for the Disinhibition subscale is $\alpha = 0.646$, with no possibility to increase the value of the coefficient. The consistency of the items in the Experience subscale is too low ($\alpha = 0.416$) to achieve good results. The results indicate a high level of reliability for the scale as a whole and good internal consistency for the items.

Risk taking was the fifth personality characteristic measured. The scale consisted of 17 items, with the results being presented in Table 5.

TABLE 4
SENSATION SEEKING SCALE – ITEM-TOTAL CORRELATIONS

Sensation Seeking Scale				
<i>Thrill and Adventure Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Thr/Adv 1	1.77	0.93	0.582	0.805
Thr/Adv 2	2.13	1.24	0.591	0.803
Thr/Adv 3	2.13	1.16	0.425	0.823
Thr/Adv 4	1.91	0.96	0.370	0.827
Thr/Adv 5	2.44	0.97	0.251	0.838
Thr/Adv 6	2.08	1.15	0.610	0.800
Thr/Adv 7	2.47	0.95	0.578	0.805
Thr/Adv 8	2.31	1.13	0.639	0.797
Thr/Adv 9	2.53	1.09	0.756	0.783
Cronbach's Alpha				0.827
<i>Experience Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Exp 1	2.70	1.14	0.286	0.298
Exp 2	1.92	1.14	0.148	0.428
Exp 3	1.20	0.47	0.161	0.405
Exp 4	2.62	1.05	0.338	0.253
Exp 5	3.34	0.76	0.169	0.393
Cronbach's Alpha				0.416
<i>Disinhibition Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item0-Total Correlation	Cronbach's Alpha If Item Deleted
Dis 1	1.98	0.96	0.348	0.631
Dis 2	1.55	0.87	0.327	0.640
Dis 3	2.68	0.94	0.510	0.519
Dis 4	2.22	1.07	0.532	0.495
Cronbach's Alpha				0.646

TABLE 5
RISK TAKING SCALE – ITEM-TOTAL CORRELATIONS

Risk Taking Scale				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
RT 1	1.46	0.82	0.504	0.739
RT 2	1.43	0.88	0.285	0.757
RT 3	2.10	1.02	0.519	0.735
RT 4	2.01	1.08	0.268	0.762
RT 5	3.06	0.69	0.124	0.767
RT 6	1.32	0.50	0.475	0.748
RT 7	1.62	0.72	0.433	0.746
RT 8	1.93	0.79	0.492	0.740
RT 9	1.74	0.92	0.197	0.766
RT 10	1.39	0.69	0.435	0.746
RT 11	2.32	0.82	0.342	0.752
RT 12	1.94	1.01	0.488	0.738
RT 13 (-)	1.89	0.85	0.436	0.744
RT 14 (-)	1.87	0.65	0.091	0.769
RT 15 (-)	1.82	0.81	0.391	0.748
RT 16 (-)	1.55	0.65	0.249	0.759
RT 17 (-)	1.81	0.82	0.248	0.760
Cronbach's Alpha				0.763

The value of Cronbach's alpha is very good ($\alpha = 0.763$) for the Risk Taking scale, and the internal consistency increases only slightly when one item is removed ($\alpha = 0.769$). The results indicate very good internal consistency of the items and high reliability for the scale as a whole.

Aggressive Driving was the next personality characteristic measured. The scale consisted of 6 subscales: Conflict Behavior (5 items), Verbal Aggression (5 items), Physical Aggression (3 items), Vehicle Aggression (5 items), Aggressive Driving Behavior (7 items), and Type-A Behavior (4 items) Table 6.

The value of Cronbach's alpha for the Verbal Aggression subscale ($\alpha = 0.829$) is very good, and the values for the Aggressive Driving Behavior and Vehicle Aggression subscales ($\alpha = 0.630$ and $\alpha = 0.611$ respectively)

are good. However, the values for the Conflict Behavior, Type-A Behavior, and Physical Aggression subscales ($\alpha = 0.574$, $\alpha = 0.448$, and $\alpha = 0.430$ respectively) are not sufficiently high, with the latter two being particularly low. The value of Cronbach's alpha was increased in all subscales after an item was removed. Certain items throughout the scale were edited in order to increase their weight and achieve better results. Overall, the results indicate good internal consistency and reliability for items on the scale.

Anger was the final personality characteristic to be measured. The scale consisted of 5 subscales: Illegal Driving (5 items), Discourtesy (8 items), Obstruction (4 items), Slow Driving (5 items) and Police Presence (3 items). The reliability results are presented in Table 7.

TABLE 6
AGGRESSIVE DRIVING SCALE – ITEM-TOTAL CORRELATIONS

Aggressive Driving				
<i>Conflict Behavior Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
ConBeh 1	1.58	0.87	0.351	0.508
ConBeh 2	2.22	0.93	0.403	0.475
ConBeh 3	1.55	0.61	0.304	0.540
ConBeh 4	2.19	0.97	0.494	0.411
ConBeh 5	1.97	0.88	0.146	0.620
Cronbach's Alpha				0.574
<i>Verbal Aggression Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
VerAg 1	2.74	0.99	0.687	0.779
VerAg 2	2.58	1.16	0.516	0.830
VerAg 3	2.74	1.00	0.716	0.770
VerAg 4	2.10	1.07	0.604	0.801
VerAg 5	2.65	1.06	0.630	0.793
Cronbach's Alpha				0.829
<i>Physical Aggression Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
PhyAg 1	1.80	1.00	0.254	0.352
PhyAg 2	1.85	1.01	0.164	0.535
PhyAg 3	1.34	0.66	0.429	0.139
Cronbach's Alpha				0.430
<i>Vehicle Aggression Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
VehAg 1	1.83	0.96	0.509	0.471
VehAg 2	2.01	0.86	0.479	0.497
VehAg 3	2.80	0.89	0.319	0.581
VehAg 4	1.62	0.88	0.168	0.653
VehAg 5	1.67	0.80	0.378	0.552
Cronbach's Alpha				0.611

TABLE 6

<i>Aggressive Driving Behavior Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
AggDrBeh 1	2.82	1.12	0.353	0.590
AggDrBeh 2	2.25	1.06	0.428	0.564
AggDrBeh 3	2.40	1.08	0.517	0.530
AggDrBeh 4	2.64	0.98	0.455	0.558
AggDrBeh 5	2.11	1.08	0.299	0.608
AggDrBeh 6	1.58	0.80	0.210	0.629
AggDrBeh 7	2.82	1.12	0.124	0.653
Cronbach's Alpha				0.630
<i>Type-A Behavior Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
TABeh 1	1.86	0.95	0.174	0.469
TABeh 2	2.26	0.96	0.320	0.303
TABeh 3	1.85	0.80	0.431	0.199
TABeh 4	1.70	0.60	0.114	0.483
			Cronbach's Alpha	0.448

TABLE 7
ANGER SCALE – ITEM-TOTAL CORRELATIONS

Anger Scale				
<i>Illegal Driving Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
IIIDr 1	2.82	0.95	0.373	0.450
IIIDr 2	2.66	0.97	0.262	0.519
IIIDr 3	3.13	0.85	0.129	0.582
IIIDr 4	2.71	0.96	0.331	0.475
IIIDr 5	2.50	0.92	0.459	0.396
Cronbach's Alpha				0.546

TABLE 7

<i>Discourtesy Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Disc 1	3.11	0.80	0.438	0.834
Disc 2	3.16	0.97	0.640	0.810
Disc 3	2.82	1.01	0.625	0.812
Disc 4	2.68	0.98	0.525	0.825
Disc 5	2.26	1.03	0.631	0.811
Disc 6	2.70	0.88	0.624	0.813
Disc 7	2.20	1.03	0.624	0.812
Disc 8	2.73	0.96	0.440	0.835
Cronbach's Alpha				0.838
<i>Obstructions Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Obstr 1	2.14	0.92	0.469	0.646
Obstr 2	3.35	0.81	0.479	0.641
Obstr 3	2.80	0.98	0.468	0.650
Obstr 4	1.70	0.85	0.532	0.608
Cronbach's Alpha				0.700
<i>Slow driving Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
SIDr 1	2.68	0.97	0.612	0.772
SIDr 2	1.65	0.78	0.626	0.771
SIDr 3	1.85	0.90	0.680	0.751
SIDr 4	1.67	0.92	0.493	0.808
SIDr 5	2.47	0.92	0.606	0.774
Cronbach's Alpha				0.812
<i>Police Presence Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
PolPr 1	2.44	0.92	0.352	0.154
PolPr 2	1.35	0.75	0.231	0.374
PolPr 3	1.89	1.33	0.221	0.466
Cronbach's Alpha				0.610

The results indicate very good internal consistency for four of the subscales – Obstructions ($\alpha = 0.700$), Discourtesy ($\alpha = 0.838$), Slow Driving ($\alpha = 0.812$), and Police Presence ($\alpha = 0.610$). There was no possibility to increase the level of consistency of these subscales by deleting items. The item consistency for the Illegal Driving subscale was good ($\alpha = 0.546$), but better results were needed. The Police Presence subscale also had a good value for Cronbach's alpha ($\alpha = 0.610$), but the weight of the items was too low. As a result, we edited various items for these two subscales and added new ones. The results reveal good internal consistency for the items in the subscales and good reliability for the scale as a whole.

2.3. CONCLUSION

The results of the pilot study indicated good and very good values for Cronbach's alpha for most of the subscales, although values for some of the items in certain subscales were not sufficiently high. This can be explained, on the one hand, by the small number of items on these subscales and, on the other, by the small number of people surveyed. For these reasons, all of the scales and subscales were revised for the actual study. Some subscales were removed, others were combined, certain items were significantly edited, and new items were developed.

3. STUDY 2

The main purpose of this study was to test the revised method with a large number of participants in order to obtain better information concerning the psychometric characteristics of the scales.

3.1. METHOD

3.1.1. REVISION OF THE METHOD CONSTRUCTED

The multidimensional method we constructed for assessing drivers' personality characteristics was significantly modified upon the basis of the results obtained in the pilot study. The revised method is a self-assessment instrument that now comprises a total of 75 items, rather than the initial 153, distributed in 7

scales and 5 subscales for the purpose of measuring seven general personality characteristics. The majority of the subscales initially created were removed after the pilot study, the aim being to develop a more consistent and reliable methodology for assessing the personality characteristics related to risky driving behavior that was as short as possible. Shortcomings were also found in certain of the assessment scales. For example, the Risk Taking Scale is important to the researcher in respect to acquiring information concerning the frequency of risky behavior on the road rather than for evaluating a particular individual's tendency to undertake such behavior. This was one reason for why the questionnaire was divided into 3 sections in accordance with the rating scales used for the various personality characteristics being studied.

3.1.2. SAMPLE

The sample, which includes 1440 participants from 11 cities in Bulgaria, is representative of the country's population. It consists of six 6 different groups of 240 people each:

1. Drivers of medium-sized and large vehicles.
2. Drivers of buses and minibuses.
3. Taxicab drivers.
4. Drivers whose licenses were suspended because of penalty points for various offences.
5. Drivers whose licenses were suspended because of drink driving.
6. Drivers with no traffic violations for the last three years.

The drivers of medium and large-sized vehicles were surveyed at transport and shipping companies. The bus drivers and taxi drivers were surveyed at companies authorized for such services. The suspended drivers were surveyed at the offices of various driving schools and laboratories for assessing psychological aptitude. Drivers with no registered traffic offenses for the last three years were surveyed at home.

The distribution of participants by cities and defined groups is presented in Table 8 below.

TABLE 8
DISTRIBUTION BY GROUPS AND CITIES

Groups City	Drivers of Medium-Sized Vehicles	Drivers of Large Vehicles	Taxicab Drivers	Revoked License–Penalty Points	Revoked License–Drinking and Driving	Drivers with No Violations for 3 Years	Total
Sofia	60	60	60	60	60	60	360
Varna	36	36	36	36	36	36	216
Plovdiv	18	18	18	18	18	18	108
Pleven	36	36	36	36	36	36	216
St. Zagora	18	18	18	18	18	18	108
Yambol	12	12	12	12	12	12	72
Kyustendil	12	12	12	12	12	12	72
Kula	6	6	6	6	6	6	36
Kardjali	18	18	18	18	18	18	108
Targovishte	12	12	12	12	12	12	72
Dobrich	12	12	12	12	12	12	72
All	240	240	240	240	240	240	1440

TABLE 9
DISTRIBUTION BY GROUPS AND AGE

Groups Age	Drivers of Medium Sized Vehicles	Drivers of Large Sized vehicles	Taxicab Drivers	Revoked License–Penalty Point	Revoked License–Drinking and Driving	Drivers with No Violations for 3 Years	All
Up to 25	40	40	40	40	40	40	240
26-35	40	40	40	40	40	40	240
36-45	40	40	40	40	40	40	240
46-55	40	40	40	40	40	40	240
56-65	40	40	40	40	40	40	240
Over 66	40	40	40	40	40	40	240
All	240	240	240	240	240	240	1440

The participants were between 18 and 81 years of age, with an average age of 45.54 (SD=15.58). They were divided into 6 different age groups: under 25, between 26-35, 36-45, 46-55, and 56-65, and over 66. Each age group consisted of 240 participants who were equally distributed (40 people) among the groups indicated in Table 8.

The distribution by age and groups is presented in Table 9.

The sample was not evenly distributed by sex in that it included 1264 men (87.8%) and only 176 women (12.2%). This was fully expected in light of the fact that driving professionally is a predominantly male profession in Bulgaria.

3.1.3. PROCEDURES

The participants completed a self-assessment questionnaire consisting of 75 items aimed at measuring 7 key personality characteristics – emotional stability, anxiety, aggression, anger, locus of control, sensation seeking, and risk taking. The first section includes the scales for assessing emotional stability, anxiety, locus of control, and sensation seeking. It utilizes a 4-step Likert scale, where 1) is “completely disagree,” 2) “disagree,” 3 “agree,” and 4 “completely agree.” The second part includes the scales for assessing aggressive driving behavior and risk taking. It utilizes a 4-step Likert scale, where 1) is “never,” 2) “rarely,” 3) “often,” and 4) “always.” The third section consists of the anger scale, which evaluates the degree of anger that occurs in certain situations on the road. It utilizes a 4-step Likert scale, where 1) is “It would not make me angry,” 2) “It would make me a little angry,” 3) “It would make me more angry,” and 4) “It would make me very angry.” The assessment is carried out in sequence, with the participants being instructed concerning how they should note their responses before filling in each section of the questionnaire.

Participants also provided information concerning certain demographic characteristics (gender, age, city, education, etc.) as well as their driving experience, traffic violations, road accidents, and so forth.

3.2. RESULTS AND DISCUSSION

The results concerning the reliability and validity of the method are presented in Tables 10-27 below and the accompanying discussion. The tables include the values for Cronbach’s alpha, for the Kaiser-Meyer-Olkin Measure of Sampling Adequacy, for Bartlett’s test of sphericity, and for the item factor analyses for each of the scales. The items on each scale are presented in numerical terms only because of confidentiality requirements.

EMOTIONAL STABILITY SCALE

This scale now consists of 6 items after being revised subsequent to the pilot study. The assessment utilized a 4-step Likert scale, where 1) is “completely disagree,” 2) “disagree,” 3) “agree,” and 4) “completely agree.” Since the items are inverted, the score should be calculated as 1=4, 2=3, 3=2, and 4=1.

Cronbach’s alpha was used to verify the reliability of the scale. The mean values, standard deviation, and coefficients for the internal consistency of the scale are presented in Table 10.

The value of Cronbach’s alpha ($\alpha=0.773$) indicates that there is a high level of internal consistency concerning the items on the scale, and that there is a high degree of reliability as well. The value of Cronbach’s alpha does not change after an item is removed from the scale.

TABLE 10
INTERNAL ITEM CONSISTENCY OF THE EMOTIONAL STABILITY SCALE

Items in scale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach’s Alpha If Item Deleted
ES1	1.9014	0.76403	0.586	0.723
ES2	1.8417	0.72285	0.545	0.734
ES3	1.8104	0.76186	0.492	0.746
ES4	2.0236	0.82322	0.556	0.730
ES5	1.9750	0.79483	0.516	0.741
ES6	2.0049	0.78951	0.423	0.764
Cronbach’s Alpha				0.773

In order to verify the construct validity of the scale for the sample, we conducted a validating factor analysis of the 6 items, with the data being analysed using the main component method. Rotation was not applied because there are no subscales. The results are presented in Table 11 below.

Bartlett's test of sphericity is statistically significant ($p < 0.001$), and the measure of sample adequacy is 0.794. The method employed for measuring emotional stability thus possesses a high level of validity and is constructively valid for the sample studied.

The results of the factor analyses are presented in Table 12.

A single factor structure is obtained when employing the analyses of the main components without predetermining the number of the factors. This result defines a one-factor structure for the scale, with all items falling precisely into one factor. The total dispersion explained is 47.17%, and the intrinsic significance is 2.83. All items from the scale have high factor weights, ranging from 0.587 to 0.744. These results show very good consistency between the scale and the construct

definition, which confirms the validity of the scale constructed.

The results thus indicate that the scale for measuring emotional stability possesses high levels of reliability and validity.

LOCUS OF CONTROL SCALE

The Locus of Control Scale consists of 15 items divided into 2 subscales – Internal Locus of Control (7 items) and External Locus of Control (8 items). The assessment utilized a 4-step Likert scale, where 1) is “completely disagree,” 2) “disagree,” 3) “agree,” and 4) “completely agree.”

Cronbach's alpha was used to verify the reliability of the scale. The mean values, standard deviation, and coefficients for the internal consistency of the two subscales are presented in Table 13.

The values of Cronbach's alpha ($\alpha=0.800$ for the internal locus of control subscale and $\alpha=0.776$ for the external locus of control subscale) indicate that there is a very good level of internal consistency concerning the items on the scale, and that the reliability of the scale is very high. The values of Cronbach's

TABLE 11
KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.794
Bartlett's Test of Sphericity	Approx. Chi-Square	2136.364
	df	15
	Sig.	0.000

TABLE 12
FACTOR ANALYSIS OF THE EMOTIONAL STABILITY SCALE

Component Matrix	Factor
	1
ES1	0.744
ES2	0.712
ES3	0.656
ES4	0.724
ES5	0.687
ES6	0.587

TABLE 13
INTERNAL ITEM CONSISTENCY OF THE INTERNAL AND EXTERNAL LOCUS OF CONTROL SUBSCALES

<i>Internal Locus of Control Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
InLoC 1	3.0771	0.90725	0.339	0.806
InLoC 2	2.8181	0.93140	0.486	0.782
InLoC 3	2.8674	0.94522	0.684	0.745
InLoC 4	2.7549	1.00536	0.577	0.765
InLoC 5	2.7090	0.94574	0.641	0.753
InLoC 6	2.7660	0.86236	0.560	0.769
InLoC 7	3.0132	1.11243	0.458	0.790
Cronbach's Alpha				0.800
<i>External Locus of Control Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
ExLoC 1	3.3780	0.74790	0.332	0.774
ExLoC 2	2.5379	0.96160	0.511	0.747
ExLoC 3	2.3815	0.96947	0.456	0.757
ExLoC 4	2.2974	0.99816	0.526	0.744
ExLoC 5	2.9326	0.85307	0.558	0.739
ExLoC 6	3.4051	0.79059	0.490	0.751
ExLoC 7	3.4378	0.77162	0.473	0.754
ExLoC 8	3.2543	0.89307	0.486	0.751
Cronbach's Alpha				0.776

TABLE 14
KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.832
Bartlett's Test of Sphericity	Approx. Chi-Square	6220.285
	df	105
	Sig.	0.000

alpha values do not change after an item is removed from the subscales.

An analysis of the main components was conducted to demonstrate the construct validity of the scale. The results are presented in Table 14.

Bartlett's test of sphericity is statistically significant ($p < 0.001$), and the measure of the sampling adequacy is 0.832. The method em-

ployed to measure the locus of control is thus constructively valid for the sample studied.

A factor analysis was utilized to demonstrate the validity of the scale, and a three-factor structure was obtained when analysing the main components without a predetermined number of factors. Since the third factor has only three statements with higher weights than the other two factors, the analysis had to

be replicated with two predetermined factors and the implementation of an orthogonal Varimax rotation. This type of rotation was chosen because by definition there is no expectation

of a correlation between the two factors. The results of the factor analyses are presented in Table 15.

TABLE 15

FACTOR ANALYSIS OF THE LOCUS OF CONTROL SCALE

Rotate Matrix	Factors	
	1	2
InLoC 1	0.491	
InLoC 2	0.613	
InLoC 3	0.801	
InLoC 4	0.704	
InLoC 5	0.760	
InLoC 6	0.680	
InLoC 7	0.596	
ExLoC 1		0.681
ExLoC 2		0.611
ExLoC 3		0.682
ExLoC 4		0.429
ExLoC 5		0.709
ExLoC 6		0.619
ExLoC 7		0.600
ExLoC 8		0.624

The results positively define a two-factor structure scale, and the items on the scale fall precisely into one or the other of the two subscales. All items on the scale have high factor weights ranging between 0.429 and 0.801, and the two factors explain a total of 44.03% of the variation. The results of the factor analyses indicate that there is a very good consistency between the subscales and the construct definition, which confirms the validity of the scale constructed.

The results thus indicate that the scale for measuring locus of control possesses high levels of reliability and validity.

SENSATION SEEKING SCALE

The Sensation Seeking Scale consists of 10 items. The assessment utilized a 4-step Likert scale, where 1) is “completely disagree,” 2 “disagree,” 3 “agree,” and 4 “completely agree.”

Cronbach’s alpha was used to verify the reliability of the scale. The mean values, standard deviation, and coefficients of internal consistency in the two subscales are presented in Table 16.

TABLE 16

INTERNAL ITEM CONSISTENCY OF THE SENSATION SEEKING SCALE

Items in scale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach’s Alpha If Item Deleted
SS1	2.2905	1.13258	0.582	0.866
SS2	2.2203	1.01695	0.659	0.860
SS3	2.2404	1.13510	0.713	0.855
SS4	2.0069	1.11879	0.656	0.860
SS5	2.5142	1.01019	0.679	0.859
SS6	2.7019	1.08316	0.551	0.868
SS7	2.9333	1.00886	0.597	0.865
SS8	2.7846	1.07417	0.499	0.872
SS9	2.3725	1.01599	0.610	0.864
SS10	1.9361	0.97754	0.452	0.875
Cronbach’s Alpha				0.876

The value of Cronbach's alpha ($\alpha = 0.876$) indicates that there is a high level of internal consistency concerning the items on the scale, and the value of Cronbach's alpha does not change after an item is removed from the scale. The scale thus possesses a high degree of reliability.

A validating factor analysis of the 10 items on this scale was conducted in order to verify the construct validity for the sample. The data were analysed using the main component method, and rotation was not applied because there is only one scale. The results are presented in Table 17 below.

TABLE 17
KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.920
Bartlett's Test of Sphericity	Approx. Chi-Square	5390.557
	df	45
	Sig.	0.000

Bartlett's test of sphericity is statistically significant ($p < 0.001$), and the measure of the sample adequacy is very high (0.920). We may thus say that the method employed to measure sensation seeking has a high level of validity and is constructively valid for the sample studied.

A single factor structure is obtained when analyzing the main components without pre-determining the number of factors. The results of the obtained factor analysis are presented in Table 18.

The results define a one-factor structure for the scale, with all items falling precisely into one factor. The total explained dispersion is 47.80%, the intrinsic significance is 4.77, and all items from the scale have high factor weights ranging between 0.547 and 0.789. These results show very good consistency between the scale and the construct definition, which confirms the validity of the constructed scale.

TABLE 18
FACTOR ANALYSIS OF THE SENSATION SEEKING SCALE

Component Matrix	Factor
	1
SS1	0.674
SS2	0.744
SS3	0.789
SS4	0.739
SS5	0.762
SS6	0.642
SS7	0.687
SS8	0.591
SS9	0.699
SS10	0.547

The results thus indicate that the scale for measuring sensation seeking possesses high levels of reliability and validity.

RISK TAKING SCALE

The Risk Taking Scale consists of 10 items. The assessment utilized a 4-step Likert scale, where 1) is "never," 2) "rarely," 3) "often," and 4) "always."

Cronbach's alpha was used to verify the reliability of the scale. The mean values, standard deviation, and coefficients for internal consistency of the subscale are presented in Table 19.

The value of Cronbach's alpha ($\alpha = 0.719$) indicates that there is a high level of internal consistency concerning the items on the scale, and its value does not change after an item is removed from the scale. The scale thus possesses a high degree of reliability.

A validating factor analysis of the 10 items on the scale was conducted in order to verify its construct validity. The data were analysed using the main component method, and rotation was not applied because there is only one scale. The results are presented in the table below Table 20.

TABLE 19
INTERNAL ITEM CONSISTENCY OF THE RISK TAKING SCALE

Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
RS1	2.4461	0.98160	0.289	0.710
RS2	2.5552	1.02043	0.290	0.710
RS3	2.5240	1.07083	0.398	0.695
RS4	1.5309	0.95532	0.531	0.668
RS5	2.3836	0.88813	0.555	0.662
RS6	1.2960	0.57648	0.501	0.674
RS7	2.2099	0.77182	0.356	0.702
RS8	2.4461	0.98160	0.321	0.707
RS9	2.5552	1.02043	0.284	0.711
RS10	2.5240	1.07083	0.228	0.719
Cronbach's Alpha				0.719

TABLE 20
KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.739
Bartlett's Test of Sphericity	Approx. Chi-Square	2918.282
	df	45
	Sig.	0.000

TABLE 21
FACTOR ANALYSIS OF THE RISK TAKING SCALE

Component Matrix	Factor
	1
RS1	0.429
RS2	0.412
RS3	0.534
RS4	0.699
RS5	0.719
RS6	0.675
RS7	0.512
RS8	0.468
RS9	0.408
RS10	0.360

Bartlett's test of sphericity is statistically significant ($p < 0.001$) and the measure of sample adequacy is 0.739. These results indicate that the method employed to measure risk taking possesses a high level of validity and is constructively valid for the sample studied.

A three-factor structure was obtained when analyzing the main components without predetermining the number of the factors. However, since many of items have very close weights in more than one factor, a one-factor solution was employed when applying both a rotated and a non-rotated matrix, which is reflected in the percentage of the variance that is explained. The results from the obtained factor analyses are presented in Table 21.

The results define a one-factor structure for the scale, with all items falling precisely into one factor. The total explained dispersion is 28.78%, and the intrinsic significance is 4.77. All items on the scale have acceptable factor weights that range between 0.360 and 0.719. These results show very good consistency between the scale and the construct definition, which confirms the scale validity.

The results thus indicate that the scale for measuring risk taking possesses high levels of reliability and validity.

AGGRESSIVE DRIVING SCALE

The Aggressive Driving Scale consists of 18 items distributed in three subscales – Physical Aggression (6 items), Instrumental Aggression (6 items), and Verbal Aggression (6 items). The assessment utilized a 4-step Likert scale, where 1) is “never,” 2) “rarely,” 3) “often,” and 4) “always.”

Cronbach’s alpha was used to verify the reliability of the scale. The mean values, standard deviation, and coefficients for the internal consistency of the three subscales are presented in Table 22.

The values of Cronbach’s alpha ($\alpha = 0.837$ for the Physical Aggression subscale, $\alpha = 0.852$ for the Instrumental Aggression subscale, and

TABLE 22
INTERNAL ITEM CONSISTENCY OF THE AGGRESSIVE DRIVING SCALE

<i>Physical Aggression Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach’s Alpha If Item Deleted
PhyAggr1	1.2335	0.54908	0.638	0.807
PhyAggr2	1.2113	0.55049	0.659	0.803
PhyAggr3	1.2808	0.64518	0.663	0.800
PhyAggr4	1.2224	0.53581	0.658	0.803
PhyAggr5	1.4329	0.69834	0.474	0.845
PhyAggr6	1.2655	0.57690	0.633	0.807
Cronbach’s Alpha				0.837
<i>Instrumental Aggression Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach’s Alpha If Item Deleted
InstrAggr1	1.5424	0.71586	0.686	0.821
InstrAggr2	1.6181	0.75115	0.626	0.830
InstrAggr3	1.7639	0.75013	0.545	0.844
InstrAggr4	1.7375	0.81285	0.665	0.822
InstrAggr5	2.0299	0.88211	0.650	0.826
InstrAggr6	1.9306	0.92041	0.670	0.822
Cronbach’s Alpha				0.852
<i>Verbal Aggression Subscale</i>				
Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach’s Alpha If Item Deleted
VerAggr1	1.6095	0.77536	0.595	0.820
VerAggr2	1.7199	0.79556	0.626	0.814
VerAggr3	1.7311	0.77734	0.680	0.804
VerAggr4	1.7338	0.81325	0.708	0.798
VerAggr5	1.6678	0.80299	0.594	0.821
VerAggr6	2.1821	0.91362	0.532	0.836
Cronbach’s Alpha				0.842

$\alpha = 0.842$ for the Verbal Aggression subscale) indicate that there is a very good level of internal consistency concerning the items on the scale. In addition, the value of Cronbach's alpha does not change after an item is removed from the scale. The scale thus possesses a high degree of reliability.

A validating factor analysis was carried out in order to verify the construct validity of the scale for the sample. The results are presented in Table 23 below.

TABLE 23
KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.918
Bartlett's Test of Sphericity	Approx. Chi-Square	12809.409
	df	153
	Sig.	0.000

Bartlett's test of sphericity is statistically significant ($p < 0.001$), and the value of sample adequacy is very high (0.918). These results indicate that the method utilized to measure sensation seeking has high level of validity and is constructively valid for the sample studied.

The main component method was used to process the factor analysis data, with a pre-determined number of three factors. A short-range Promax rotation was employed because of the hypothesis that there is a correlation between factors. The results are presented in Table 24 below.

The total dispersion thus explained is 60.37%. The first factor (Instrumental Aggression) explains 39.54%, the second (Physical Aggression) 14.65%, and the third (Verbal Aggression) 6.19% of the total dispersion. The intrinsic significance is 7.11 for the first factor, 2.63 for the second, and 1.11 for the third. A clear delineation of the three-factor structure of the scale is evident when analyzing the Pattern Matrix. All items of the scale have high factor weights that range between 0.439 and 0.759. These results indicate very

TABLE 24
FACTOR ANALYSIS OF THE AGGRESSIVE DRIVING SCALE

Component matrix	Factors		
	1	2	3
PhyAggr1		0.712	
PhyAggr2	0.497	0.531	
PhyAggr3	0.513	0.563	
PhyAggr4	0.494	0.619	
PhyAggr5	0.439	0.669	
PhyAggr6	0.452	0.663	
InstrAggr1	0.759		
InstrAggr2	0.712		
InstrAggr3	0.636		
InstrAggr4	0.696		-0.359
InstrAggr5	0.709		
InstrAggr6	0.651		-0.410
VerAggr1			0.743
VerAggr2	0.452		0.599
VerAggr3			0.755
VerAggr4		-0.393	0.668
VerAggr5	0.581		0.591
VerAggr6		-0.460	0.533

good consistency between the scale and the construct definition, which confirms the validity of the scale.

The results thus indicate that the scale for measuring aggressive driving possesses high levels of reliability and validity.

ANGER SCALE

The Anger scale consists of 10 items. The assessment utilized a 4-step Likert scale, where 1) is "I don't get angry at all," 2) "I seldom get angry," 3) "I sometimes get angry," and 4) "I get angry a lot."

Cronbach's alpha was used to verify the reliability of the scale. The mean values, standard deviation, and coefficients of internal consistency are presented in Table 25.

TABLE 25
INTERNAL ITEM CONSISTENCY OF THE ANGER SCALE

Items in Subscale	Mean	Std. Deviation	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Ang1	2.3285	1.00369	0.531	0.856
Ang2	2.1757	0.99287	0.681	0.842
Ang3	2.3694	0.96910	0.633	0.847
Ang4	2.5000	1.05116	0.592	0.851
Ang5	2.4556	0.90522	0.627	0.848
Ang6	2.4535	0.86748	0.462	0.860
Ang7	2.6785	0.83368	0.514	0.856
Ang8	1.9632	0.81211	0.484	0.859
Ang9	2.0090	0.85862	0.641	0.847
Ang10	2.4444	0.86374	0.608	0.849
Cronbach's Alpha				0.865

The value of Cronbach's alpha ($\alpha = 0.865$) indicates that there is a very good level of internal consistency concerning the items on the scale. In addition, the values of Cronbach's alpha do not change after an item is removed from the scale. As a result, the scale possesses a high level of reliability.

A validating factor analysis was conducting in order to verify the construct validity of the scale for the sample. The data were analysed using the main component method, and rotation was not applied because there is only one scale. The results are presented in the table below.

TABLE 26
KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.877
Bartlett's Test of Sphericity	Approx. Chi-Square	5281.784
	df	45
	Sig.	0.000

Bartlett's test of sphericity is statistically significant ($p < 0.001$), and the measure of sample adequacy is 0.877.

Without predetermining the number of factors, a two-factor structure is obtained in the preliminary analysis when employing both a rotated and non-rotated matrix. Insofar as the second factor includes only two items that have higher factor weights than the first factor, the decision was taken to construct only a one-factor structure. The results of the factor analysis are presented in Table 27 below.

TABLE 27
FACTOR ANALYSIS OF THE ANGER SCALE

Anger Scale	Factor
	1
Ang1	0.621
Ang2	0.772
Ang3	0.730
Ang4	0.689
Ang5	0.712
Ang6	0.550
Ang7	0.611
Ang8	0.588
Ang9	0.735
Ang10	0.698

The results define the scale as having one-factor structure, with all items falling precisely into one factor. The total dispersion explained is 45.46%, and the intrinsic significance is 4.67. All items on the scale have acceptable factor weights that range between 0.550 and 0.772. These results indicate that there is very good consistency between the scale and the construct definition, which confirms the validity of the scale constructed.

The results thus indicate that the scale for measuring anger possesses high levels of reliability and validity.

4. CONCLUSION

The theoretical and empirical analysis that we have presented here identified seven personal characteristics related to risky driving behavior and investigated the possibility of developing a multicomponent method for measuring them. The results of both a pilot study and an actual study were presented in connection with the process of constructing and validating the method we constructed. Seven scales were designed in order to examine the personal characteristics in question – Emotional Stability, Anxiety, Locus of Control, Sensation Seeking, Risk Taking, Aggressive Driving Behavior, and Anger.

The results of the pilot study displayed good and very good values of Cronbach's alpha for almost all scales, but the values for certain other scales were not adequate. This required substantial modification of elements of the method. In respect to the results of the actual study, the values of Cronbach's alpha, of the KMO and Bartlett's test of sphericity, and of the factor analyses confirmed the validity of the method constructed and of its constituent scales and subscales.

The successful construction of a multidimensional method for assessing personality characteristics related to risky driving behavior provides a solid foundation for studying the behavior of Bulgarian drivers. This will make possible thorough and in-depth research in the field of transport psychology, thereby providing a scientific perspective concerning the growing problem of road safety.

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VALIDITY AND RELIABILITY OF METHODS FOR ASSESSING COGNITIVE FUNCTIONS IN DRIVERS

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Abstract. *An analysis of theoretical and empirical research has identified attention, memory, visual-spatial, executive functions as cognitive characteristics directly related to one's fitness for driving. This article presents and evaluates the psychometric features of methods with proven effectiveness in clinical practice that have been modified and employed for measuring these functions in order to assess drivers. The sample consists of 134 individuals who were split equally into experimental and control groups comprising patients with cognitive disturbances and members of the general population respectively. The results indicate significant and high levels of validity and reliability of the methods we have constructed, with participants from the control group performing significantly better than the experimental group on tasks aimed at evaluating the cognitive functions noted above. Moreover, the results indicate that all subgroups of the experimental group – those marked by neurological disorders, psychiatric disorders, alcohol addiction, or drug addiction – perform worse than members of the control group at tasks related to the cognitive abilities we studied. The reliability of the methods is examined by means of the test-retest technique, and the results of the correlational analyses demonstrate significant and strong connections between how the participants performed on both the test and the retest. The data thus provide sound evidence that the methods we have constructed successfully identify people with disturbances in attention, memory, visuospatial, and executive functions, and that they may consequently be useful in future evaluations of people's fitness to drive. These data can also provide a basis for developing programs aimed at prevention and intervention in the field of traffic psychology.*

Keywords: cognitive characteristics; drivers; methods for assessment; validity, reliability.

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INTRODUCTION

The role of the human factor in road safety, which has been studied for many decades worldwide, is of paramount importance. Although a great deal of research has addressed various ways in which to assess the psychological characteristics associated with good driving performance, no universal means have been identified. One reason in this regard is that assessing the psychological aptitude of drivers is closely related to the specifics of a given culture, its norms, and the relevant legislation (Hristova and Krumova 2018). In Bulgaria, this process of driver assessment has a preventative function, and it is conducted regularly in respect to specific groups of drivers, particularly non-professional drivers who have committed various traffic violations and professional drivers, including taxi drivers, who are involved in the public transport of passengers and freight. The aim in both cases is to determine whether these drivers possess psychological characteristics that can identify them as potentially risky in traffic.

In-depth analysis of studies concerning the psychological aptitude for driving reveals that drivers' cognitive functioning comprises one of the groups of psychological factors closely related to road safety. Our review of the theoretical and empirical studies in this area has found that attention, memory, executive and visuo-spatial functions, language, and praxis functions are directly related to the driving process (Racheva and Totkova 2018). Research concerning the relations between these characteristics and driving has revealed that individuals with various disorders, especially neurological and psychiatric disorders, perform poorly either on a preliminary psychological assessment of cognitive functioning, or during practical tests (Blane et al. 2017; Akinwuntan et al. 2014; Lincoln and Radord 2008; Lincoln et al. 2006; Leung 2004; Brower and Withaar 1997; O'Toole 1997; Wilson et al. 1996; Harvey et al. 1995; Odenheimer et al. 1994; Simms and O'Toole 1994; Hunt et al. 1993; Galski et al. 1990; Galski et al. 1992; Brooke et al. 1992; Nouri and Lincoln 1992; Engum et al. 1988; Engum et al. 1989; Engum

et al. 1990; Gautier et al. 1989; Nouri et al. 1987). Another group of studies highlight the relations between disturbances in cognitive functions related to driving and participation in road accidents (Lee et al. 2016; Anderson et al. 2005; Daigenault et al. 2002; Owsley et al. 1991; Kahneman and Triesman 1984).

There is no universal approach to assessing the cognitive characteristics related to driving – both pen and paper and computerized tests are used. In addition, some of these characteristics are studied primarily on the level of individuals (language and praxis functions), while others (attention, memory, executive, and visuo-spatial functions) can also be studied within a group context. The particular features of the characteristics studied, as well as the objective opportunities related to their implementation in practice, should be taken into consideration in the process of constructing methods for assessing the cognitive functions related to driving.

This study presents the modifications of certain methods with proven effectiveness in clinical practice for the purpose of assessing the cognitive functioning of drivers in a group setting.

GOALS

The goals of this study are to construct methods for assessing the cognitive traits of drivers, verify the validity of these methods, and verify their reliability.

METHODOLOGY

This section presents the principles underlying our selection and modification of instruments for assessing the cognitive functions of drivers; the participants included in the study; the procedures used; and the statistical methods employed to analyze the data obtained.

PRINCIPLES FOR SELECTING INSTRUMENTS FOR ASSESSING DRIVERS' COGNITIVE FUNCTIONS

32 methods for assessing cognitive characteristics were examined and analyzed during the selection process. The main principles for selecting methods for assessing the cognitive

functions of drivers were related, on the one hand, to the specifics of the psychological assessment process in Bulgaria and, on the other, to the specifics of driving. These principles led to the identification of the following criteria that should be reflected in the methods used for this purpose:

- They should be applicable within a group context.
- They should allow for a comparison of the data concerning the participants in our study with the normative data for a given age group regarding their applying for a driver's licence.
- It should be possible to implement these methods within a brief time period. This is related to the "time for reaction" factor that influences drivers' performance on the road.

Below we present the methods with proven effectiveness in clinical practice that were modified to accord with our selection criteria as well as the principles underlying that process.

PRINCIPLES FOR CONSTRUCTING THE METHODS USED

We utilized the following procedures with selected and proven quantitative methods regarded as appropriate for application in a group context in order to construct the analytical methods we used in the present study.

- 1) Forms were constructed for assessing the cognitive characteristics we were examining that were consistent with the specifics and context of the study. These forms were constructed on the basis of methods widely used in clinical practice, but were significantly modified for the purpose of driver assessment. These modifications include changes in the concept and content of the method, the manner in which it is employed, the conditions and procedures for performing the assessment (e.g. in a group, for fixed periods of time), and the processing and analysis of the results.
- 2) New forms of stimuli were developed with the assistance of a graphics designer for all the methods we utilized. These correspond

to the requirements associated with the specifics of driver assessment.

- 3) The forms were optimized on the basis of the researchers' observations and analyses during the initial testing stage.

METHOD FOR ASSESSING ATTENTION:

LETTER CANCELLATION TASK

Attention may be defined as a functional system used to orient and focus mental activity for specific purposes. The characteristics of attention may be measured either as separate components (concentration, sustainability, ability to switch, division), or as elements of more complex processes that include other cognitive or behavioral functions (vigilance, keenness of observation). We examined the basic components of attention as comprising the bases for other and more complex processes related to driving.

For this purpose we employed the letter cancellation method, which has been used in clinical practice for more than 100 years. The original version, or symbol cancellation, was developed by Benjamin Bourdon (1901) and later modified by George Talland (1965) into the letter cancellation test. It has also been subject to a number of other modifications in order to serve the purposes of clinical practice (Mirsky et al. 1991). We have employed two forms consisting of one sheet of A4 paper each for assessing drivers' attention in a manner that is based upon this method. The first evaluates the ability to concentrate and sustain attention, while the second is intended to measure both this ability and the ability to distribute and switch concentration and attention.

Both forms have a large number of random letters printed on them distributed among 16 equal-sized boxes, each of which contains an equal number of stimulus letters that the respondent is to locate among the other letters and mark. This ensures that the stimuli are distributed over the entire sheet of paper. On the first form, the stimulus in each box consists of six identical letters (such as six letters "B") that the respondent is to find and cross out. Each box on the second form also contains six letters, but it consists of three each

of two different letters (such as three letters “D” and three letters “P”). The task for the respondent is to locate the letters and mark them in two different ways (one stimulus letter is crossed out and the other is underlined). Both tasks are to be completed within a fixed period of time.

METHOD FOR ASSESSING SHORT-TERM VISUAL MEMORY: REPRODUCING

VISUAL STIMULI TASK

The scientific literature on cognitive characteristics related to the process of driving indicates that short-term visual memory is a component of human short-term memory which meets our criteria concerning methods that may be used for assessing drivers. Short-term visual memory involves the ability to retain and reproduce visual information (shapes, letters, numbers, and other symbols) for a short period of time. The information that we thus capture may be used by the working memory, passed to long-term memory, or forgotten. It is of great importance in the process of driving insofar as it enables drivers to memorize stimuli from the environment (the position of other vehicles, the colour of traffic lights, and so forth) that are important for decision-making related to the process of driving. For example, if a driver is able to remember that a black sports car is next to him on the road, he will have a better chance of avoiding an accident involving it.

The method we have constructed to measure this ability in drivers is based upon what Luck (2007) discusses as the reproduction of visual stimuli. This position resides upon Philips and Routh's work (1983), which includes displaying simple visual stimuli for very short periods of time and reproducing them after they have been removed. The development of the stimulus material we have used resides upon conception of displaying visual stimuli in a sequence of increasing levels of difficulty.

The method utilizes 6 cards, each of which contains a 4×4 grid of squares. Dots are in some of the squares, with the number increasing as the cards are displayed in sequence, beginning with 2 on the first and ending with 7

on the last. Each card is displayed separately for 5-6 seconds. After it is removed, the respondents have to place the dots within an identical but blank grid in a manner that corresponds to where they were placed on the card that was displayed. The tasks are to be performed within a fixed period of time.

METHOD FOR ASSESSING EXECUTIVE FUNCTIONS: TRACE THE ROUTE TASK

Executive functions encompass a set of higher-order cognitive processes (Anderson et al. 2005). In addition to being defined in a number of ways, they are also regarded as including such varied components as planning, purposive action, effective performance, volition (Lezak et al. 2004), ability to respond adaptively, flexibly change direction, etc (Baron, 2004). Evaluating these functions in drivers is challenging not only because most methods measure only some of the components involved, but also because there is no precise list of components with psychometric characteristics related to driver performance (Asimakopulos et al. 2012).

The ability to set a goal, plan tasks related to attaining that goal, follow a definite sequence of actions, and change behavior when needed are aspects of executive functioning that are closely related to driving (Hunter et al. 2009). We chose to modify Platonov's entangled lines test to measure these characteristics. Although this method was originally employed to evaluate certain aspects of attention, the use of labyrinths and/or interlaced lines (so-called maze tasks) has become widely adopted in evaluating drivers' executive functions insofar as they are regarded as having a very high predictive value in respect to performance on the road (Snellgrove 2005; Porteus 1956; Staplin et al. 2013).

The method utilizes a sheet of paper with 15 lines (routes) that that curve and intersect numerous times, which are numbered from 1 to 15 depending on where they begin on the left-hand side of the paper. The respondents have to trace each line and record the number marking where it ends on the right-hand side of the paper. The task is to be completed within a fixed period of time.

*METHOD FOR EVALUATING VISUOSPATIAL
FUNCTIONS AND VISUAL NEGLECT:*

IDENTIFYING AND STRIKING OUT FIGURES

Visuospatial functions comprise a small number of important elements closely related to safe driving – the ability to distinguish figure and background, the visual recognition of an object, and the ability to identify the correct number of objects in a given area, including their absolute and relative positions (Vestri and Marchi 2009). Disturbances in these functions are usually related to injuries in the right brain hemisphere that cause spatial neglect. Vestri and Marchi emphasize the fact that persons afflicted with visual neglect cannot make use of compensation strategies insofar as they are partially or fully unaware of their deficit. Moreover, the danger is increased if they turn their heads toward the better functioning part of their visual field. Drivers with this disorder are prone to underestimate the information coming from one area of the visual field, which renders them dangerous for themselves and other drivers.

Visuospatial functions among drivers may be examined using a number of different methods, depending on the conditions related to the testing situation. For the purposes of the present study, we modified Gautier's test of cognitive functioning as part of our battery of tests for Bulgarian drivers (Gautier et al.

1989). The aim of this test, which includes a sheet of A4 paper upon which numerous different figures have been printed, is to assess abilities concerning the visual perception of stimuli and the risk of visual neglect. The respondent's task is to locate and cross out the figures indicated by the psychologist within a fixed amount of time.

CHARACTERISTICS OF THE SAMPLE

The data related to the distribution of the participants by age, gender, and level of education are presented in Table 1.

134 individuals between 20 and 80 years of age ($M = 47.11$, $SD = 13.78$), of whom 70 were male and 64 female, participated in the study. Most had completed their secondary education (46.3%) or possessed a bachelor/master's degree (46.3%). 3.7% had completed only their primary education, while (3.7%) had doctoral degrees. Both the experimental and control groups were balanced in respect to gender and similar in respect to education and age. The experimental group consisted of patients, chosen from five neurological and psychiatric hospitals in Sofia, who were in treatment at the time of the study and had been diagnosed by experts (clinical psychologists, neuropsychologists, psychiatrists, or neurologists) as having cognitive disorders.

TABLE 1
DISTRIBUTION OF THE RESPONDENTS BY AGE, GENDER, AND EDUCATION

Gender					
Male		Female			Total
70 (52%)		64 (48%)			134 (100%)
Age					
20-30 years	31-40 years	41-50 years	51-60 years	Over 61 years	Total
15 (11%)	37(28%)	34 (25%)	24 (18%)	24 (18%)	134 (100%)
Education					
Primary	Secondary	Bachelor/Master’s Degree		Doctoral Degree	Total
5 (3.7%)	62 (46.3%)	62 (46.3%)		5 (3.7%)	134 (100%)

The demographic data (gender, age, education) and type of disorder for the members of the experimental group are presented in Table 2.

The experimental group consisted of 67 participants, 35 male and 32 female, who were distributed approximately equally in the decade-based age groups. The age group comprising those between 20 and 30 years of age was an exception, however, since it is represented by only 4.5% of the participants. One possible explanation for this imbalance is that those who are hospitalized or receive out-patient treatment often manifest serious disorders in ways that are not typical for young adults. While adolescence and early adulthood may be associated with the first manifestations of many disorders, intensive medical treatment for cognitive disorders is uncommon among this age group.

Members of the experimental group can also be divided into four subgroups by type of disorder— patients with neurological disorders ($N = 16$), patients with psychiatric disorders ($N = 20$), patients addicted to alcohol ($N = 19$), and patients addicted to drugs ($N = 12$). The fourth sub-group consists primarily of patients with heroin or polysubstance dependence that are registered in methadone maintenance programs.

The educational status of the members of the experimental group is similar to that of the sample as a whole – most have a secondary (49.2%) or higher (41.8%) education.

The demographic characteristics (gender, age, education) of the members of the control group are presented in Table 3. This group consists of 67 participants gathered from the general population. They are identical in gender and similar in age and education to the participants from the experimental group.

TABLE 2
EXPERIMENTAL GROUP: GENDER, AGE, EDUCATION, AND TYPE OF DISORDER

Gender					
Male		Female			Total
35 (52%)		32 (48%)			67 (100%)
Age					
20-30 years	31-40 years	41-50 years	51-60 years	Over 61 years	Total
3 (4.5%)	16 (23.9%)	17 (25.4%)	15 (22.3%)	16 (23.9%)	67 (100%)
Education					
Primary	Secondary	Bachelor/Master’s Degree		Doctoral Degree	Total
4 (6%)	33 (49.2%)	28 (41.8%)		2 (3%)	67 (100%)
Type of Disorder					
Psychiatric Disorders	Neurological Disorders	Alcohol Addiction		Drug Addiction	Total
20 (30%)	16 (23.8%)	19 (28.3%)		12 (17.9%)	67 (100%)

TABLE 3
CONTROL GROUP: GENDER, AGE, AND EDUCATION

Gender					
Male		Female			Total
35 (52%)		32 (48%)			67 (100%)
Age					
20-30 years	31-40 years	41-50 years	51-60 years	Over 61 years	Total
12 (17.9%)	20 (29.9%)	17 (25.4%)	9 (13.4%)	9 (13.4%)	67 (100%)
Education					
Primary	Secondary	Bachelor's/Master's Degree		Doctoral Degree	Total
1 (1.5%)	29 (43.3%)	34 (50.7%)		3 (4.5%)	67 (100%)

RESEARCH PROCEDURE

Some participants were tested individually in order to observe whether they understood and could follow the instructions given by the researcher. Others were tested in a group in order to check the applicability of the battery of tests within a group context. These procedures were employed in both the experimental and control groups. Observations during the testing period clearly indicate that the battery of tests are applicable in both individual and group contexts.

The instrument for evaluating attention was applied first, followed in order by those for evaluating short-term visual memory, executive functions, and visuospatial functions.

The procedure for applying all four instruments takes about 15 minutes in total. The results from the control group and the experimental group were compared in order to validate the methods we had constructed. Their reliability was evaluated through a test-retest procedure among members of the control group.

Statistical processing of the survey data was conducted with SPSS version 25, using descriptives statistics, independent samples *t*-testing, one-way ANOVA, post hoc testing, and Pearson correlations.

RESULTS AND DISCUSSION

The validity of the methods we constructed for distinguishing between people with and without cognitive impairments has been tested by means of a comparative analysis of the cognitive functioning of people with known impairments (the experimental group) and people from the general population (the control group). The results of this analysis are presented below in Table 4, which illustrates how both groups dealt with tasks that measured their attention functions, memory (short-term visual memory), executive functions, and visuo-spatial functions (visual neglect).

We observed statistically significant differences concerning the results for the control and experimental groups in respect to the tests for attention (Form 1: $-t = -9.257$, $p = 0.000$; Form 2: $-t = -7.768$, $p = 0.000$), short-term visual memory ($t = -9.998$, $p = 0.000$), executive functions ($t = -10.190$, $p = 0.000$), and visuospatial functions ($t = -4.112$, $p = 0.000$). It is evident that the participants from the control group correctly cancelled significantly more letters (Form 1: $M = 39.39$ vs. $M = 24.84$; Form 2: $M = 55.61$ vs. $M = 35.99$); reproduced correctly significantly more symbols ($M = 23.52$ vs. $M = 16.85$); traced correctly significantly more routes ($M = 12.87$ vs.

TABLE 4
SIGNIFICANT DIFFERENCES BETWEEN EXPERIMENTAL AND CONTROL GROUPS:
ATTENTION, MEMORY, EXECUTIVE, AND VISUOSPATIAL FUNCTIONS

Cognitive Functions	Group	N	M	SD	<i>t</i>	<i>p</i>
Attention (Form 1)	Experimental group	67	24.84	8.492	-9.257	0.000
	Control group	67	39.39	9.667		
Attention (Form 2)	Experimental group	67	35.99	15.450	-7.768	0.000
	Control group	67	55.61	13.747		
Memory	Experimental group	67	16.85	4.816	-9.998	0.000
	Control group	67	23.52	2.578		
Executive Functions	Experimental group	67	7.55	3.718	-10.190	0.000
	Control group	67	12.87	2.095		
Visuospatial Functions	Experimental group	67	30.97	4.296	-4.112	0.000
	Control group	67	33.30	1.741		

M = 7.55); and marked correctly significantly more figures (M = 33.30 vs. M = 30.97) than the members of the experimental group.

The variables with the largest differences in value between the two groups serve as criteria when presenting the methods employed. In the present case, the number of correct answers regarding the different tasks clearly demonstrates that members of the control group performed much better than members of the experimental group, while those with cognitive impairments scored much lower regarding the cognitive functions associated with good driving skills.

The specifics of the participants in the study made possible a more detailed comparative analysis between the control group and each of the subgroups of the experimental group concerning the tasks aimed at assessing their attention, memory, executive, and visuospatial functions. The results are presented in Table 5.

The dispersion analysis indicates that belonging to a given subgroup is directly connected with how members of the experimental group performed the tasks used to test the cognitive functions in question because each subgroup is associated with a specific type of disorder. The resulting F values are

as follows: attention, Form 1: $F = 21.139$, $p = 0.000$; attention, Form 2: $F = 16.321$, $p = 0.000$; memory: $F = 25.738$, $p = 0.000$; executive functions: $F = 26.476$, $p = 0.000$; and visuospatial functions: $F = 5.278$, $p = 0.001$. Statistically significant differences were observed between the control group and all subgroups of the experimental group when comparing results concerning the attention, memory and executive function tasks. Significant differences regarding visuospatial function were observed only in respect to the subgroup consisting of those addicted to alcohol. This may be accounted for by the low number (Table 3) of participants in the subgroups, on one hand, and by specific forms of cognitive impairment being related only to disturbances in particular visual functions, on the other. However, more detailed comparative analyses between these groups are needed in order to clarify the specifics and importance of the differences related to the cognitive processes studied.

In addition to this comparative group analysis, we utilized a correlational analysis to assess the consistency of the methods we employed for measuring drivers' cognitive functioning. The results are presented in Table 6 below.

TABLE 5
SIGNIFICANT DIFFERENCES BETWEEN THE CONTROL GROUP AND THE SUBGROUPS OF THE
EXPERIMENTAL GROUP: ATTENTION, MEMORY, EXECUTIVE, AND VISUOSPATIAL FUNCTIONS

Cognitive Functions		M	SD	Subgroups of the Experimental Group	M	SD	F	p
Attention (Form 1)	Control Group	39.39	9.67	Psychiatry	25.65	8.48	21.139	0.000
				Neurology	24.50	7.40		0.000
				Alcohol Addiction	25.16	10.06		0.000
				Drug Addiction	23.42	8.02		0.000
Attention (Form 2)	Control Group	55.61	13.75	Psychiatry	39.80	15.73	16.321	0.003
				Neurology	32.38	11.19		0.000
				Alcohol Addiction	38.26	17.35		0.004
				Drug Addiction	39.80	15.73		0.001
Memory	Control Group	23.52	2.58	Psychiatry	17.20	5.69	25.738	0.001
				Neurology	16.44	4.98		0.000
				Alcohol Addiction	17.74	3.72		0.000
				Drug Addiction	15.42	4.76		0.001
Executive Functions	Control Group	12.87	2.095	Psychiatry	7.40	3.789	26.476	0.000
				Neurology	8.56	3.614		0.002
				Alcohol Addiction	7.21	3.980		0.000
				Drug Addiction	7.00	3.516		0.001
Visuospatial Functions	Control Group	33.30	1.74	Psychiatry	31.45	5.165	5.278	0.530
				Neurology	31.94	3.356		0.533
				Alcohol Addiction	29.89	4.593		0.036
				Drug Addiction	30.58	3.288		0.096

One-Way ANOVA and Games-Howell Post Hoc Test, $p < 0.05$, $N=134$

The results of the correlational analysis of the data for all participants in the study ($N = 134$) indicate that there is good methodological compatibility. They also verify that the instruments included in the battery of test measure different psychological characteristics.

The reliability of the methods was examined by means of the test-retest technique, which involved 51 of the participants from the control group between 23 and 72 years of age ($M = 44.35$, $SD = 12.69$). 50% have a higher education, with 44.1% having a secondary

education. 2% have only a primary education, while 3.9% have a doctoral degree. The results of the correlational analysis demonstrated a strong and significant connection between performance on the test and on the retest. The strongest connection concerned the assessment of distribution and switching attention ($r = 0.828$, $p < 0.001$). This was followed by the assessment of concentration and the sustainability of attention ($r = 0.757$, $p < 0.001$), visuospatial orientation ($r = 0.712$, $p < 0.001$), memory functions ($r = 0.603$, $p < 0.001$), and executive functions ($r = 0.506$, $p < 0.001$).

TABLE 6
CORRELATIONS OF METHODS FOR ASSESSING THE COGNITIVE FUNCTIONING OF DRIVERS

		Correlations				
		Attention Form 1	Attention Form 2	Executive Functions	Memory	Visuospatial Functions
Attention Form 1	Pearson Correlation	1	0.830**	0.622**	0.577**	0.503**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000
	N	134	134	134	134	134
Attention Form 2	Pearson Correlation	0.830**	1	0.593**	0.545**	0.444**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000
	N	134	134	134	134	134
Executive Functions	Pearson Correlation	0.622**	0.593**	1	0.700**	0.438**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000
	N	134	134	134	134	134
Memory	Pearson Correlation	0.577**	0.545**	0.700**	1	0.406**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000
	N	134	134	134	134	134
Visuospatial functions	Pearson Correlation	0.503**	0.444**	0.438**	0.406**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	134	134	134	134	134

These data provide sound evidence of the high level of reliability of these instruments for assessing the cognitive functions related to driving that we selected and tested.

CONCLUSION

Our analysis of the psychometric characteristics of the instruments we constructed for assessing the cognitive functions of drivers resulted in high values for their validity and reliability. The results clearly indicate that

the methods are capable of successfully distinguishing between people with and without cognitive impairments. However, it is important to pay particular attention to the fact that an assessment of the cognitive ability to drive is distinct from a clinical assessment of cognitive functioning. A further evaluation of the battery of instruments we have constructed for assessing the cognitive functioning of drivers is needed to determine their capacity for distinguishing between risky and non risky drivers.

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STRATEGIC ORIENTATIONS OF MANAGERS IN IT COMPANIES: EVIDENCE FROM BULGARIA AND FINLAND

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Abstract. *The purpose of the article is to reveal what are the leading strategic orientations of the managers in IT companies in Bulgaria and to compare them with the results of managers from a research conducted in Finland. Five types of strategic orientations – customer, technology, learning, and entrepreneurship orientations, and organizational performance – are evaluated in terms of a scale initially developed by Henri Hakala (2011) for this purpose. The two samples are generally similar, with only small differences in the average values of the orientations. The findings also indicate that the profile of the Bulgarian sample is more balanced in respect to orientations than the Finnish one. The learning orientation has the highest measured values among both samples, with the customer and technology orientations displaying the greatest differences. The data provided by the study concerning management practices in IT companies are useful for organizational managers when defining and/or changing organizational strategies, cultures, or structures. HR professionals and consultants may also avail themselves of our findings when planning training programs for employees at all levels of a given organizations. This study makes a unique contribution to comparative analyses of strategic orientations in two different locations (Bulgaria and Finland) insofar as it employs Hakala's scale for the first time in this type of research in Bulgaria, thereby providing valuable information for managers, researchers, university professionals, and students.*

Keywords: management; strategic orientations; IT organizations; cross-cultural comparison.

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INTRODUCTION

Organizational strategy has become one of the main topics in management practice and management research. Organizations today increasingly rely upon culture, simple rules, and strategic guidelines for steering employee actions instead of managing individual behavior through formal planning processes or hierarchical procedures (Eisenhardt and Sull 2001). These guidelines for how organizations manage their business activities are often referred to as strategic orientations (Berthon et al. 1999), which may be defined as principles that influence and guide a given company's activities and generate behaviors designed to ensure the viability and effectiveness of the organization (Gatignon and Xuereb 1997). Strategic orientation is also often used as an umbrella term for describing a number of different constructs, such as the market, entrepreneurial, learning, and technology orientations. Each of these entails a different adaptation mechanism and thus generates a different response to the question of how companies compete with particular products in their chosen market segments. In this respect, understanding strategic orientations may be regarded as an answer to the question of what makes organizations successful in adapting to the environment. Previous studies have developed several different constructs in the effort to explain organizational performance from a specific point of view.

THEORETICAL OVERVIEW

Our literature review reveals that scholarly interest in strategic orientations has increased in recent years. For example, Hubery Gatignon and Jean-Marc Xuereb (1997) regard strategic orientations as principles that guide and influence a company's activities and generate behaviors designed to ensure the viability and effectiveness of the organization. More recently, the Finnish researcher Henri Hakala (2010) has emphasized that examining strategic orientations casts light on the business aspects of a given organization's strategy, including its ability to compete in the circumstances that

prevail. This serves to prepare that organization for future challenges in its chosen sphere of activity. He maintains, however, that strategic orientations have little involvement with the corporate level of strategic decision making, such as decisions concerning the specific types of business a given organization should undertake (Hakala 2010:12).

Hakala presents a holistic approach to strategic orientations in a series of articles, surveys, and cluster analyses completed between 2008-2013 in which he addresses the relations between the technology, customer, entrepreneurship, and learning orientations within a configuration of strategic orientations in respect to organizational performance (Hakala 2010; Hakala and Kohtamäki 2010; Hakala and Kohtamäki 2011; Hakala 2013). He argues that strategic orientations may thus be regarded as comprising a multidimensional configuration of the separate orientations he investigates, which is to say that strategic orientations are interrelated (Hakala 2010).

Hakala provides a framework that distinguishes between two major sets of opposing choices:

- 1) Orientation towards either internal resources (technology orientation), or external positioning (customer orientation).
- 2) Exploring new opportunities through either a learning orientation, or an entrepreneurship orientation.

He argues in this regard that a technology orientation focuses on a given company's internal resources, while a customer orientation addresses the choice between the internal and external environments in terms of positioning on the external market (Hakala 2011). These orientations also include processes aimed at striking a balance between internal resources and external markets. The entrepreneurial orientation comprises a specific intermediate position between the technology and customer orientations insofar as it may promote growth for the company and reinforce the learning orientation, which in turn improves effectiveness (Hakala 2010). Furthermore, the learning orientation has a direct effect on profits, en-

couraging entrepreneurial research concerning new markets and technologies. While both the entrepreneurial and learning orientations may exist independently of each other, they provide benefit to a given company only to the extent that they are combined within that company's own practice and processes.

In software companies, the learning orientation mediates the effects of the entrepreneurial orientation upon a given company's profits, while the entrepreneurial orientation mediates the effects of the learning orientation upon that company's growth (Hakala 2010). A software company must consequently find a way in which to actively manage both entrepreneurial research processes and learning processes if it aims for profit and growth.

We found only a small number of empirical studies concerning strategic orientations within IT companies in our search of databases, on-line libraries, and the published literature. The results are presented in Table 1.

Hakala's studies of strategic orientations in the IT sector (Hakala 2010; Hakala and Kohtamäki 2010; Hakala and Kohtamäki 2011; Hakala 2013; Sirén, Hakala, Wincent

and Grichnik, 2016) are the most exhaustive of those available in the literature. The model he has developed (Hakala and Kohtamäki 2011) provides the basis for constructing a questionnaire that measures the following 5 types of strategic orientations.

Customer Orientation consists of five items. It measures a company's understanding of customer needs as well as the emphasis it places upon customer service, customer engagement, and customer satisfaction, including the actual levels of customer satisfaction (Hakala and Kohtamäki 2011:72). It is based on Narver and Slater's (1990) earlier conception of customer orientation.

Technology Orientation consists of five items. It measures the technological level of a company's products, the development of new technologies, and the organizational drive to develop new technological solutions that meet the needs of customers. It indicates the level of a company's technological capability as well as the ambitions of the company's product development programs in comparison with competitors (Hakala and Kohtamäki 2011:72).

TABLE 1
PREVIOUS RESEARCH ON STRATEGIC ORIENTATIONS IN IT COMPANIES

Empirical Research	Main Research Focus
Akman and Yilmaz 2008	An exploration of the relations between market and technology orientations, innovation strategy, and innovative capabilities within the software sector in Turkey.
Hakala 2010	An analysis of the results of various strategic orientations in software companies.
Hakala and Kohtamäki 2010	An investigation of the relations between organizational performance and entrepreneurial, technology, and customer orientations, with a sample of 164 managers of software companies in Finland.
Hakala and Kohtamäki 2011	An analysis of a sample of 164 participants from various Finnish software companies in respect to a combination of customer, technology, and entrepreneurial orientations.
Hakala 2013	An examination of the relations between entrepreneurial and learning orientations in two dimensions of organizational performance (profit and growth). The sample comprises 192 participants from software companies in Finland.
Sirén, Hakala, Wincent, and Grichnik 2016	A survey of 182 directors of software companies concerning the individual components of strategic learning, depending on the level of entrepreneurial orientation and the age and size of a given organization.

Entrepreneurial Orientation consists of 12 items that measure a company's proactivity, innovation, and risk-taking. It reveals not only how a company is exploring new and creative ideas that can lead to market changes, but also whether it is exploring these ideas pro-actively before competitors do so in anticipation of future demand. In essence, the entrepreneurial orientation indicates a company's strategic position in respect to competing organizations (Hakala 2010).

Learning Orientation, which utilizes D. A. Garvin's work (1993), consists of four items. It measures experimentation, lessons learned from past experience, and knowledge sharing.

Organizational Performance consists of three items that measure ownership's satisfaction with the productivity, profitability, and growth of their company in comparison with competitors.

A total of 164 Finnish managers responded to the survey questions. On the basis of the results obtained, the profiles of the IT companies participating in Hakala and Kohtamäki's (2011) study indicate that customer orientation is predominant in Finland, followed by learning orientation, technology orientation, entrepreneurial orientation towards proactivity, entrepreneurial orientation to innovation, and entrepreneurial risk-taking orientation. Organizational performance receives the least emphasis. We conducted a similar survey among IT companies in Bulgaria in order to investigate the strategic orientations of their managers and make a comparison with the Finnish results. The results are presented below.

METHOD

Our study utilized a questionnaire concerning strategic guidelines based on Hakala and Kohtamäki's (2010) work that was employed for the first time in the Bulgarian socio-cultural environment. This questionnaire accurately addresses the dynamics of the contemporary business context. In addition, Hakala not only explores all five of the strategic orientations we have discussed, he typically explores a combination of at least three orientations in any given study, which makes possible a

more complete view of the issue (Hakala 2010; Hakala and Kotamaki 2010; Hakala and Kotamaki 2011; Hakala 2013; Sirén et al. 2016). These characteristics, coupled with the questionnaire's focus on a sample of software companies, underlay our decision to employ this questionnaire in the Bulgarian study.

The questionnaire utilizes a five-point Likert scale ranging from 1) "totally disagree" to 5) "totally agree" in order to measure five constructs – customer orientation, technology orientation, entrepreneurial orientation, learning orientation, and organizational performance. Our respondents' answers reflect their own perceptions rather than strictly objective facts (Hakala and Kohtamäki 2010).

Strategic orientations were measured by 5 scales comprising 29 items that were distributed as follows (Hakala and Kohtamäki 2011:72):

- 1) Customer orientation, five items
- 2) Technology orientation, five items
- 3) Entrepreneurial orientation, 12 items
- 4) Learning orientation, four items
- 5) Organizational performance, three items

The value of Cronbach's alpha for the questionnaire as a whole ($\alpha = 0.79$) indicates that Hakala's original questionnaire displayed good psychometric properties. The values for each scale as measured in Finland are shown in Table 2 (Hakala 2010:135).

TABLE 2
CRONBACH'S ALPHA FOR THE STRATEGIC
ORIENTATION SCALES

Scale	Cronbach's alpha
Customer Orientation	0.79
Entrepreneurial Orientation	0.78
Technology Orientation	0.87
Learning Orientation	0.81
Organizational Performance	0.70

The strategic orientation questionnaire was originally published in English (Hakala and Kohtamäki 2010). In order to adapt it for use in a Bulgarian environment, psycholo-

gists made two translations from English into Bulgarian and two reverse translations from Bulgarian into English. These texts were then discussed and compared, discrepancies were corrected, and the version judged to be the most accurate was selected for use with the Bulgarian sample (see Brislin 1970).

The values of the Kaiser-Meyer-Olkin measure of sampling adequacy ($KMO = 0.875$) are presented in Table 3. These results indicate that the data obtained were fully adequate for applying factor analysis to the questionnaire (see Meyer et al. 1977; Muthén and Kaplan 1985).

TABLE 3
TEST FOR THE SAMPLING ADEQUACY OF
THE QUESTIONNAIRE

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.875
Bartlett's Test for Sphericity	Approx. Chi-Square	1467.069
	Df	21
	Sig.	0.000

The psychometric properties of the questionnaire were verified by factor and item analysis. We conducted both exploratory and confirmatory factor analyses based on the principal components in order to determine whether the methodology that Hakala and Kohtamäki (2010) proposed for analyzing strategic orientations could be employed. Six factors were defined in an exploratory factor analysis using a Varimax rotation, while five

factors were defined in the confirmatory factor analysis, which equals the number of scales in the original methodology. In addition, the item for measuring entrepreneurial orientation had three subscales that were taken into account in the analysis. For the purposes of the Bulgarian survey, it was decided to adopt the structure of the original questionnaire and use five basic scales, with three subscales for the entrepreneurial orientation (Hakala and Kohtamäki 2010, 2011).

Cronbach's alpha was calculated in order to determine whether the 29 questions from the strategic orientations scale (Hakala and Kohtamäki 2010) possessed a sufficiently high level of reliability. The value of Cronbach's alpha for the scale as a whole was very good ($\alpha = 0.93$, $N = 180$), with the values for the subscales being 0.83 for customer orientation, 0.89 for entrepreneurial orientation, 0.85 for technology orientation, 0.79 for learning orientation, and 0.63 for organizational performance.

Table 4 presents a comparison of the values of Cronbach's alpha for the Finnish ($N = 164$) and Bulgarian ($N = 180$) samples.

The values of Cronbach's alpha were good for all items on both versions of the questionnaire. In addition, Bartlett's test of sphericity was statistically significant ($p < 0.000$), and the measure of the sample adequacy was high (see Meyer et al. 1977; Muthén and Kaplan 1985). The results were thus adequate for a comparative analysis of the Bulgarian and Finnish samples.

TABLE 4
CRONBACH'S ALPHA FOR BULGARIAN
AND FINNISH SAMPLES

Scale	N of Items	Cronbach's Alpha Finnish Sample ($N = 164$)	Cronbach's Alpha Bulgarian Sample ($N = 180$)
Customer Orientation	5	0.79	0.83
Entrepreneurial Orientation	12	0.78	0.89
Technology Orientation	5	0.87	0.85
Learning Orientation	4	0.81	0.79
Organizational Performance	3	0.70	0.63

SAMPLE

The study focused on IT companies in Bulgaria, a strict requirement being that only managers of software companies could participate in the survey. In the light of various studies in the IT field and the software industry (see Rönkkö et al. 2010), companies were defined as engaged in the software business if their activities are covered by Division 62 (computer programming, consultancy and related activities) of the *International Standard Industrial Classification* (2008). The final sample consisted of 180 managers from 35 software companies in Bulgaria who managed people, processes, and/or projects.

COMPARISON OF THE PROFILES OF THE BULGARIAN AND THE FINNISH MANAGERS

Utilizing the strategic orientations questionnaire that was based upon Hakala's work in a Bulgarian environment made it possible to compare the results we obtained in our study with those of the previous Finnish study. Both studies focused on executives in software companies operating in the IT sector. The samples consisted of 164 managers in Finland and 185 in Bulgaria, with 180 valid participants among the Bulgarian sample. The descriptive statistics of the samples made it possible to compare the results of the two studies.

Figure 1 below presents the two country profiles, which display relatively small differences in the mean values of the various orientations. The learning orientation ($X = 4.15$) was dominant in the Finnish study, followed by customer orientation ($X = 4.006$). The entrepreneurial orientation towards proactivity ($X = 3.325$) and the technology orientation ($X = 3.330$) had similar values, followed by the entrepreneurial orientation towards innovation ($X = 3.27$) and organizational performance ($X = 3.21$). The entrepreneurial orientation towards risk-taking had the lowest value among both the Finnish ($X = 3.02$) and Bulgarian ($X = 3.026$) samples.

The learning orientation ($X = 3.8764$) was also dominant in the Bulgarian study, followed

by the technology orientation ($X = 3.6761$). The entrepreneurial orientations towards innovation ($X = 3.4645$) and towards proactivity ($X = 3.447$) had similar values, followed by customer orientation ($X = 3.0454$).

The Bulgarian and Finnish surveys were conducted in 2017 and 2011 respectively, and Figure 1 illustrates that there were in general only relatively small differences between the two profiles. The latter are particularly evident regarding customer orientation, which received the second highest value among Finnish IT managers, but the second lowest among the Bulgarian sample. While the profile of the Bulgarian sample was more balanced than the Finnish one in respect to the five orientations being examined, both had one clearly dominant orientation.

There was thus a high level of similarity in the strategic orientations of IT companies in the two countries, although they have differing national values in respect to Hofstede's model (2001). While it is possible that these results may have been due to industry specifics and not national characteristics, this issue requires further research within the framework of a study designed for that purpose.

Our study reveals that the entrepreneurial orientation towards risk-taking received the lowest mean value in both countries, which is to say that managers in software companies preferred to be cautious, avoid risk, and focus on security and predictability. The entrepreneurial orientation towards proactivity also had similar values in both samples, while the entrepreneurial orientation towards innovation was somewhat more pronounced among the Bulgarian sample. The learning orientation, which includes knowledge sharing, was ranked first in both countries.

These results appear to support the view of IT as a knowledge-based industry, regardless of whether it is located in a northern country, such as Finland, or a southern country, such as Bulgaria. The primary differences are that Finnish IT companies place a greater importance on customer orientation, which is, recognizing customer needs and using them to acquire a competitive advantage, while the Bulgarian companies are focused on internal

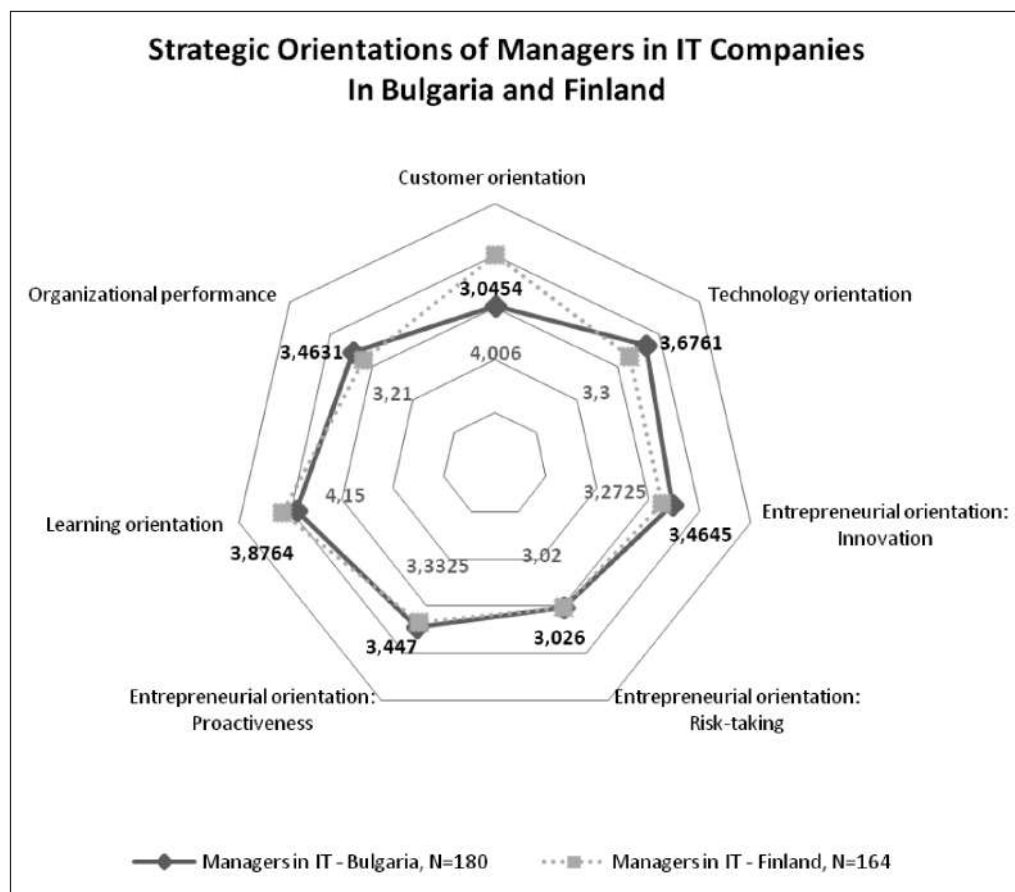


FIGURE 1. COMPARISON OF RESULTS FOR STRATEGIC ORIENTATIONS IN BULGARIA AND FINLAND

resources, that is, technology development and the implementation of cutting edge technologies. It is possible that technology provides Bulgarian IT companies with a market advantage insofar as many studies show that Bulgarians are among the best programmers (see BASSCOM 2016). However, a relatively poor understanding of client needs may undercut any competitive advantage associated with this technological strength.

Hakala and Kohtamäki (2010) argue that the entrepreneurial orientation of Finnish IT companies has a positive influence upon both customer and technology orientations. They maintain that while software companies need to improve their customer service skills, they

also need to recognize new business opportunities associated with existing client relationships. This indicates that software companies need to balance between their clients' needs, on the one hand, and entrepreneurial proactivity and innovation, on the other, in order to attain high levels of organizational performance.

A starting point for future investigation involves how a strong outward focus in the IT sector on the market and on clients may be accompanied by low values regarding customer orientation. This issue turns upon the particular combination of constructs involved – the values of market culture entail achieving results and attaining goals (Ilieva and Panche-

lieva 2017), while strategic customer orientations suggest that customer understanding and satisfaction can be optimized for IT companies. Developing customer service skills, understanding consumer behavior, and anticipating customer needs with good technological solutions and products can constitute a basis for training and development programs within software companies.

Moreover, the introduction of systems for measuring customer satisfaction could contribute to elevating the competitive technological advantage provided by Bulgarian teams, regardless of whether they are units within Bulgarian or international organizations.

The cross-cultural comparison we have undertaken can be further developed by employing the strategic orientations questionnaire in other countries and in other industries so that an extended data base on the issues we have addressed can be made available to IT companies. An important issue for further research is to investigate whether differences in strategic orientations reside upon national values or involve other issues.

CONCLUSION

Studies in the field of strategic orientations have shown that an effective configuration includes, on the one hand, dimensions that focus on internal business priorities (development of new technologies) and external influences from the environmental (customers), and, on the other, a process that determines how such priorities are combined within a given company (entrepreneurial orientation and learning orientation) (Hakala 2011). Insofar as Bulgarian IT companies prioritize the technological or product sustainability of software solutions, their focus remains within companies insofar as they emphasize learning and development. Such companies invest in both technology and their customers, but likely do not take full advantage of the latter in that they respond to customer needs rather than anticipate them. A more balanced orientation profile and greater customer understanding can help to achieve better customer satisfaction and provide a competitive advantage, which helps foster

sustainable organizational growth. It should be noted in this regard that Finnish IT companies may improve their capacity to meet international competition by directing greater attention to innovation and new technologies.

The results of the study we have presented here may serve as a reference point for managers of international IT companies in their efforts to promote organizational development and define effective strategic orientations by making possible a comparison of their own work practices with those of their Bulgarian and Finnish counterparts. Employee training and development programs for managers and for those working in operations can also be developed on the basis of the results we have presented. Furthermore, the latter can assist organizational leaders, consultants, and/or researchers in identifying policies and activities that will improve team effectiveness and elevate the overall organizational performance of IT companies.

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THE ROLE OF EGO STATES IN SUBJECTIVE CAREER SUCCESS IN DIFFERENT OCCUPATIONS

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Abstract. *The aim of this article is to highlight the role of ego states in subjective career success in several different occupations. The study is based upon the transactional analysis theory of the personality, which proposes that there are five functional ego states: Critical Parent, Nurturing Parent, Adult, Adapted Child, and Natural Child. Our model of subjective career success is based upon evaluations of Professional Satisfaction, Recognition, Growth and Development, Personal Life, and Authenticity. The sample is the study consists of 882 people from seven different occupations between 25 and 65 years of age, 59% of whom are women. We apply Hay's (1996) ego states questionnaire and Shockley et al.'s (2016) subjective career success scale to measure the values of the items we examine. The results establish that the functional ego states of Adult, Natural Child, and Nurturing Parent are significant predictors of subjective career success. Our findings also indicate that there are certain similarities and differences in the predictors for career success in different occupations. In general, the Natural Child ego state is a predictor for subjective career success of the physicians, while the Adult ego state is a predictor for the engineers and the architects. Also, the Nurturing Parent is a predictor for the nurses. In addition, the work experience and the organizational position significantly contribute to the subjective career success. The research provides new knowledge concerning the role of the personality within the organizational environment and adds transactional analysis to the existing approaches in the field. The findings also promise to be useful for personnel selection and for the planning of career development.*

Keywords: Ego states; subjective career success; occupation; transactional analysis.

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Sezgin Bekir – Introduction, Theoretical background, Data processing and graphics, Results & Discussion, Conclusions, References.

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INTRODUCTION

One of the most important decisions that a person takes in life is career choice, which very often requires dealing with complex contradictions. The modern career model describes how a person changes career paths so that they correspond to the various aspects of their personal life, both inside and outside the workplace (see Mainiero and Sullivan 2006). There are also different approaches to career and to the factors that determine it. For instance, Judge et al. (1994) proposing two groups of variables that combine different factors which predict career success. The first group includes demographic characteristics (e.g. gender, age, marital status, and so forth), human capital (education, experience, occupation), as well as personality traits, abilities, and motivation. The second group is connected to organizational characteristics as type and size of the organization, region, and labor market.

A number of studies focusing on career success and satisfaction emphasize subjective factors regardless of the existence of certain significant differences due to differing occupations (see Maggiori 2015). In the Big Five Model (BFM), for example, the trait Conscientiousness is one of the strongest predictor for job skills and training. Extraversion is a predictive factor for managers and salespersons, while Emotional Stability is a predictive factor for police officers (see Barrick and Mount 1991; Tett et al. 1991). Agreeableness is an important factor for police officers and managers, with Openness to Experience, Emotional Stability, and Agreeableness being important for one's readiness to learn at work (Barrick et al. 2002; Hurtz and Donovan 2000). Our study explores the roles of subjective factors in career success upon the basis of ego states as they are defined by the theory of transactional analysis.

THE PERSONALITY IN TRANSACTIONAL ANALYSIS

There are a number of definitions of the personality depending upon the theoretical approach taken on the issue. Gordon Allport provides one of the first classical definitions

of the personality, namely, "personality is the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to the environment" (Allport 1937:48). Other authors maintain that the personality is a "structured set of inborn and acquired dispositions that determine the individual's adaptation to the environment" (Silami 1996:150), while yet others argue that it represents successive patterns of thinking, feeling, and behavior that may express latent variables or traits (Chamorro-Premuzic 2015:67). The BFM noted above, which is an important approach today in personality theory, maintains that permanent and unchangeable dispositions determine the personality, while various situational approaches, in contrast, emphasize that people behave differently depending on the social context. Psychodynamic theories, which focus on the structure of the personality, regard unconscious mental processes as central to descriptions of personal organization (Brenner 1993). The Freudian model, for example, which is viewed as a structural personality model (Brenner 1993), postulates the Id, Ego, and Super-ego as the three fundamental structures upon which the personality is based.

The paradigm of Transactional Analysis presents the personality in terms of the so-called three-component model of ego states, which are defined as Parent, Adult, and Child (Berne 1992). Each of these three ego states represents a coherent system of thoughts, feelings and behavior through which people interact (Berne 1957). The Parent ego state indicates the attitudes, feelings, and behavior that parents or significant others introduce into a person's life, including all rules, ethical norms, values, and patterns of behavior. The Adult ego state involves the thoughts, feelings, and behavior associated with an objective assessment of reality. The Child ego state denotes the thoughts, feelings, and behaviors related to one's experiences from childhood, that is, fixations from the past (Berne 1992:16).

Berne proposes two models for analyzing and describing the structure of the personality, namely, structural and functional (Berne 1992). These two models explore different

aspects of a person's behavior and psychic apparatus based on the social stimuli and responses (transactions) that the person exchanges in his interactions with the surrounding world. The main difference between them is that the structural model "classifies stored memories and strategies," while the functional model "classifies behavior that could be observed" (Stewart and Joines 1987:36). The structural model of personality description refers to the content of ego states, their intrapsychic organization, and the complex interactions between them (Berne 1992). Insofar as "an 'ego states' may be described phenomenologically as a coherent system of feelings, and operationally as a set of coherent behavior patterns; or pragmatically, as a system of feelings which motivates a related set of behavior patterns". (Berne 1957:295). They are established within the developmental process of one's personal history such that they represent the memory and memories of events from their early life (Drego 1993).

The functional model for personality analysis builds upon Berne's conceptual model of how parents actively influence their children's individual behavior (Berne 1992). This model maintains that the person often behaves in the same way that their parents behave as a result of internalized behavioral patterns. The functional model includes the behavioral components and flexibility associated with each ego state and demonstrates how the person applies them, which is an important indicator of mental health. Berne remarks that it is possible to provide a description of the functions and observable manifestations of ego states in a manner analogous to the description of the structure of ego states (Berne 1972). The Parent may thus be critical or nurturing; the Child can be adapted, natural, or rebellious; and the Adult could be logical, rational, and organized (Berne 1972).

John Dusay created a tool for analyzing ego states, named "egogram," which is the most widely used model in transactional analysis. The model propose five functional ego states: Controlling Parent, Nurturing Parent, Adult, Adapted Child, and Natural Child (Dusay 1972). The Controlling Parent ego state in-

cludes the norms and rules of the community that have been internalized in childhood, along with one's behavior in compliance with the generally accepted rules and the establishment of the border (Temple 1999; Cox 1999; Hay 1996). It is evident in attitudes that express moralizing, criticism, and condemnation. It is also often punitive, and is very much associated with law and order. The words "always," "never," and "must" are extensively utilized in the verbal manifestations of this ego state.

The Nurturing Parent ego state is associated with encouraging growth, and it displays empathy towards those surrounding us. It is committed, protecting, and caring, and is expressed both verbally and through one's actions. The Adult ego state involves a connection of the personality with reality or the "here and now," and it is associated with logical and rational thinking and the ability to understand one's experiences as well as the outside world. It is oriented towards objective reality, the autonomous processing of information, and an assessment of possibilities. It is characterized by introspection, analytical thinking, an interest in facts and events, meeting current needs, and adaptability.

The Adapted Child ego state is characterized by a manifestation of either conformational, subordinate, or rebellious behavior, and it is associated with compliance with the requirements of others, the strict observance of rules and social norms, withdrawal, delayed action, a fear of intimacy, low self-esteem, and a display of extremes when experiencing both pleasure and obedience. The Natural Child ego state refers to instinctive and spontaneous feelings, impulsivity, the satisfaction of personal needs, and the pursuit of pleasure. The repertoire of the Natural Child includes the pursuit of creativity, invention, courage, acting with desire and ardor, egocentricity, acting rashly, taking risks, and self-love.

PERSONALITY AND SUBJECTIVE CAREER SUCCESS

In general, a career may be defined as an individually-perceived series of attitudes and behaviors that are related to one's work expe-

periences and activities throughout their professional path in life (Hall 1971). Arthur et al. define career success as “the accomplishment of desirable work-related outcomes at any point in a person’s work experiences over time” (Arthur et al. 2005:179). If we accept the assumption that a career is a sequence of job-related occupations during the course of a person’s professional life, then subjective career success also includes current job satisfaction (London and Stumpf 1982). In contrast to these approaches, Shockley and colleagues maintain that a person’s career success is guided by objective factors, with the exception of those that are less perceptible by nature and require subjective interpretation (Shockley et al. 2016).

Subjective career success may be defined as a component of a person’s internal evaluation that is based upon multiple criteria, such as Recognition, Authenticity, Personal Life, Growth and Development, Satisfaction, Influence, Meaningful Work, and Quality of Work (Shockley et al. 2016). Recognition is related to being formally or informally acknowledged for one’s work by significant others through positive feedback, compliments, and respect. Authenticity is linked to one’s ability to determine the direction of development of their career in accordance with their personal needs and preferences. Personal Life concerns the positive impact that a career has on one’s life outside the workplace, while Growth and Development refers to growth in one’s career through the acquisition of new knowledge and skills that are perceived as an aspect of success. Satisfaction is associated with experiencing positive emotions or feelings about one’s career in general. The underlying idea is that a person cannot be successful until they attain happiness in their work. Influence involves having an impact upon others within a given organization and on the organization itself, while Meaningful Work indicates engaging in work that is personally or socially valued. Finally, Quality of Work is related to the production of a high-quality product or service (Shockley et al. 2016).

It is clear from the above that the influence of ego states on subjective career success is the research interest for the paper.

PERSONALITY, OCCUPATION, AND CAREER SUCCESS

The connection between personality and career success is complex, and it involves both direct and indirect interactions between specific personal traits and various criteria for professional success. The associations between personality traits, quality of life, and career success have been investigated in this regard (Judge and Kammeyer-Mueller 2007), with certain authors maintaining that perhaps even half of the variations in career success can be explained by personality traits (see Karabelyova 2015; Furnham 2012). The results of previous studies have shown that requirements for employees are different in different occupations, which leads to the dominance of one or another set of personal characteristics in any given profession (e.g. Furnham 2012; Tair 2011; Loffredo 1998). It has already been noted that Extraversion and Conscientiousness make significant contributions in the professions of salesperson, manager, and police officer (Barrick and Mount 1991). Agreeableness also makes a contribution in several professional groups, including physicians, finance specialists, and hotel employees. Extraversion is a strong predictor for merchants, as is Openness to Experience for pharmacists and skilled employees (e.g. Salgado 1997; Smithikrai 2007).

The transactional analysis provides a clear and complete model of personality relationships in their daily functioning within working environments, and it serves to indicate how active professional roles representing ego states intersect with the roles associated with various aspects of professional life (Crespelle 1998). The distinction between the organizational and professional worlds is particularly useful in providing a more autonomous definition of the personality within organizations and for gaining a better understanding of this issue (Schmid 2008). Using ego states as a framework for conceptualizing occupational choices can provide greater clarity concerning professional stereotypes and the classification of professions in respect to the characteristics they require, such

as those associated with the Adult or Nurturing Parent ego states (Dolliver and Mixon 1977). This makes it possible to cast light on differences between perceptions of the content of a given occupation and the characteristics of an employee's personality.

A number of empirical studies have sought to draw correlations between a given occupation, Holland's six personality types, and ego states (see Dolliver and Mixon 1977) as well as highlight the interrelationships between ego states and job satisfaction (Baldwin et al. 1986). Schreier (1984) has shown in his study of the degree to which different ego states are displayed in different occupations (financial specialists, nurses, engineers, scientists, entrepreneurs, and so forth) that there are significant differences in this regard between the professions investigated. Also, he finds that the Adult ego state is the one most evident in all of the occupational groups studied, followed by the Controlling Parent, which is characteristic of all groups but least manifest among entrepreneurs, and the Nurturing Parent, which is most characteristic of nurses. As one may expect, the Natural Child comprises the ego state most visible in the group of entrepreneurs, which can be explained by their tendency to take risks.

Therefore, we expect ego states to play a significant role in subjective career success as a whole, with certain differences in respect to the specific occupations of the persons taking part in the survey.

OBJECTIVE, TASKS, AND RESEARCH HYPOTHESIS

The main objective of this study was to establish the role of ego states for career success in respect to employees with different occupations.

The study tasks included:

- 1) Revealing the manifestation of ego states and levels of subjective career success, both in general and in particular occupations.
- 2) Establishing the associations between ego states and subjective career success.

- 3) Tracing the contributions of ego states, individual characteristics, and occupational characteristics to subjective career success, both in general and in respect to particular occupations.

The main research hypothesis may be stated as follows:

On the basis of our theoretical overview and the character of our sample, we assumed, first, that the Adult ego state would be the one most evident in all occupations; that the Nurturing Parent ego state would be more clearly manifest in healthcare and art professionals; and that the Natural Child ego state would be most closely associated with art professionals and physicians. We also anticipated high levels of subjective career success due to the highly qualified professional groups in the study.

Second, we expected that functional ego states would predict subjective career success. In particular, we expected that the Adult ego state would be a significant predictor of subjective career success in all occupations; that the Natural Child ego state would be a significant predictor for professions based upon creativity and independence in decision making, such as art professionals and physicians; and that the Controlling Parent and Nurturing Parent ego states would be significant predictors in care-related and rule-setting occupations, such as the healthcare professions and professions in the public sector. We also expected that the Adapted Child ego state would not be a significant predictor of career success because of its associations with passivity and an inclination to obedience, which we assumed were not characteristic of the occupations included in our survey. Finally, we assumed that there would be certain significant differences upon the basis of individual characteristics and work characteristics.

METHODOLOGY

Our sample consists of 882 people between 25 and 65 years old in seven different occupational groups from various locations throughout the country. Table 1 below presents a

detailed description of the sample by age, gender, education, organizational position, and occupation. The sample is unbalanced by gender and education, as 58.9% are females, while nearly 80% of the participants have a higher education. In respect to organizational position, participants are evenly distributed between managers and performers, while half of the sample are experts. In the study are included 7 groups: Public sector professionals (19.1%), Engineers and Architects (17.5%), Financial specialists (17.3%), Technical specialists (15.7%), Health care employees (14.8%), Art professionals (8.3%), and Physicians (7.3%).

In details, participants included Administrative and technical specialists (employees holding executive positions, technicians with secondary educations, and so forth); Healthcare professionals (nurses, lab technicians, rehabilitation specialists); Professionals in the

public sector (lawyers, sociologists, psychologists, journalists, and so forth); Art professionals (artists, choreographers, musicians); Engineers and Architects (civil engineers, architects, surveyor engineers); Financial specialists (financiers, accountants and others); and Physicians.

Two questionnaires were used for the purposes of the study:

1. *The Bulgarian Adaptation of the Personal Styles Questionnaire* (PSQ) (Hay 1996). The PSQ is a self-evaluation questionnaire containing 32 items that investigates the typical behavioral characteristics of a person's five functional ego states. Participants allocated a score for each statement in order to indicate the degree to which the behavior in question described how they themselves behave. This utilized a 5-point Likert scale ranging from 1) "not true for me" to 5) "extremely true for me."

TABLE 1
SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE

Characteristics		N	%
Gender (N = 881)	Male	362	41.1
	Female	519	58.9
Age (N = 874)	25-35 years	217	25.9
	36-45 years	282	33.6
	46-55 years	207	24.7
	56-65 years	133	15.9
Education (N=881)	Higher education	703	79.8
	Secondary education	178	20.2
Organizational Position (N=881)	Manager	222	25.2
	Expert	438	49.7
	Performer	221	25.1
Occupation (N=845)	Administrative and technical specialists	133	15.7
	Healthcare professionals	125	14.8
	Professionals in the public sector	161	19.1
	Art professionals	70	8.3
	Engineers and Architects	148	17.5
	Financial specialists	146	17.3
	Physicians	62	7.3

Table 2 below presents the values of Cronbach's alpha for each item on the questionnaire in order to evaluate its internal integrity. The values for five of the ego states are over 0.75, the exception being the Natural Child ego state ($\alpha = 0.56$). The reliability of the ego state questionnaire is thus fully satisfactory for the purposes of the study.

TABLE 2
INTERNAL CONSISTENCY OF THE
EGO STATES QUESTIONNAIRE

	Cronbach's alpha N = 882
Controlling Parent	$\alpha = 0.82$
Nurturing Parent	$\alpha = 0.80$
Adult	$\alpha = 0.75$
Adapted Child	$\alpha = 0.80$
Natural Child	$\alpha = 0.56$

2. *The Bulgarian Adaptation of the Subjective Career Success Inventory (SCSI)* (Shockley et al. 2016). Five of the eight original scales of the SCSI were included in the study: Professional Satisfaction, Recognition, Growth and Development, Personal Life, and Authenticity, measured in respect to three items for each subscale. Participants allocated a score for each statement in order to indicate the degree to which the behavior in question described how they themselves behave. This utilized a 5-point Likert scale from "not true for me" (1) to "extremely true for me" (5).

It is clear from Table 3, which presents the values of Cronbach's alpha for each subscale,

that the level of internal integrity, which ranges from 0.72 to 0.88, is completely acceptable for the purposes of the study.

TABLE 3
INTERNAL CONSISTENCY OF THE
SUBJECTIVE CAREER SUCCESS QUESTIONNAIRE

Subscales	Cronbach's alpha N=882
Satisfaction	$\alpha = 0.83$
Recognition	$\alpha = 0.84$
Growth and Development	$\alpha = 0.82$
Personal Life	$\alpha = 0.72$
Authenticity	$\alpha = 0.72$

The respondents also indicated various demographic characteristics, such as gender, age, organizational position, and so forth.

RESULTS AND DISCUSSION

A number of analyses were conducted in order to attain the objectives of the study, with the first involving a presentation of the frequency results for functional ego states and subjective career success. It is obvious from Table 4 below that the participants in our study rate the Nurturing Parent and Adult ego states higher than the Natural Child ego state, which was in accordance with our expectations. We may therefore assume that the participants in the study describe their personal characteristics as including supportive and empathic behavior towards others, understanding their own experiences and the outside world, displaying spontaneity, and satisfying their own needs.

TABLE 4
DESCRIPTIVE STATISTICS FOR EGO STATES (N = 882)

Ego States	Number of items	M	SD	Average M	Average SD	Min.	Max.
Controlling Parent	7	0.43	0.55	2.92	0.79	0.00	5.00
Nurturing Parent	6	4.79	0.62	4.13	0.60	1.00	0.00
Adult	7	8.53	0.89	4.08	0.56	4.00	5.00
Adapted Child	7	3.08	0.40	3.30	0.77	0.00	5.00
Natural Child	5	8.13	0.00	3.63	0.60	0.00	5.00

The values for the Controlling Parent and Adapted Child ego states are lower, which enables us to assume that the respondents exhibit to a lesser degree such qualities as exerting control, setting boundaries, being critical, and observing the generally accepted rules and requirements.

Figure 1 below presents the mean values for functional ego states in the occupational groups studied. We may conclude from the findings that the Nurturing Parent and Adult ego states are those most manifest in all occupational groups. This also conforms to our expectations. The Natural Child and Adapted Child ego states are less evident, with the Controlling Parent ego state having the lowest value. A more detailed analysis revealed that the Nurturing Parent ego state, which is related to features such as care, compassion, support, and empathy, is the most prominent ego state among Healthcare professionals. It is also least developed among the Engineers and Architects, which can be explained by the greater autonomy and independence of these professionals.

The Adult ego state is the one most manifest among Physicians, which indicates that they are characterized by analytical thinking, dealing with facts and information, self-control, and confidence in decision-making. It is

also the least manifest among Arts professionals, which is to say so they are less analytical and rational, and are less decision-makers in the “here and now.” The third in order of expression is the Natural Child ego state, which is most manifest in the professional field of culture and the arts. One may thus conclude that such professionals are characterized by creativity, impulsivity in decision-making, spontaneity, and an orientation to pleasure. The fourth in respect to our results is the Adapted Child ego state, which is most evident among Health care professionals and Financial specialists. It is related to such personal characteristics as dependence on others’ decisions, a limited capacity for autonomy in decision-making, and being adapted to social norms and rules. The weakest manifestation of the Adapted Child ego state is among the group of Engineers and Architects, which permits us to state that they are characterized by assertiveness, independence, initiative, and non-compliance with the requirements of others.

The Controlling Parent ego state is the one least evident among the individuals surveyed in the various occupational groups we studied. It is most evident among Physicians, Engineers, and Architects, which leads us to conclude that they are characterized by a sense of independence, domination, freedom, an incli-

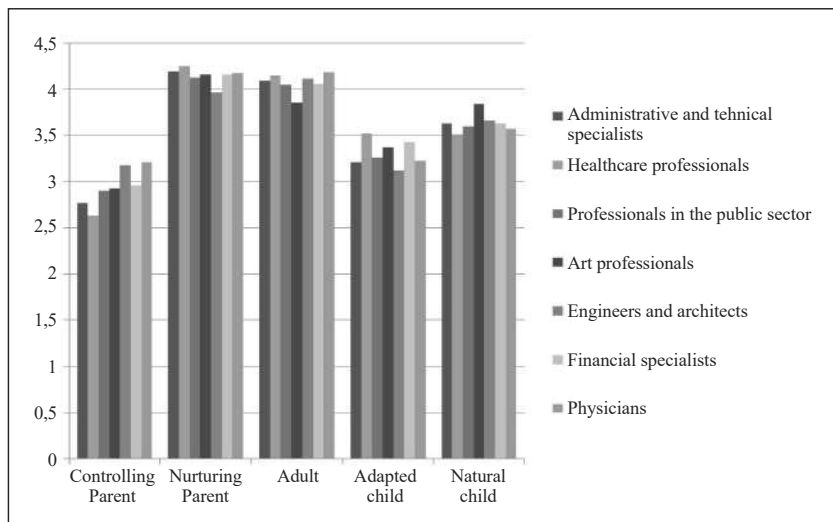


FIGURE 1. DISTRIBUTION OF EGO STATES IN DIFFERENT OCCUPATIONS

nation to impose boundaries and rules, and a tendency to criticize others and demand that they do what is expected of them. The lowest values for this ego state are among Healthcare professionals. This was anticipated in light of the need for passivity typical in their professions and the requirement that they implement what senior officials prescribe.

Table 5 below presents the means, standard deviations, and the minimum and maximum values of the overall level and subscales of subjective career success. In general, there is a high level of perceived career success, with no significant differences in this regard in the subscales. However, higher values are ascribed to Authenticity, Growth and Devel-

opment, and Recognition, while lower values are ascribed to professional Satisfaction and Personal Life. Those surveyed thus have a rather high sense of career success, and are satisfied with how they present themselves to others, their possibilities for development and growth, and the recognition that their professional realization ensures them. This is in line with our expectations.

Figure 2 below presents the mean values for the subscales of subjective career success in different occupations. These results indicate that professional Satisfaction, Recognition, Growth and Development, and Authenticity are almost evenly represented among employees in the different groups, the sole

TABLE 5
DESCRIPTIVE STATISTICS FOR SUBJECTIVE CAREER SUCCESS (N = 876)

Dimensions	Number of items	M	SD	Min.	Max.
Overall Subjective Career Success	15	60.42	8.49	25.00	75.00
Satisfaction	3	11.74	2.49	3.00	15.00
Recognition	3	12.06	2.24	3.00	15.00
Growth and Development	3	12.42	2.02	3.00	15.00
Personal Life	3	11.56	2.57	3.00	15.00
Authenticity	3	12.63	2.25	3.00	15.00

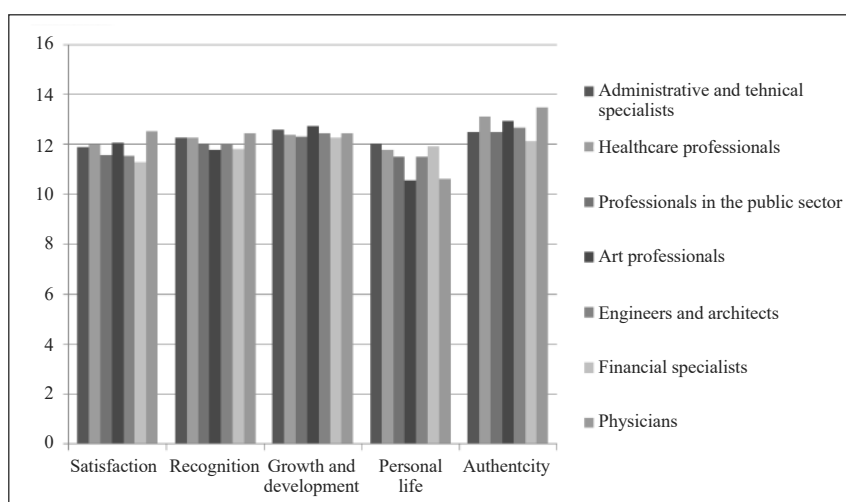


FIGURE 2. SUBJECTIVE CAREER SUCCESS SUBSCALES IN DIFFERENT OCCUPATIONS

exception being Personal Life. Art professionals and Physicians display the lowest values in respect to attaining a balance between career and personal life. This can be explained by the fact that the professional activities of both groups are likely related to certain difficulties with attaining such a balance and with career-life satisfaction outside of the work environment. Career and work performance in given occupations are often associated with limitations and compromises concerning free time and relationships outside the work environment.

Table 6 below presents the results of our analysis of the correlations between ego states and subjective career success. The findings indicate that there are weak to moderate positive relationships between ego states and overall Subjective Career Success. The strongest relations involve the Adult, Natural Child, and Nurturing Parent ego states, while weaker relations are associated with the Adapted Child and Controlling Parent ego states. In addition, the Adult, Natural Child, and Nurturing Parent ego states have moderately positive correlations with all five subscales of subjective career success, with the Adapted Child and Controlling Parent ego states displaying rather weak and insignificant relationships in this regard.

The regression analysis presented in Table 7 below concerning the joint contributions of individual and occupational characteristics to subjective career success indicates the significant influence of the variables studied,

which explain 37% of variations ($R^2 = 0.37$). Functional ego state is the strongest predictor, independently accounting for 33% of variations in subjective career success. The Adult ($\beta = 0.30$, $p = 0.000$), Natural Child ($\beta = 0.28$, $p = 0.000$) and Nurturing Parent ($\beta = 0.22$, $p = 0.000$) ego states play significant roles in that they moderately contribute to heightening subjective career success. Of the individual characteristics examined, only age ($\beta = -0.14$, $p = 0.047$) played a role in that it slightly decreased subjective career success, with younger persons having a lower level of subjective career success. Among labor characteristics, only a growth in work experience ($\beta = 0.18$, $p = 0.012$) had an effect upon subjective career success, leading to a moderate increase.

In summary, a significant role is played by ego states in subjective career success, which was in line with our expectations. Upon the basis of our findings, we may assume that one should possess such traits as analytical thinking, adaptability, and an ability to analyze facts and information in order to be successful in their career. Qualities such as curiosity, creativity, independence, and risk-taking, along with the ability to compromise, provide support, empathize, and engage, are also needed. Age, work experience, and occupation play weak, even negligible, roles in this regard.

We also examined the roles of ego states, individual characteristics, and occupational characteristics in subjective career success. First, Growth and Development ($R^2 = 0.28$)

TABLE 6
CORRELATIONS BETWEEN EGO STATES AND SUBJECTIVE CAREER SUCCESS (N = 876)

p (r)	Overall Subjective Career Success	Satisfaction	Recognition	Growth and Development	Personal Life	Authenticity
Controlling Parent	0.131**	0.070*	0.202**	0.119**	-0.001	0.102**
Nurturing Parent	0.424**	0.307**	0.315**	0.389**	0.268**	0.288**
Adult	0.499**	0.313**	0.370**	0.442**	0.340**	0.378**
Adapted Child	0.159**	0.164**	0.119**	0.143**	0.040	0.128**
Natural Child	0.436**	0.320**	0.338**	0.351**	0.318**	0.280**

** $p \leq 0.01$, * $p \leq 0.05$

TABLE 7
REGRESSION ANALYSES OF INDIVIDUAL, WORK, AND PERSONAL
CHARACTERISTICS OF SUBJECTIVE CAREER SUCCESS

Variables	Step 1	Step 2	Step 3
Sex	0.05	0.073*	0.044
Education	-0.002	0.050	0.022
Age	0.100**	-0.168	-0.141*
Organization		0.018	0.042
Position		-0.105**	-0.059
Service		0.270**	0.179*
Salary		0.054	0.054
Controlling Parent			-0.015
Nurturing Parent			0.215***
Adult			0.301***
Adapted Child			-0.073*
Natural Child			0.275***
R ²	0.01	0.04	0.37
R ² Change	0.01	0.03	0.33
F	3.45*	4.71***	41.73***
Df	3	7	12

Note: Standardized regression coefficients (β) are shown.

*** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$

play the most significant role in career success among the characteristics studied, with ego states explaining 27% of variations. The Adult ($\beta = 0.27$, $p = 0.000$), Nurturing Parent ($\beta = 0.24$, $p = 0.000$), and Natural Child ($\beta = 0.18$, $p = 0.000$) ego states are significant predictors of Growth and Career Development. As a result, personal fulfillment, such as acceptance of others, engagement, and the search for solutions to problems, makes a significant contribution to the satisfaction associated with career development and growth. Analytical thinking and autonomy in assessing the situation make moderate contributions. Age ($\beta = -0.17$, $p = 0.023$) slightly lowers career development satisfaction, but the effect is weak insofar as it accounts for 1% of variations. This is in line with the general tendency.

Second, the characteristics studied make a contribution on the Recognition subscale of subjective career success, explaining 24% of

variations. Ego states again have a significant positive effect ($R^2 = 20$). All states are predictors: Adult ($\beta = 0.20$, $p = 0.000$), Nurturing Parent ($\beta = 0.19$, $p = 0.000$), Natural Child ($\beta = 0.19$, $p = 0.000$), and Controlling Parent ($\beta = 0.10$, $p = 0.003$). The Adapted Child ego state has only a small effect, associated with an increase in the sense of career recognition. The personality features that imply a recognition of the other's boundaries, an ability for positive critique, an engagement with problem solving, adaptability, and creativity in work contribute little to Recognition. Individual characteristics have no important impact, and the only work characteristics with any significance are experience ($\beta = 0.16$, $p = 0.039$) and organizational position ($\beta = -0.10$, $p = 0.005$). An accumulation of knowledge and work experience only slightly increases a sense of career recognition, while the position of performer slightly lowers it.

Third, the characteristics examined make a contribution to the dimension of Personal Life, accounting for 21% of variations. Once again, ego states are predictors ($R^2 = 20$), and all ego states other than Controlling Parent have a significant influence. The Natural Child ($\beta = 0.25$, $p = 0.000$) and Adult ($\beta = 0.23$, $p = 0.000$) ego states slightly increase the feeling of satisfaction in this respect, while the Nurturing Parent ego state ($\beta = 0.13$, $p = 0.004$) has very little effect. The Adapted Child ego state ($\beta = -0.12$, $p = 0.002$), which is associated with over-adaptation to social norms and requirements, leads to a slight decrease in satisfaction with personal life. The gender is a predictor ($\beta = 0.12$, $p = 0.000$) among individual characteristics, and the ego states described contribute to a small increase in satisfaction with personal life for women. In summary, attaining a balance between career and personal life is primarily related to one's possibilities for expressing themselves, with tendencies towards impulsive behavior, curiosity, and emotionality being more characteristic of women.

Fourth, the characteristics examined play a significant role on the Authenticity subscale, explaining 20% of variations. As in the cases above, ego states are more significant predictors, accounting for 18% of variations, with work characteristics explaining only 2%. Among individual characteristics, age ($\beta = 0.13$, $p = 0.000$) is associated with only a small increase in values for Authenticity. Organizational position and work experience also have an influence upon Authenticity, with work experience moderately increasing it ($\beta = 0.30$, $p = 0.001$) and organizational position ($\beta = -0.12$, $p = 0.002$) lowering diminishing it. Only work experience retains its influence in respect to individual characteristics and ego states. The Adult ego state ($\beta = 0.26$, $p = 0.000$) is the strongest predictor among ego states, associated with a small increase in values for Authenticity, with the Natural Child ($\beta = 0.17$, $p = 0.000$) and the Nurturing Parent ($\beta = 0.10$, $p = 0.027$) ego states also having a significant impact upon this value, even lowering it. In summary, career guidance in accordance with the needs and preferences of

the personality is significantly related to behavior associated with analyzing and adapting to current reality, introspection, and objectivity in decision-making. Generally speaking, the accumulation of work experience and competence contributes to the manifestation of such behavior.

Fifth, ego states, individual characteristics, and occupational characteristics explain 19% of variations on the professional Satisfaction subscale of career success. The ego states are once again the strongest predictors, accounting for 16% of variations. The Natural Child ($\beta = 0.23$, $p = 0.000$), Adult ($\beta = 0.16$, $p = 0.000$), and Nurturing Parent ($\beta = 0.14$, $p = 0.001$) ego states make a small contribution to career satisfaction, with individual characteristics and work characteristics making none. Manifestations of creativity and spontaneity in the workplace, the possibility for self-expression, independence, and the satisfaction of the actual needs of the personality thus have a weak influence upon the experience of positive emotions associated with professional realization. Gaining a higher position in the organization leads to a clearer expression of satisfaction concerning professional realization and a feeling of career success.

We also examined in detail the contributions of personality, individual characteristics, and work characteristics upon subjective career success in the professional groups we studied. First, the characteristics studied play the most significant role in subjective career success ($R^2 = 0.50$) for Engineers and Architects, with ego states accounting for 46% of variations. The Adult ($\beta = 0.43$, $p = 0.000$) and Natural Child ego states ($\beta = 0.27$, $p = 0.000$) are significant predictors in this regard. Briefly stated, career success for this occupational group implies the possession of such personality traits such as an analytical approach, the skills needed for dealing with facts and information, rational thinking, and objectivity in decision-making.

Second, the characteristics examined play a significant role for subjective career success ($R^2 = 0.49$) among Physicians, explaining 39% of variations. In respect to our sample, the Natural Child ego state ($\beta = 0.37$,

$p = 0.008$) and the salary ($\beta = 0.26$, $p = 0.053$) were predictors of career success for Physicians. Such personal characteristics as independence, freedom of action, spontaneous expression of emotions, and a desire for pleasure moderately enhanced their subjective career success. Individual characteristics play no significant role for this group, and work characteristics, other than salary, make a minor contribution. An increase in the salary leads to a small increase in the sense of subjective career success for Physicians.

Third, the characteristics studied make a significant contribution for Art professionals ($R^2 = 0.45$), with ego states explaining 40% of variations. The Nurturing Parent ego state ($\beta = 0.58$, $p = 0.000$) is the strongest predictor of career success for this occupational group, with the Adapted Child ($\beta = -0.33$, $p = 0.018$) and Natural Child ($\beta = 0.26$, $p = 0.023$) ego states having a lesser affect. That is to say that the subjective perception of career success among Art professionals is significantly associated with such characteristics as paying attention to others, meeting their needs, displaying empathy, and understanding. In general, creativity and impulsive behavior contribute to increased career success in this regard. Dependence behavior and adapting to rules and external requirements leads to a small decrease in career satisfaction.

Fourth, the characteristics we have examined make a significant contribution for the group of Healthcare professionals, accounting for 42% of variations. The ego states are again the more significant predictors, explaining 38% of variations. Among work characteristics, age ($\beta = -0.44$, $p = 0.039$) moderately lowers subjective career success. Three ego states are particularly important as predictors, with the Nurturing Parent ego state ($\beta = 0.37$, $p = 0.001$) significantly improving and moderately raising the perception of career success, with the Natural Child ($\beta = 0.24$, $p = 0.004$) and Adult ($\beta = 0.20$, $p = 0.045$) ego states also playing significant roles. We may thus say that Healthcare professionals are most expected to possess characteristics associated with engaging other people's problems, caring for others and providing help, displaying positive emo-

tions, being able to analyze information, and maintaining self-control. Significantly, career satisfaction and a sense of success among Healthcare professionals' decrease with age.

Fifth, the characteristics we have studied influence subjective career success ($R^2 = 0.42$) among Financial specialists. The ego states are once again more significant predictors, accounting for 37% of variations. Among work characteristics, salary ($\beta = 0.22$, $p = 0.014$) has an effect, with higher wages slightly raising the sense of subjective career success. The Adult ego state ($\beta = 0.43$, $p = 0.000$) is the strongest predictor among ego states, moderately raising the value for subjective career success, with the Natural Child ego state ($\beta = 0.27$, $p = 0.001$) also increasing it. In summary, career success in this professional group implies the possession of such personality traits as an analytical approach, the ability to deal with facts and information, rational thinking, and objectivity in decision-making.

Sixth, the characteristics examined contribute to subjective career success for those working in the administrative and technical specialists, explaining 39% of variations. The ego states are again the more prominent predictors, explaining 36% of variations. Among work characteristics, only organizational position ($\beta = -0.18$, $p = 0.029$) plays a notable role, slightly lowering subjective career success. Three ego states are predictors, with the Adult ($\beta = 0.30$, $p = 0.001$), Natural Child ($\beta = 0.25$, $p = 0.006$), and Nurturing Parent ($\beta = 0.24$, $p = 0.021$) ego states significantly predicting subjective career success. In general, we can say that the feeling of career success in Administrative and Technical professions implies the possession of such personal characteristics such as consciousness, self-observation, analytical thinking, consistency, initiative, and purposefulness. To a lesser extent, having a low organizational position leads to a reduction in career satisfaction and in a sense of success.

Finally, ego states, individual characteristics, and work characteristics explain 39% of variations for Public sector employees. The ego states have the strongest influence, accounting for 34% of variations. Among work

characteristics, work experience ($\beta = 0.49$, $p = 0.029$) moderately raises the perception of career success. Among the ego states, the Adult ego state ($\beta = 0.36$, $p = 0.000$) is the most significant predictor for subjective career success, with the Natural Child ego state ($\beta = 0.19$, $p = 0.019$) having a less important influence. Therefore, the perception of career success in the public sector implies the possession of such personality characteristics as rationality, adaptability, consciousness, self-observation, analytical thinking, the ability to objectively evaluate reality, and purposefulness.

CONCLUSION

Based on the results of our study, we may state that personal characteristics measured as ego states are significant predictors of subjective career success. In addition, tendencies that have been identified for ego states as predictors of subjective career success are associated in different ways with the various occupational groups surveyed. For example, the Adult and Natural Child ego states are predictors of subjective career success for Administrative and Technical specialists, professionals in the Public sector, Engineers, Architects, and Financial specialists, and their roles are most pronounced for the latter three groups. This suggests that the satisfaction obtained from successfully attaining one's career goals reside upon such personal characteristics as analytical and rational thinking, the knowledge and information needed for working with facts, objectivity in finding a solution, impulsivity, and a tendency to meet current needs.

Other tendencies revealed by our detailed analysis include the importance of the Nurturing Parent ego state as a predictor for Healthcare and Art professionals. This ego state, which is in fact the strongest predictor for these groups, includes such specific features as concern, empathy, engagement with others' problems, providing help, and displaying positive emotions. Unlike all other occupations, Physicians have only one predictor for career success, namely the Natural Child

ego state. This implies that career success is related to the possession of such personality characteristics as independence, freedom of action, spontaneous expression of emotions, audacity, an ability to make quick decisions in critical situations, and the effort to experience pleasure and fulfill current needs.

The findings of this study can be used to assist managers at various organizational levels as well as employees in different organizations. Such interventions could improve organizational efficiency and create conditions for the optimal professional realization of employees. The use of transactional analysis tools can help employees establish their own working style and behavior model within a given work environment that will enable them to have a greater choice concerning how to respond to different situations and how to apply their strengths in their professional realization.

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