

## National academic award winners over time: their family situation, education and interpersonal relations

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The article presents the results of a study focusing on the family situation, education and interpersonal relations of adults (26–35 years old) who in their adolescence (16–19 years old) displayed exceptional giftedness. One group of those surveyed were national academic award winners (90). The control group consisted of 90 people of no outstanding academic achievement. The research found many differences between these two groups, both in the family situation and in interpersonal relations. High achievers were raised in families of higher social and professional status, and almost 72.2% of them decided to continue their academic career after they had graduated from university. The national academic award winners showed higher scores in shyness and lower scores in sociability in interpersonal relations.

**Keywords:** national academic award winners; high achievers; family situation; education; interpersonal relations

### Introduction

The problems that are addressed in the following article belong to the current trends in research pertaining to psychology of giftedness. Among the numerous publications on the gifted that have appeared within the last 100 years, merely 13%–24.2% deal with adults (Heller, Mönks, & Passow 1993; Heller & Schofield, 2000; Ziegler & Raul, 2000).

Very frequently, those individuals who were regarded as particularly gifted at the level of primary, secondary, or higher education are not successful as adults (Sękowski, 2000, 2004; Stasiakiewicz, 1982; Sternberg, 1996, 1997). The present-day research generally stresses the important role of the social milieu not only in the identification but especially in the development of giftedness and in nurturing the gifted (Delcourt, 1993; Feldhusen & Heller, 1986; Freeman, 2000; Gagné, 1995; Heller et al., 1993; Mönks, van Boxtel, Roelofs, & Sanders, 1986; Painter, 1993; Piirto, 1995). The environment exerts an impact on the development of particular personality traits (Mönks, 2004; Mönks et al., 1986). Studies have shown that noncognitive factors such as motivation, concentration, and endurance, as well as parental and school support systems, seem mainly responsible for exceptional performances in later life (Bloom, 1985; Schneider, 2000). According to the expert performance approach, learning and deliberate practice play a crucial role in the acquisition of expert performance, and adult skills can be described as a sequence of acquired states of measurable levels of

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mastery (Ericsson, Krampe, & Heizmann, 1993; Ericsson, Roring, & Nandagopal, 2007; Schneider, 2000).

### ***Academic achievements in secondary school***

School achievements constitute a psycho-pedagogical criterion of giftedness. According to some authors, they are an *ex post* indicator and, as such, are of no predictive value (Sternberg, 1996; Siekańska, 2004a; Tyszkowa, 1990). In other words, among those who as adults are particularly successful in a given area, there are very few of those who were the best pupils at school. In the relevant literature, however, one can also come across a contrary statement that school achievements are a good predictor of future attainment and that the range and level of these achievements is a basic indicator of the range and level of giftedness (Feist, 2006; Rosołek, 1990; Szmajke, 1989; Trost, 1993). The achievements are connected with an activity that is much extended over time, requires perseverance, and consistency in the pursuit of a defined goal. Based on these achievements, one can guess the direction in the development of giftedness (Sękowski, 2000; Siekańska, 2004b).

The achievements of gifted school children and students are usually associated with their activity at school level and university level, but, as some studies demonstrate, the objectives that are identified by gifted students may surpass the above-mentioned limits (Sękowski, 2000). In Kelly's study (1993), school success was a stronger predictor of career self-efficacy than gender. Academic achievements are closely connected with interests (Rubinsztein, 1964) and testify to ambition and high aspirations. Adolescent interests and experiences influence the choice of objectives, professional activity, and achievements in adulthood (Siekańska & Sękowski, 2006; Trice & McClellan, 1993).

### ***Family situation and education***

In childhood, a gifted person needs special support and stimulation from the family and school environment, including stimulation to develop social and emotional skills. This is crucial for his/her adult life. The lack of proper stimulation or support may affect the quality of his/her family life and career (Korczałowska, 2004; Torrance, 2004). The relation between the individual and the environment is not simply interactive. The environmental components can function in a compensatory fashion and shortcomings in one factor can be compensated by other factors (Katzko & Mönks, 1995).

Family structure, family traditions, and parents' education have an influence on the self-esteem (Sahin, 1995) and the system of values (Trost, 1993) of children, not only gifted ones. Gifted children live in a world that is designed according to the perception of others, especially their parents. The fear of disappointing their parents' inappropriate expectations may cause unwanted emotional consequences (Moon & Thomas, 2003; Sahin, 1995). Parents, as well as other mentors, seem to play a significant role in evoking the children's and adolescents' motivation to achieve (Stewart & Porath, 1999; Trost, 1993). Mothers and fathers can help their children by deferring immediate gratifications to accomplish long-term objectives. The curriculum of the home may include not only direct teaching and parent-child discussions but also encouragement, planning, and monitoring of leisure time and school activities (Walberg, 1995). Parental interests and activities create a climate

that offers a wide range of stimulation to their children (Korczakowska, 2004; Piirto, 1995; Trost, 1993). A child's capacity to do well in life is heavily dependent on encouragement from the parents, as well as on the type of home and neighborhood. The majority of parents of exceptional achievers can be described as child-oriented. Research on award-winning adolescents and highly eminent people shows the huge potential of learning environments (Ericsson et al., 1993; Ericsson et al., 2007; Schneider, 2000; Walberg, 1995). The interaction between parents and gifted children is not just an interaction between individuals, but also an interaction between their cognitive capacities and needs, which change with age (Freeman, 1993). Gifted females in Reis' (1995) study indicated that their parents encouraged them to *do well in school*, but had no idea how to encourage a specific career goal. The way parents conduct their lives is a very powerful way of teaching their children. Parents act as models (*actors breed actors, professors breed professors, musicians breed musicians* etc.; Piirto, 1995, p. 15) but children do not simply imitate them.

The researchers show that family environment is considered an important factor that influences the development of gifts. However, this factor can play a positive or negative role. The results of Reis' (1995) study indicate that in adulthood many gifted women do not develop their own talent because of their marriage and personal lives. Another study by Goertzel et al. (cited in Trost, 1993) found that 85% of eminent persons came from disturbed homes.

Some gifted children who are economically disadvantaged rise to eminence despite these apparent difficulties (Goertzel & Goertzel, 1962, cited in Stewart & Porath, 1999). The influences of the mother, the organizational structure within the home, and mentors were found to be positive factors that encouraged the success and creative achievements of eminent adults raised in impoverished conditions (Stewart & Porath, 1999).

Higher levels of achievement are associated with families that have clearly communicated expectations for achievement, standards for study, homework, and practice, a family life organized around school or lessons or both, and active recreational pursuits (Bloom, 1985; Silverman, 1991; Subotnik & Olszewski-Kubilius, 1997).

### ***Interpersonal relations***

The quality of social contacts is important from the point of view of emotional functioning and possible difficulties in this domain of psychological life. This is especially significant in the case of exceptionally gifted people (Freeman, 2006; Gross, 1993; Moon, Jurich & Feldhusen, 1998; Sękowski, 1999, 2001; Tyszkowa, 1990). Good interpersonal relations evolve from the very first moments of life and play a special part in the intellectual development and education of gifted people (Freeman, 1994). Czeschlik's (1993) study of a group of exceptionally intelligent and moderately intelligent 10 year olds shows that, for instance, compared with moderately intelligent children, exceptionally intelligent children were more flexible in personal and social contacts. This characteristic, however, was not observed in older children. Researchers agree that attributes typical of gifted people, such as independence, individualism, self-reliance, tendency to make use of the gift, focus on one's own interests may lead to alienation and a sense of otherness, and consequently to difficulties in interpersonal relations (Dąbrowski, 1989; Mendaglio & Peterson, 2007; Prober, 2008; Sękowski, 2001).

Practically speaking, the term ‘*interpersonal relations*’ denotes relations between people, and they can be analyzed in various contexts and in relation to various domains of life. The quality of interpersonal relations is of utmost importance to the child’s perception of the quality of his/her school life (Czarnecka, 1994) as well as for the sense of satisfaction with one’s marriage and family life (Grzesiuk, 1994; Middlemiss, 1996; Nęcki, 2000). Equally important is the quality of interpersonal relations in the workplace. The way in which an individual functions in a large social context affects his/her efficiency in fulfilling the professional and familial roles (Mendaglio & Peterson, 2007; Moszyński, 1982; Wiggins & Trobst, 1997).

Research has shown that, as adults, high ability learners were more satisfied with their jobs than nonhigh achievers (Siekańska, 2000, 2004b; Siekańska & Sękowski, 2006), but they had trouble finding friends and partners, i.e., people who have similar depth, complexity, sensitivity, and interests (Prober, 2008; Siekańska, 2002). They spent more time in solitude, and when they were with other people were more likely to be with one person at a time (Csikszentmihalyi, Rathunde, & Whalen, 1997).

From the first day of our lives, we find ourselves in interpersonal situations involving interactions with others. Our early attachments to parents and other significant persons are cognitively and emotionally represented in our memories as *personifications* or prototypes of interpersonal situations (Wiggins, 1995; Yaughn & Nowicki, 1999). According to Sullivan (1953), individuals are driven to interact with others, in large part, to reduce anxiety and affirm one another’s self-image (status, power, worth). When these goals are attained, the interaction is complementary (Sullivan, 1953; Yaughn & Nowicki, 1999).

To measure and categorize the types of interactions we need a circumplex framework (Lorr, 1996; Wiggins, 1997). In most circumplex models, interpersonal behavior is arranged on two axes: status (from dominance to submissiveness) and affiliation (from hostility to friendliness) (Yaughn & Nowicki, 1999). In the Wiggins model, on the basis of these two orthogonal dimensions, personality styles are arranged into eight divisions (Wiggins, 1995). Interpersonal variables are known to be distributed continuously around the circle formed by the coordinates of *Dominance* and *Nurturance*. The characteristics of the scales comprise: a description of interpersonal style, a description of interpersonal problems and a description of personality disorders.

### ***The aim of the study***

Before the study the following research question were formulated: (i) What were the families like in which the national academic award winners were raised (a generational family)? (ii) What is the present situation of their own (procreative) families? (iii) Are there any significant differences in the characteristics of the interpersonal relations between those of high achievers and those of nonhigh achievers?

The purpose of this study is to address the relative lack of empirical research on gifted adults. The aim of the research is both to become acquainted with, and to make comparisons between, the social circumstances (i.e., family situation, education and interpersonal relations) of national academic award winners and people of no outstanding academic achievement. Moreover, the research makes it possible to check whether winning a national school competition in a particular subject is a reliable predictor of future attainment.

On the one hand, we can expect unique family circumstances in people with high academic achievement. On the other hand, the data collected in the course of our research will allow us to refute or confirm the common belief that high achievers encounter difficulties in their social functioning more frequently than those of average talent.

## Method

### *Participants and procedure*

The research involved two groups of people aged 26–35 years. Each group consisted of 37 women and 53 men. All the respondents were employed for at least three years and all work in a large Polish town (200,000–1,000,000 inhabitants). The first group comprised 90 people who in their high schools (between 16 and 19 years of age) were top prize winners in at least one school-subject contest at the national level. School olympiads, known also outside Poland (Passow, 1986; Pèk, 1986), are to pick out especially gifted students and to encourage them to continue their academic activity (Sękowski, 1999). In Poland there, are more than twenty national competitions. Pupils participate annually in school olympiads in subjects such as mathematics, biology, chemistry, physics, technology, astronomy, foreign languages, Latin and Greek, history, Polish language and literature, geography, philosophy, economy and others. Most academic competitions are aimed at upper secondary school students (above 16 years of age). The winners of school olympiads are given a choice of university and study discipline. Additionally, they can apply for various academic scholarships. They are also successful while representing Poland in various international competitions, which are held annually in mathematics, chemistry and physics (Siekańska, 2000, 2002).

The control group were 90 people who used to attend, and graduated from, the same school as the national academic award winners but did not participate in school olympiads and achieved no outstanding academic success.

The information concerning the competition winners was found in school chronicles and archives, was obtained from the competition organizers (national and regional competition committees), or was gathered from the publications of Wydawnictwa Szkolne i Pedagogiczne (a major publisher of school handbooks and related materials). On the basis of this information, a list of 102 competition winners was drawn up. Ultimately, only five persons refused to take part in the survey, three were dead at the time and four could not be reached.

The research lasted for 1½ years. Each of the respondents was approached individually. The project embraced competition winners from the years 1983–1991. To provide maximally homogeneous conditions, each interview was conducted by the same person. The mean age in the high achievers group was  $M=30.01$ ,  $SD=2.35$ , while in the control group it was  $M=30.26$ ,  $SD=2.94$ . The age difference was statistically insignificant.

The prize winners represented such domains as: history of art (seven participants), astronomy (4), biology (16), chemistry (5), economics (1), English language and literature (6), French language and literature (3), geography (3), German language and literature (2), history (7), Latin (9), mathematics (5), philosophy (1), physics (7), Polish language and literature (24), technical knowledge (2), knowledge about Poland and the contemporary world (4).

In the analysis of the family situation of the respondents, the following aspects were taken into account: number of siblings, marital status, number of children, education and academic degree, continued traditions of professional practice in the family, education and academic degree of the father, education and academic degree of the mother, and the motivation lying behind the choice of professional career.

### ***Instrumentation, data collection, and analysis***

The data concerning the respondents, their education and family situation were collected with the help of Siekańska's *Individual Chart*. Interpersonal relations were examined with the help of the abridged version of J.S. Wiggins's *Interpersonal Adjective Scales-Revised (IAS-R)* (Wiggins, 1995; Wiggins & Pincus, 1992; Wiggins & Trobst, 1997), which contains 64 adjectives arranged in eight scales that are called octants. Each octant is labeled with two capital letters that replace a pair of adjectives: PA (Assured–Dominant), BC (Arrogant–Calculating), DE (Cold-hearted), FG (Aloof–Introverted), HI (Unassured–Submissive), JK (Unassuming–Ingenuous), LM (Warm–Agreeable), NO (Gregarious–Extroverted).

This scale is used to relate individual interpersonal styles to Leary's circumplex model (Wiggins, 1995). Eight scales define four bipolar vectors: Dominant versus Submissive, Calculating versus Unassuming, Cold versus Agreeable, and Introverted versus Extroverted. These correspond closely to what Costa and McCrae call *facets* of the NEO-PI (Lorr, 1996).

The work on the Polish adapted version (Sękowski, Klinkosz & Siekańska, 2001), which commenced in 1998, is advanced enough to use the scales in academic research.

The task consists of judging how accurately (on the scale of 1–8) a given adjective describes the respondent; 1=*extremely inaccurate*, 8=*extremely accurate*. The results are processed as follows: the arithmetic means are calculated for each of the scales, then converted into standard scores  $T$  (10–90), and then *angular location* ( $0^\circ$ – $360^\circ$ ) and *vector length* ( $10$ – $90T$ ) are computed. All the adjectives that describe interpersonal relations are placed on the circumplex between the main axes of Love (LOV) and Dominance (DOM). Each category, or octant, correlates with a sector of 1/8 of the circle. It is the *angular location* of the resultant vector (and not the shape of the profile) that decides which *personality type* a person represents, whereas the *vector length* correlates with how intensely the person displays behaviors connected with a given type. An above average result indicates problems with interpersonal relations, and a high figure is interpreted in clinical categories (maladjustment, personality disorders) (Wiggins, 1995). This is a significant piece of information because it may happen that diagnostic profiles of people who were classified as belonging to the same category do not differ in shape, that is in configuration, but do differ in intensity, that is in the length of the resultant vector. The results displayed on the circumplex are the so-called profile. In order to define the interpersonal type of the respondent, it is necessary to provide the position on the circumplex on the basis of two coordinates. The results for DOM and LOV are calculated with the help of mathematical formulas. The IAS scales have a satisfactory reliability index ( $\alpha > .773$ ) and may be administered both in individual and group format. Further work is carried out on the Polish adapted version of the method.

To understand results better, a short description of the scales are given below (Wiggins, 1995):

- PA (Assured–Dominant) – forceful, assertive, dominant, and self-confident;
- BC (Arrogant–Calculating) – egotistical, arrogant, cunning, and exploitative;
- DE (Cold-hearted) – not warm, kind, sympathetic or understanding; likes autonomy and freedom from others and from social convention;
- FG (Aloof–Introverted) – introverted, distant, aloof, and unsociable;
- HI (Unassured–Submissive) – timid, meek, shy, and self-doubting;
- JK (Unassuming–Ingenuous) – mild, gentle, conventional, and not argumentative, devious or egotistical;
- LM (Warm–Agreeable) – sympathetic, forgiving, kind, and softhearted;
- NO (Gregarious–Extroverted) – friendly, outgoing, sociable, and cheerful.

## Results

### *Family situation and education*

The data concerning the number of siblings pointed that 43.3% among the high achievers and only 8.9% among the control group grew up without siblings. Nearly 38% (i.e., 37.8%) of the national academic award winners and 63.3% of the control group had one brother or sister. Over 13% (13.3%) of the high achievers and 20% of the control group had two siblings. More than two siblings (three to six brothers and sisters) were in the families of 5.6% of the prize winners and 7.8% of the nonwinners. The difference between the groups regarding the number of siblings was statistically significant (chi-square=29.3; df=5;  $p < .001$ ).

The data concerning the marital status of the respondents showed that 47.8% of the high achievers were single, compared with 28.9% in the control group. Among the high achievers 50% were married, and in the control group 68.9% were married. For both groups, the number of the divorced was the same, namely 2.2%. The difference between the groups regarding the marital status was statistically significant (chi-square=6.89; df=2;  $p = .031$ ).

Another variable taken into consideration was the number of children. The research demonstrated that 65.6% of the high achievers and 48.9% of the respondents from the control group had no children; 23.3% of the award winners and 28.9% of the control group had one child, 11.11% of the high achievers and 22.2% of the control group had two or more children. The difference between the groups regarding the number of children was statistically significant (chi-square=6.05; df=2;  $p = .049$ ).

As to education and academic degrees, the respondents (both groups) were divided into four groups: high school graduates, university graduates, postgraduate students, and holders of doctoral degrees.<sup>1</sup> The difference between the groups regarding the level of education and academic degrees was statistically significant (chi-square=85.31; df=4;  $p < .001$ ). In the high achievers group 4.4% received only high school education. Strictly speaking, they began their university studies but never graduated. In the control group 26.7% of the respondents had high school education. Among the high achievers, 23.3% had university education, and the relevant number in the control group was as high as 67.8%. For as many as 50% of the national academic award winners, the procedure concerning their doctoral

degree had started; the analogical figure for the control group was a mere 3.3%. The difference was manifested also at the highest level of education. The group of high achievers included 10 times more people who hold a doctoral degree (22.2% vs. 2.2% in the control group). The information provided by the respondents showed that 72.2% of the high achievers were at that moment occupied with academic research. Their specialty field was connected with their past interests, manifested in their participation in the school subject competitions (e.g., a winner in the mathematics competition became a mathematician, a winner in the physics competition became a physicist, etc.). Only 6.7% decided to change the field of their specialization compared with 23.3% in the control group.

The next batch of data concerned the education and academic degrees of the fathers of the respondents. The difference between the groups regarding the level of the fathers' education was statistically significant (chi-square=38.36;  $df=5$ ;  $p<.001$ ). In the high achievers group, no father had only primary education and only one father in the control group did. Only 1.1% of the fathers of the academic award winners and 12.2% of the fathers of the nonwinners had vocational education. In the control group, twice as many fathers as in the high achievers group had high school education (42.2% vs. 17.8% among the fathers of the high achievers). Nearly half (48.9%) of the fathers of the academic award winners and 40% of the fathers of the nonwinners had university education. In the high achievers group, 15.6% of the fathers held doctoral degrees, while holders of postdoctoral degrees and professors were 16.7% among them. In the control group, those figures were much lower and respectively amounted to 1.1% and 3.3%.

A statistically significant difference was also observed in the education of the mothers of academic award winners vs. nonwinners (chi-square=33.76;  $df=5$ ;  $p<.001$ ). Among the mothers of the high achievers, 3.3% had primary education, 0% vocational education, 24.4% high school education, 56.7% university education, 8.9% held a doctoral degree, 6.7% either had a postdoctoral degree or were professors. In the control group 4.4% of the mothers had primary education, 5.6% vocational education, 54.4% high school education, and 35.6% university education. In the control group, no mother had a doctorate, postdoctoral degree or was a professor.

Another set of data related to the motives behind the choice of respondents' education and career path. Respondents were asked the question: "What was the main motive behind your choice of education and career path?" The answers were analyzed by the research team. Four categories of answers were distinguished:

- (1) respondent's own interests, e.g., "It was obvious. I always wanted to become a mathematician";
- (2) calculation (profitability and attractiveness of the profession), e.g., "I thought it would be easy to find a well-paid job";
- (3) persuasion of others, e.g., "I followed my teacher's suggestion";
- (4) chance, e.g., "I had no idea what to choose so I followed my class mates".

The difference between the academic award winners and the nonwinners group regarding the motives behind the choice of education and career path was statistically significant (chi-square=18.11;  $df=3$ ;  $p<.0004$ ). The research demonstrated that 68.9% of the high achievers were motivated exclusively by their own interests; 8.9% paid attention chiefly to the profitability and attractiveness of the

profession; 14.4% were persuaded by other people; and 7.8% declared that their decision was a matter of pure chance. In the control group, 41.11% of the respondents were motivated by their own interests, 15.6% calculated the profitability of the choice, 15.6% were persuaded by others, and as many as 27.8% thought their choice was a haphazard one, since they had no particular interests and it was extremely hard for them to make a decision.

The respondents were also interviewed as to the continuation of family traditions in professional practice. The question was whether any close relative (e.g., parent or grandparent) had, or had had, a similar profession and if so, whether this fact was a matter of importance or an inspiration in the development of their interests or in their professional career. The research showed that the difference between the academic award winners and nonwinners group regarding the continuation of family traditions was statistically significant (chi-square=8.57;  $df=1$ ;  $p=.003$ ). Forty percent of the high achievers reported that they continued family traditions, while 60% did not continue them. In the control group 20% of the respondents admitted they continued their family tradition, and 80% did not.

### Interpersonal relations

When the IAS-R are used in research, not one but 10 scores are obtained: eight for each of the subscales (Table 1), plus angular location and vector length. Table 1 shows means ( $M$ ), standard deviation ( $SD$ ), and the  $t$  tests results concerning the significance of the differences in each of the eight subscales.

The high achievers group obtained the highest scores on the scale Warm–Agreeable ( $M=5.58$ ). The second highest score was on the scale Gregarious–Extroverted ( $M=5.38$ ) and the scores next in frequency were Assured–Dominant ( $M=4.79$ ), Unassuming–Ingenuous ( $M=4.59$ ), Unassured–Submissive ( $M=4.20$ ), Aloof–Introverted ( $M=3.56$ ), Arrogant–Calculating ( $M=3.11$ ), and Cold-hearted ( $M=2.44$ ). It means that they have a disposition to be warm, nurturing, sympathetic, and caring in social transactions. They provide material or emotional benefits to others who are in trouble or need help. They are inclined to be cheerful and actively seek out settings and situations that will permit harmonious interactions with others.

Table 1. Mean ( $M$ ), standard deviation ( $SD$ ) and  $t$  test values for Interpersonal Adjective Scales-Revised (IAS-R).

IAS-R scale	Gifted people, $n=90$		Control group $n=90$		$t$	$p$
	$M$	$SD$	$M$	$SD$		
Assured–Dominant (PA)	4.79	0.95	4.99	0.86	-1.49	0.139
Arrogant–Calculating (BC)	3.11	0.82	3.42	1.06	-2.17	<b>0.032</b>
Cold-hearted (DE)	2.44	0.75	2.41	0.88	0.251	0.802
Aloof–Introverted (FG)	3.56	0.98	3.22	0.81	2.563	<b>0.011</b>
Unassured–Submissive (HI)	4.20	0.87	4.04	0.78	1.354	0.178
Unassuming–Ingenuous (JK)	4.59	0.66	4.54	0.75	0.449	0.654
Warm–Agreeable (LM)	5.58	0.75	5.51	1.02	0.531	0.596
Gregarious–Extroverted (NO)	5.38	0.94	5.88	0.80	-3.8	<b>0.000</b>

$p$ , significance;  $N$ , number of respondents;  $df=7$ . Values in bold are significant,  $p<0.001$ .

In the control group, the respondents obtained the highest scores in the octant Gregarious–Extroverted ( $M=5.88$ ). The second highest score, quite contrary to what occurred in the gifted group, was on the scale Warm–Agreeable ( $M=5.51$ ). Then came the scales Assured–Dominant ( $M=4.99$ ), Unassuming–Ingenuous ( $M=4.54$ ), Unassured–Submissive ( $M=4.04$ ), Arrogant–Calculating ( $M=3.42$ ), Aloof–Introverted ( $M=3.22$ ), and Cold-hearted ( $M=2.41$ ). They described themselves as outgoing and vivacious in social transactions. They seek out jobs, social events, organized activities, hobbies, parties, and social clubs that will provide settings for social interactions. They also have a disposition to be warm and nurturing.

In the case of three scales out of eight, the observed differences between mean values were statistically significant: Gregarious–Extroverted ( $p=.000$ ), Aloof–Introverted ( $p=.011$ ), Arrogant–Calculating ( $p=.032$ ). It means that high achievers are less friendly, outgoing, and cheerful than the control group respondents. They are also less prone to express anger and irritation toward others in the form of humiliation and exploitation. They more often tend to avoid social interactions to rebuff the friendly overtures of others (Wiggins, 1995).

The IAS-R scales make it possible to determine the so-called interpersonal type of a given person. To that end, one should translate raw data into  $T$  scores (10–90), then calculate the indexes DOM and LOV as well as the *angular location* and *vector length*. It is the angular location and not the shape of the profile that determines the category of the interpersonal type, while the vector length points to the intensity of the manifested behavior that is connected with the given type.

This research allowed us to define the interpersonal type of each of the respondents. Table 2 shows a comparison between the high achievers and the control group respondents as to their interpersonal types. The research showed that the difference between the variable academic award winners vs. nonwinners regarding the interpersonal type was statistically significant (chi-square=18.92,  $df=7$ ,  $p=.008$ ). The greatest differences occurred on the scales: Aloof–Introverted FG, Cold-hearted DE, and Arrogant–Calculating BC.

Table 2. Distribution of number and percentage of interpersonal types for the scores obtained in the Interpersonal Adjective Scales-Revised by the gifted and the control group.

Interpersonal type	Gifted people		Control group		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
PA	12	13.3%	16	17.8%	28	15.6%
BC	7	7.8%	22	24.4%	29	16.1%
DE	14	15.6%	6	6.7%	20	11.1%
FG	19	21.1%	6	6.7%	25	13.9%
HI	9	10.0%	9	10.0%	18	10.0%
JK	6	6.7%	6	6.7%	12	6.7%
LM	6	6.7%	9	10.0%	15	8.3%
NO	17	18.9%	16	17.8%	33	18.3%
Total	90	100.0%	90	100.0%	180	100.0%

*n*, number of respondents; PA, Assured–Dominant; BC, Arrogant–Calculating; DE, Cold-hearted; FG, Aloof–Introverted; HI, Unassured–Submissive; JK, Unassuming–Ingenuous; LM, Warm–Agreeable; NO, Gregarious–Extraverted. (chi-square=18.92,  $df=7$ ,  $p=0.008$ )

The data included in Table 2 showed that the high achievers group was dominated by the interpersonal type FG, Aloof–Introverted. This type was represented by 21.1% of the respondents, which was three times more than in the control group (6.7%). It means that three times more high achievers than nonhigh achievers (the control group) present behavior that limits social life (e.g., refusing invitations, not taking time or making effort to interact with others).

The interpersonal type DE Cold-hearted was represented by 15.6% of the high achievers and only by 6.7% of the control group. It means that behaviors emphasizing autonomy and freedom from others can be observed among the high achievers twice as often.

The control group included the most representatives of the type BC Arrogant–Calculating (24.4%), compared to only 7.8% in the high achievers group. As to the remaining types of interpersonal relations, the proportions are similar in both groups.

Furthermore, the analysis of the results consisted in the comparison of the angular location and vector length within particular interpersonal types. With the help of a *t* test,<sup>2</sup> we calculated the significance of the differences in the scores of the high achievers and the control group. The vector lengths belonged to average values (40.837–52.717), which means that the displayed behavior was neither exaggerated nor inflexible. The angular location differences were not statistically significant.

Although the average vector lengths with the respondents from both groups do not point to any special problems connected with social contacts, it must be remembered that these values were the resultants of all the scores. Therefore, one ought to apply caution in the formulation of general conclusions.

### Discussion and conclusions

This study revealed a special characteristic of the family circumstances of people who in the past were high ability learners. This group is dominated by people with no siblings. This has a bearing upon the shape of social orientations and of particular personal traits, interests, ways of spending free time, acquisition of language, evolution and nature of interpersonal relations. A child's position in the family can have a considerable effect on role expectations. First-born children and the only children strive harder to please their parents because they identify with them more strongly. They are more likely to be concerned with the way they are perceived by adults and to be more responsible (Freeman, 1993). The research carried out by Macháček et al. (cited in Rembowski, 1986) showed that those who are raised as an only child are better-read, progress faster in terms of intellectual development, and have more opportunities to observe and follow the example of adults. On the other hand, they are treated with excessive protectiveness and attention on the part of the carers, which may hinder their adjustment to social life in a group.

The high achievers were raised in families of higher social and professional status so they had more opportunities to cultivate their interests, to establish contacts with academic circles, and to access appropriate literature. This information refers to the past situation. Nowadays all students have easier access to appropriate literature. PISA (2006) research shows that, between 2000 and 2006, Poland increased its reading performance by 29 score points.

The high achievers group, compared with the control group, married and began their own families later. It appears from the interviews that academic award winners,

who devote their time to an academic career and the cultivation of their interests, postpone the decision to start a family, e.g., “I always liked learning and reading books and I was too busy to go to parties. Now I speak nine languages fluently and have only a few friends. I have never had a boyfriend” (female respondent, aged 28); “I would like to start a family but first I have to complete my PhD” (male respondent, aged 27); “It was my decision, my own choice to spend more time learning and working instead of socializing” (male respondent, aged 31).

Three-quarters of the high achievers group decided to continue their academic career after they had graduated from university and did so successfully. Therefore, we can assume that winning a top prize in a national school competition is a reliable predictor of future academic attainment. The number of doctoral degrees earned and the number of Olympians working as scientists provides proof that the gifted fulfill their high potential and serve the international interest (Campbell, Wagner & Walberg, 2000; Limont & Cieślukowska, 2004).

In the high achievers group, one can also observe a tendency to uphold family traditions related to professional or academic careers. Forty percent of the national academic award winners – unlike the gifted females in Reis’s (1995) study – were encouraged by their parents to take up a specific professional career. One can, therefore, accept the theory put forward by Piirto (1995, p. 15) that doctors bring up doctors, lawyers bring up lawyers, professors bring up professors, and so on. Similar conclusions were reached by Walberg (1994). According to him, the general atmosphere in the home and the example set by the parents have a huge impact on the accomplishments of the child – not only at school, but also in adult life.

The research demonstrated that, in the national academic award winners group, *personal interests* were the most frequent (68.9%) motive behind the choice of education and career path, and were connected with academic achievements. Perhaps national award winners tended to win when they rated the academic achievements as relatively important for their future career and/or, perhaps, they were strongly motivated to develop their interests by earlier successes.

The results of our research described in this article include a number of differences between the high achievers group and the control group as to interpersonal relations. The traits typical of the high achievers group in interpersonal relations were relative shyness and lower sociability. The intensity of these traits did not indicate social maladjustment or intensified problems in social contacts. It confirms that developmental counseling programs in school should foster both the cognitive and the socioemotional growth of the high achievers and the gifted (Colangelo & Assouline, 2000). As the research shows, lower sociability can also mean that high achievers enjoy solitude and use time alone productively for pastimes such as reading, learning, working on a collection, or writing in a journal (Csikszentmihalyi et al., 1997; Schneider, 2000; Subotnik & Olszewski-Kubilius, 1997).

It turns out that the term *dissocial* certainly more appropriately describes high academic achievers than the control group respondents. On the other hand, the latter are characterized by a stronger tendency to compete and to “put others in their place”. These results seem understandable if we put them alongside the data concerning the family situation of the respondents (they have more siblings).

Our research confirmed that high achievers are characterized by greater autonomy, individualism, self-reliance, desire to achieve identified objectives, and

focus on their own interests. This behavior, however, is not so rigid or exaggerated as to be interpreted in terms of interpersonal problems or personality disorders.

In the case of three interpersonal scales out of eight, the observed differences between mean values were statistically significant. Therefore it can be concluded that the people from the control group were much more lively and joyous in interpersonal relations. The results on the scale Aloof–Introverted showed that the high achievers, in comparison to the control group, had a clearer tendency to become withdrawn and to limit their social contacts. They were more focused on their professional and personal development. They were also more reserved and distanced in social situations.

The difference between means on the subscale Arrogant–Calculating for both surveyed groups was statistically significant and amounted to  $p=.032$ . This suggests that, compared with the high achievers group, the respondents from the control group were more inclined to criticize others. This way they try to “minimize” others’ achievements and maintain high self-esteem.

Although the average vector lengths with the respondents from both groups do not point to any specific problems connected with social contacts, it must be remembered that these values were the resultants of all the scores. Therefore, one ought to apply caution in the formulation of general conclusions.

Most interpersonal situations involve two persons, each of whom strives to *define* the situations from his or her own perspective, and each of whom *influences* and *is influenced* by the other (Wiggins, 1995). From the high achievers’ point of view, it is important to have good relationships and get support from others: family, school, friends. But this is only one aspect. The second important issue is to use one’s own ability to support other people – those with lower achievements.

Research carried out by Rydell Altermatt and Pomerantz (2005) shows that low-achieving students who established and maintained friendships with high-achieving classmates evaluated themselves less positively, but also performed better academically, than low achievers with similarly low-achieving friends.

## Notes

1. They obtained a doctoral degree.
2. We used Bonferonni adjustment in  $p$  level to control Type 1 error rates.

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