



Investigating the Structural Model of the Strengths and Difficulties Questionnaire

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Abstract: The Strengths and Difficulties Questionnaire (SDQ) aims to assess problems in the psychological adjustment of children and youths. In this paper, we present results from an analysis of the structure of the SDQ. Data were collected from a community sample of 582 children and adolescents aged 10–19 years in Poland. The results showed that the bi-factor model yielded a good fit to the data. Out of five original SDQ factors, only emotional symptoms and prosocial behavior scales were distinguished from the general factor of difficulties. Additionally, two independent facets that concerned the characteristics of unsettlement and cautiousness have been extracted from the hyperactivity and conduct scales. The achieved structure differs from the theoretically assumed structure, but the findings are consistent with the Circumplex of Personality Metatraits (CPM), which was adapted to interpret the results. Moreover, with the help of the CPM, an additional difficulty that can be introduced to the model was identified.

Keywords: SDQ, structure, exploratory bi-factor analysis

The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) aims to measure the psychological adjustment of children and adolescents from 4 to 17 years old. The SDQ can be completed as a self-report (by adolescents aged 11–17 years) or observers' report (by parents and teachers). The only difference between the self-rated and informant-rated SDQs is a grammatical change from the first to the third person. All versions of the SDQ are built of 25 items that are grouped into five scales: emotional symptoms (fearful, anxious, worried, lonely with depressive symptoms), conduct problems (losing temper, fighting, lying, stealing), hyperactivity/inattention (restless, fidgety, easily distracted), peer relationship problems (preference for solitary, bullied, not liked), and prosocial behavior (considerate, sharing, helpful, kind). The first four scales relate to respondents' difficulties in their psychosocial functioning, whereas the fifth scale refers to the strengths in interpersonal relations as presented in Table 1.

The Strengths and Difficulties Questionnaire has been established as one of the most widely used instruments in assessing children and youth mental health difficulties (Vostanis, 2006) that has been translated into over 60 languages and adapted to different cultures worldwide, for example, French (Capron, Théron, & Duyme, 2007), Norwegian (Van Roy, Veenstra, & Clench-Aas, 2008),

German (Klein, Otto, Fuchs, Zenger, & von Klitzing, 2013; Petermann, Petermann, & Schreyer, 2010), Danish (Nielsen et al., 2012), Japanese (Tanabe et al., 2013), Greek (Giannakopoulos et al., 2009), Italian (Di Riso, Chessa, Bobbio, & Lis, 2013), Spanish (Gómez-Beneyto et al., 2013), and Russian (Ruchkin, Kuposov, Vermeiren, & Schwab-Stone, 2012). The instrument is available for researchers and clinicians to download free of charge from the Internet (www.sdqinfo.com).

Current Issues Regarding SDQ Reliability and Structure

Due to the fact that the SDQ is a widely used instrument that has been applied in numerous studies and translated into different languages, one can suppose that its psychometric properties are satisfactory. However, some measurement weaknesses have been identified. Most studies that were carried out cross-culturally faced difficulties in achieving acceptable reliability and a five-factorial solution for this measure as hypothesized on theoretical grounds (Bourdon, Goodman, Rae, Simpson, & Koretz, 2005). Thus, the underlying SDQ structure is still a matter of debate

Table 1. The original SDQ scales with items

Scale		Item number and content
Emotional symptoms	3	I get a lot of headaches, stomachaches, or sickness
	8	I worry a lot
	13	I am often unhappy, downhearted, or tearful
	16	I am nervous in new situations. I easily lose confidence
	24	I have many fears, I am easily scared
Conduct problems	5	I get very angry and often lose my temper
	7	I usually do as I am told
	12	I fight a lot. I can make other people do what I want
	18	I am often accused of lying or cheating
	22	I take things that are not mine from home, school, or elsewhere
Peer relationship problems	6	I am usually on my own. I generally play alone or keep to myself
	11	I have one good friend or more
	14	Other people my age generally like me
	19	Other children or young people pick on me or bully me
	23	I get on better with adults than with people my own age
Hyperactivity/inattention	2	I am restless, I cannot stay still for long
	10	I am constantly fidgeting or squirming
	15	I am easily distracted, I find it difficult to concentrate
	21	I think before I do things
	25	I finish the work I'm doing. My attention is good
Prosocial behavior	1	I try to be nice to other people. I care about their feelings
	4	I usually share with others (food, games, pens, etc.)
	9	I am helpful if someone is hurt, upset, or feeling ill
	17	I am kind to younger children
	20	I often volunteer to help others (parents, teachers, children)

(Caci, Morin, & Tran, 2015). In this paper, we will briefly summarize the problems and further address them in our empirical study.

Internal Consistency

The reliability of some SDQ scales has been found to be below the acceptance level in most of the previous researches. The emotional symptoms scale ranged from .55 (Di Riso et al., 2013) to .83 (Caci et al., 2015). The conduct scale achieved rather unacceptable reliability estimates, ranging from .43 (Di Riso et al., 2013) to .66 (Hawes & Dadds, 2004). The hyperactivity scale ranged from .57 (Van Roy et al., 2008) to .80 (Hawes & Dadds, 2004). The lowest reliability indices were reported for the peer relationship problems scale, which ranged from .27 (Di Riso et al., 2013) to .65 (Caci et al., 2015). Although, in general, the prosocial scale was found to be the most reliable, some studies confirmed its low reliability ranging from .59 (Capron et al., 2007) to .88 (Caci et al., 2015). Those results are in line with estimates reported by Goodman (2001) in the original SDQ study where reliability was unacceptably low for the peer relationship problems scale (.41), and the highest estimate was found for hyperactivity

scale (.67). The authors stressed that even if the level of reliability acceptance was low and that special caution should be taken when interpreting results using the current version of the SDQ, the measure can still be applied for scientific purposes.

While carrying out our research with the use of the SDQ, we believe that such low reliability, particularly of two scales, the conduct and peer problems scales, may suggest the existence of a general problem with the measure and thus requires further revision and intervention. We attempted this in the current study.

Construct Validity Based on Exploratory Factor Analysis (EFA)

Based on a literature review, one can conclude that confirming a stable original five-factorial structure of the SDQ was problematic from the beginning (Goodman, 2001). Some scales were lacking homogeneity and items cross-loaded onto other scales. EFAs showed that the hyperactivity scale was the least stable and that its positively worded items (i.e., 25 = "I finish the work I'm doing. My attention is good" and 21 = "I think before I do things") cross-loaded onto other scales, especially onto prosocial

behavior (Capron et al., 2007; Hawes & Dadds, 2004). Similarly, one item from the conduct problems scale (i.e., 7 = "I usually do as I am told") cross-loaded onto the prosocial factor (Goodman, 2001). Thus, for the purpose of our study, we treated the three-item constellation (items 7, 21, and 25) as a separate facet called "cautiousness."

Furthermore, loading onto other scales can be observed more broadly (Hawes & Dadds, 2004). The peer relationship problems and conduct problems factors had the highest cross-loadings, peer relationship problems items cross-loaded onto the emotional symptoms factor (Capron et al., 2007; Goodman, 2001; Hawes & Dadds, 2004), and the conduct problems items cross-loaded onto prosocial behavior (Capron et al., 2007; Goodman, 2001), hyperactivity/inattention (Capron et al., 2007; Goodman, 2001; Hawes & Dadds, 2004), and peer relationship problems factors (Gómez-Beneyto et al., 2013). Based on the common cross-loadings, one can conclude that SDQ items form somewhat different scales from the expected theoretical ones or may capture a total difficulties general factor rather than a domain of specific factors. Previous studies have shown that one pair of items from the hyperactivity/inattention scale (i.e., 2 = "I am restless, I cannot stay still for long" and 10 = "I am constantly fidgeting or squirming") clearly achieved the highest loadings (e.g., Gómez-Beneyto et al., 2013; Goodman, 2001). It may suggest that these two items represent the core element of the hyperactivity/inattention scale whereas other items seem to measure somewhat different constructs. Thus, in our study, we called the two-item constellation (items 2 and 10) "unsettlement."

Construct Validity Based on Confirmatory Factor Analysis (CFA)

Confirmatory studies of the SDQ encountered similar issues to those reported in exploratory studies and provided further evidence for problems with the five-factor construct validity of this instrument. Alternative models containing three and six factors have been tested and were found to fit the data marginally better when compared to the first-order five-factor model. A three-factor model proposed by Dickey and Blumberg (2004) consisted of two dimensions: internalizing and externalizing, and a prosocial factor. A six-factor model comprised five original first-order factors and a separate uncorrelated method factor that included the strengths domain (prosocial behavior scale) and the five positively worded items extracted from the difficulties domain (McCroory & Layte, 2012; Palmieri & Smith, 2007).

Although most studies failed to confirm the five-factorial structure of the SDQ, they replicated the stability of two (out of the five) scales, that is, prosocial behavior and

emotional symptoms (Capron et al., 2007; Gómez-Beneyto et al., 2013; Hawes & Dadds, 2004), and thus this finding could be interpreted as the measure's quality. Some scales were found to be inconsistent, especially the hyperactivity/inattention scale. Based on results from CFA studies, the scale could be divided into two separate sub-dimensions or facets that independently relate to hyperactivity and inattention (Giannakopoulos et al., 2009) and are highly inter-correlated (Van Roy et al., 2008).

Searching for an Alternative: The Bi-Factor Model

In a bi-factor model, a general factor loaded by all items is introduced in addition to the specific uncorrelated factors loaded by specific items. Model building in exploratory bi-factor analysis consists of classifying items into groups, using a bi-factor rotation criterion and it does not require one to provide an explicit bi-factor structure a priori (Jennrich & Bentler, 2012).

The implementation of a bi-factor model is particularly useful in an assessment of a hypothesized construct that comprises several closely related domains. A general factor in a bi-factor model is meant to account for the commonality of all items, while other specific factors that appear account for the unique variance (Chen, West, & Sousa, 2006). It is worth noting that in exploratory bi-factor modeling, items may freely load onto the general factor and onto any of the specific factors (Reise, Moore, & Haviland, 2010).

In the case of this study, the general factor would account for difficulties, whereas the domains of specific factors would represent a particular content of the scales. Substantive higher loading of a given item onto the general factor means that this item measures the general factor rather than a specific factor. Inversely, a high loading of a given item onto the specific factor means that this item measures the intended content that is relatively independent from the general factor of difficulties. Thus, the bi-factor analysis provides answers to two questions: the first one whether a general factor can be identified and the second one whether specific facets beside the general factor appear and which items load onto them (Chen et al., 2006). The bi-factor model can be tested using both exploratory and confirmatory analysis (Muthén & Muthén, 2012).

The existence of a general factor that would relate to the total difficulties was originally proposed by Goodman (2001). The total difficulties general factor was found to be reliable with Cronbach's α ranging from .77 (Giannakopoulos et al., 2009) to .82 (Hawes & Dadds, 2004; Woerner, Becker, & Rothenberger, 2004). Although the bi-factor analysis is a promising approach, to the best of our knowledge, only

the teacher and parent versions of the SDQ have been assessed using this procedure (Caci et al., 2015; Kóbor, Takács, & Urbán, 2013) and only confirmatory testing was applied. According to these studies, some scales loaded higher onto the general factor, whereas others loaded onto independent facets. Peer relationship problems and conduct problems loaded higher onto the general factor, whereas emotional symptoms and prosocial behavior loaded higher onto the independent grouping of facets than onto the general factor. Hyperactivity items that concern restlessness and fidgeting were strongly related and formed a strong specific factor, but the remaining items from this factor loaded higher onto the general factor (Caci et al., 2015; Kóbor et al., 2013).

Current Study

The current paper aims to explore the structure of self-reported version of the SDQ (Goodman, 2001) by applying an exploratory bi-factor analysis. We hypothesize the existence of (1) an underlying general factor, which was reported in several studies (Giannakopoulos et al., 2009; Hawes & Dadds, 2004; Woerner et al., 2004), and (2) specific facets that tend to capture particular difficulties (Capron et al., 2007; Gómez-Beneyto et al., 2013; Goodman, 2001). Because there is a disagreement in the current literature regarding the structure of the self-report version of the SDQ and it lacks a well-defined model, we decided to apply an exploratory approach to our studies in order to shed new light on the identified theoretical problems. Browne (2001) emphasized not using CFA for exploratory purposes by investigating modification indices, but instead, it is preferable to switch to an exploratory approach with rotation of the factor matrix. Because we hypothesized the existence of a general factor and simultaneously specific facets, we assessed those issues by investigating results from a bi-factor exploratory factor analysis (bi-EFA).

Materials and Methods

Participants and Procedure

The study was conducted in a nonclinical sample of $N = 582$ children and adolescents (58% females) between 10 and 19 years of age ($M_{\text{age}} = 13.88$, $SD_{\text{age}} = 2.51$) who attended secondary schools in Poland. The current sample comprised the following age distribution: 10–11 year olds (16%), 12–13 year olds (27%), 14–15 year olds (19%), 16–17 (13%), and 18–19 year olds (15%). Adolescents 17 years of age

and older were included in our data due to the organization of the Polish education system where most students graduate at age 19.

The school principals received a letter stating that their school was invited to take part in a research project that aimed to assess problematic behavior in children and youth. They received information that participation in this study was voluntary and anonymous and that the results would be analyzed for scientific purposes only. Following the school principals' consent to participate, the main researcher met with parents at the parent-teacher meeting during which parents received a study description with a consent form to agree or disagree for their children to participate in this study. Only children with written parental consent participated (this rule was no longer applicable for persons aged over 18 years). Data were collected during normal school lessons in groups of 15–20 children using a paper and pencil form. To standardize the procedure, we went to each school to collect the data ourselves. The main teacher and two researchers were available during the data collection to ensure that the instructions and statements were clear to the participants. We paid particular attention to the individual work and participants were asked not to share their answers or consult with other children.

Measures

The self-report Polish version of the SDQ consists of 25 items grouped into five scales: emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behavior. Five items from the difficulties dimension were positively worded and thus should be reverse scored. All items are presented in Table 1. The adaptation procedure of the Polish SDQ was carried out according to the International Test Commission (ITC) guidelines for translating and adapting tests in cross-cultural research (Brislin, 1986; Hambleton, 2005) which included:

1. forward translation of all items from English to Polish,
2. consultation of the results in a group of developmental and cross-cultural psychologists regarding the linguistic, developmental, and cultural suitability of the questionnaire,
3. independent back-translation of all items from Polish to English,
4. submission of the back-translation to the SDQ authors,
5. discussing authors' comments and suggestions, introducing all recommended modifications, and
6. back-translation of the modified items and repetition of steps 4, 5, and 6 until a final version of the SDQ was agreed.

Table 2. Exploratory factor analysis with bi-factor model

Item	Bi-factor	Emotional symptoms	Unsettlement	Cautiousness	Prosocial behavior
24 I have many fears, I am easily scared	.44*	.71*	-.11	.04	.02
13 I am often unhappy, downhearted, or tearful	.49*	.67*	.02	-.07	-.04
8 I worry a lot	.30*	.66*	.06	-.17	-.03
16 I am nervous in new situations. I easily lose confidence	.25*	.64*			
3 I get a lot of headaches, stomachaches, or sickness	.31*	.47*	.08	.03	.04
6 I am usually on my own. I generally play alone or keep to myself	.38*	.37*	-.18	-.22	-.02
2 I am restless, I cannot stay still for long	.41*		.68*		
10 I am constantly fidgeting or squirming	.41*	-.04	.65*	.05	.03
25 I finish the work I'm doing. My attention is good	.35*			.69*	
7 I usually do as I am told	.43*	-.12	.04	.58*	-.03
21 I think before I do things	.38*			.53*	
9 I am helpful if someone is hurt, upset, or feeling ill	-.40*	-.03	.05	-.03	.67*
1 I try to be nice to other people. I care about their feelings	-.42*	.05	-.01	.02	.58*
20 I often volunteer to help others (parents, teachers, children)	-.42*				.47*
4 I usually share with others (food, games, pens, etc.)	-.28*	.11	.13	.07	.45*
17 I am kind to younger children	-.40*	.01	.00	-.11	.39*
18 I am often accused of lying or cheating	.61*	-.11	.01	-.32	.06
19 Other children or young people pick on me or bully me	.67*	-.01	-.24	-.03	.26
12 I fight a lot. I can make other people do what I want	.52*	-.07	.21	-.03	-.16
14 Other people my age generally like me	.49*	-.03	-.32	.01	-.01
22 I take things that are not mine from home, school, or elsewhere	.49*	-.04	-.08	.03	.06
5 I get very angry and often lose my temper	.48*	.25	.28	-.03	.01
15 I am easily distracted, I find it difficult to concentrate	.42*	.24	.22	.26	.15
11 I have one good friend or more	.35*	.08	-.28	.03	-.17
23 I get on better with adults than with people my own age	.33*	-.01	.01	-.24	.27

Note. * $p < .01$.

Results

Bi-Factor Analysis

We conducted a bi-EFA using Mplus version 7.2 (Muthén & Muthén, 2012). As the response scale of the SDQ contains only three possible answers, we treated the data as categorical. The polychoric correlation matrix uses weighted least squares (WLSM) as the estimator, and bi-geomin rotation was used. The results of the bi-EFA are presented in Table 2. In the current analysis, we have identified a general factor and a set of specific factors.

The presented model fits the data very well ($\chi^2 = 299.93$, $p < .0001$, CFI = .984, TLI = .974, RMSEA = .033 [90% CI = .026-.039]). As expected, the standard five-factor CFA ($\chi^2 = 1,432.52$, $p < .0001$, CFI = .837, TLI = .816, RMSEA = .087 [.083-.091]) and bi-factor CFA model fit indices ($\chi^2 = 1,376.02$, $p < .0001$, CFI = .843, TLI = .812, RMSEA = .088 [.083-.093]) suggested a poor fit to the data. In the bi-factor model, all items significantly loaded onto the general factor (positive significant loadings obtained from all four difficulties scales and negative loadings of prosocial behavior items), thus it could be called the general

difficulties factor. In addition to the general factor, we identified domain-specific factors that were unique. In particular, we noticed that only two scales, emotional symptoms and prosocial behavior, aside from the loadings onto the general factor, were loaded by the corresponding items. For other scales, the dyadic constellation of items that concern unsettlement (i.e., “I am restless, I cannot stay still for long” and “I am constantly fidgeting or squirming”) has been found to be the essence of the hyperactivity/inattention factor. Additionally, we distinguished a separate facet that corresponds to cautiousness and is built from three items extracted from the conduct problems scale (one item: “I usually do as I am told”) and the hyperactivity/inattention scale (two items: “I finish the work I'm doing. My attention is good” and “I think before I do things”).

Reliability of the SDQ

To assess the reliability of the measure, we computed Cronbach's α coefficients for distinguished scales. Reliability coefficients were estimated using the R system for statistical computing (R Development Core Team, 2014).

Table 3. Model-based scale score reliabilities with bootstrapped 95% Confidence Intervals of the self-report SDQ

Factor or facet	α	95% CI
Scales theoretically assumed and not obtained in the bi-factor analysis		
Conduct	.47	.40–.54
Hyperactivity/Inattention	.61	.56–.66
peer relationship problems	.42	.34–.49
Scales theoretically assumed and obtained in the bi-factor analysis		
Emotional symptoms	.77	.74–.81
Prosocial behavior	.69	.65–.73
New scales, obtained in the bi-factor analysis		
Unsettlement	.68	.61–.74
Cautiousness	.67	.62–.72

Because reliability is agreed to be just a point estimate, we additionally provided a 95% confidence interval for each estimate. The number of bootstrapped simulations used in estimating intervals was 1,000. Reliability estimates of the original five factors and two extracted facets are presented in Table 3.

The highest reliability estimates were found for the emotional symptoms and prosocial behavior scales that were both theoretically assumed and found in the bi-factor analysis. Three remaining scales, the hyperactivity/inattention, conduct problems, and peer relationship problems scales, had the lowest reliabilities. Two facets identified in the bi-factor analysis, unsettlement and cautiousness, achieved good reliability that was better than the scales assumed theoretically. It is worth noting that Cronbach's α is highly influenced by the number of items (Sijtsma, 2009). Therefore, taking into account that these two new facets are built of two to three items each, their estimates could be interpreted as quite good.

Discussion

The self-report SDQ has been applied in many studies, but its underlying structure is still doubtful and lacks firm support (McCrory & Layte, 2012). Although there have been a decent amount of studies reporting EFAs and CFAs, many discrepancies could be observed in the factor structure analysis. Previous studies have supported alternative three-factor (e.g., Dickey & Blumberg, 2004) or six-factor solutions (McCrory & Layte, 2012). Some researchers have also suggested that the structure might be dependent on culture (Essau et al., 2012).

Due to the lack of a stable SDQ structure and the existence of numerous methodological questions, a bi-factor exploratory approach was applied that allows us to clearly separate the general factor from specific facets (Chen

et al., 2006). As expected from the literature review, our results showed that only two out of five scales, the emotional symptoms and prosocial behavior scales, had satisfactory psychometric properties. The reliability of these scales was acceptable, and all of the items loaded onto their respective two specific factors. It is also worth noting that items from the prosocial behavior scale negatively loaded onto the general factor, which proves its validity because the bi-factor reflects the total difficulties factor in the current study (Klein et al., 2013).

Similar to other studies, we obtained the lowest reliability estimates in peer relationship problems and conduct problems scales, which question the utility of these two scales. Therefore, the presence of the bi-factor sheds a new light on the self-report SDQ structure. It turned out that the peer relationship problems and conduct problems scales could not be extracted from the general problems (weaknesses) domain. Thus, the results obtained from these two scales cannot be interpreted separately but only in the context of the general problems.

On the basis of previous studies of the SDQ (e.g., Goodman, 2001), we demonstrated that two-item and three-item constellations can explain the results more accurately. A dyadic constellation of items that concern unsettlement (i.e., restless and fidgety) have been found to be the essence of the hyperactivity/inattention factor. A triadic constellation of items that concern obedience, reflectiveness, and persistence were extracted from the conduct problems and hyperactivity/inattention scales and were grouped into a cautiousness facet. Similar to previous studies on the SDQ, the dyadic constellation from the hyperactivity/inattention scale had the highest loadings onto the hyperactivity/inattention factor, whereas the remaining items often tended to cross-load onto other factors. Although the unsettlement and cautiousness facets comprise only two to three items, respectively, the reliability estimate was higher when compared with the general hyperactivity/inattention scale.

The results obtained in this study and others reported in the literature have indicated a need to combine the scales or to extract narrower constructs leading to a reflection on the SDQ structure, the nature of difficulties, and the theoretical justification of the empirical findings. It can be assumed that the cause of these problems lies in the lack of a theoretical model which would justify a particular catalog of difficulties. The existence of such a model could help in modifying constructs at a theoretical level or indicators (items or scales) on the operationalization level in the case of empirically identified problems with the structure.

It is worth noting that our results provide suggestions that can be used for developing such model. Following the literature review, we noticed that our results were consistent with the Circumplex of Personality Metraits (CPM)

proposed recently by Strus, Ciecuch, and Rowiński (2014). The CPM can be applied to explain the discrepancies between the SDQ model and the results we obtained; therefore, we used it for the interpretation of our results. This approach could be a valuable starting point for further theoretical reflections that will lead to the construction of a new catalog of strengths and difficulties. This model offers a convenient interpretative framework for our results as it seeks to integrate various personality constructs, including specific difficulties. It assumes the existence of eight metatraits of personality located onto a circle. The traits are defined as broader (meta) traits because they are originally based on the five basic personality traits (Big Five). Two additional traits were added, gamma/integration and delta/self-restraint, to the traits established in the empirical research alpha/stability and beta/plasticity (DeYoung, 2006; Digman, 1997). The CPM assumes unidimensionality of the metatrait, thus it describes both poles of the dimension separately (such as alpha plus and alpha minus). Factors identified in our study overlap with the metatraits from the CPM. The positive SDQ factor – prosocial behavior – seems to be related to alpha plus, and the positive facet obtained in the current study – cautiousness – is related to delta plus. All other scales refer to problems or difficulties, and thus, they are connected with delta minus (unsettlement), gamma minus (emotional symptoms), and alpha minus (conduct problems), as presented in Figure 1.

Although the subject of the conduct problems scale seems to be well defined and theoretically justified based on the CPM, the measurement itself needs to be improved, so that it could be successfully implemented in further research and practice. The framework of CPM also suggests one additional characteristic of problem behavior that can be measured and adapted in a screening measurement tool. This missing factor should be related to beta minus, which accounts for apathy, cognitive and behavioral passivity, and some type of inhibition or stagnation.

To summarize, the results of the present study contribute to the literature in two ways. First, the analysis we conducted allowed for identifying the cause of the problems with the SDQ structure reported in the literature. We found out that four factors could be distinguished, with only two (i.e., emotional symptoms, prosocial behavior) coinciding with the scales introduced by the SDQ authors, and the other two comprising items from different scales.

Secondly, the theoretical model which we adopted to interpret the obtained results allowed us to identify a gap in the current catalog of difficulties. The structural analysis that can be found in the literature usually tends to identify weaknesses of the tool and its improvement rather than the analysis of the underlying theoretical model. Our analytical approach led to obtaining results that were consistent with Circumplex of Personality Metatraits (CPM; Strus et al.,

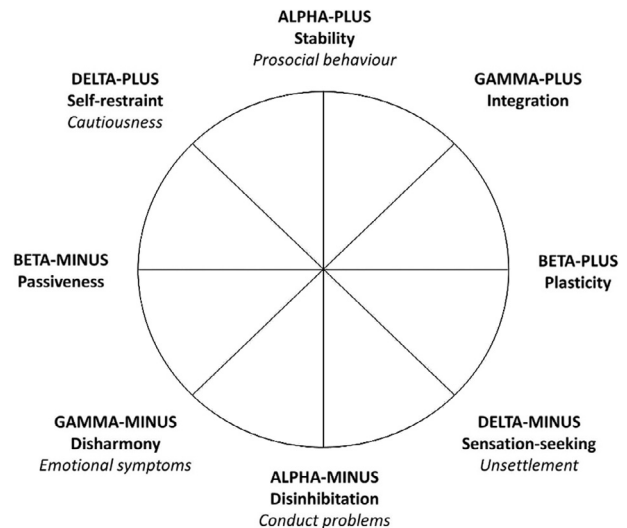


Figure 1. The Circumplex of Personality Metatraits (in bold) with overlapping SDQ dimensions (in italics).

2014). The factors we discovered proved to be consistent with this model, which aims to organize a number of different constructs of personality. Although the adoption of the CPM seems to be heuristically fertile, its validity should be verified in further studies. Our results and their interpretation can be an inspiration for the development of a coherent theoretical model and a valid measurement of strengths and difficulties.

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