

**Multidimensional Vs. Unidimensional Perspectives of Self-Concepts in Adolescent
Mental Health:**

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In this study we demonstrate that the relations between self-concept and mental health are best understood from a multidimensional perspective. For a new French translation of the Self Description Questionnaire II (SDQII), confirmatory factor analysis demonstrated a well-defined multidimensional factor structure of reliable, highly differentiated self-concept factors, supporting its cross-cultural validity. Consistent with a priori predictions, correlations between 11 SDQII and 7 mental health problems (Youth Self-Report, YSR) varied substantially (+.11 to -.83; mean $r = -.35$). Externalizing factors (delinquent, aggressive behaviors) were almost unrelated to physical, appearance, and peer self-concepts but were substantially related to parents and honesty self-concepts (-.46 to -.70); anxious/depressed and attention problems were substantially related to emotional stability self-concept (-.71, -.83). Relations among 11 SDQ factors could not be explained in terms of one higher-order SDQ factor, relations among 7 YSR factors could not be explained in terms of one higher-order YSR factor, and relations between the 11 SDQ and 7 YRS factors could not be explained in terms of two higher-order (SDQ & YSR) factors. This highly differentiated multivariate pattern of relations supports a multidimensional perspective of self-concept, not a unidimensional perspective that is still prevalent in mental health research and assessment.

In self-concept research there is an ongoing debate about the relative usefulness of unidimensional perspectives that emphasize a single, relatively unidimensional, global domain of self-concept (sometimes referred to as self-esteem) and multidimensional perspectives based on multiple, relatively distinct components of self-concept. Based primarily on educational psychology research, Marsh and Craven (1997, p. 191) argued that: "If the role of self-concept research is to better understand the complexity of self in different contexts, to predict a wide variety of behaviors, to provide outcome measures for diverse interventions, and to relate self-concept to other constructs, then the specific domains of self-concept are more useful than a general domain." Unlike many other disciplines that are increasingly adopting a multidimensional perspective to self-concept, the unidimensional perspective still predominates in mental health research. Hence, the primary purpose of the present investigation was to evaluate the proposal that relations between self-concept and different components of mental health (based on responses to the Youth Self Report) can be better understood from a multidimensional perspective of self-concept than a unidimensional perspective. We evaluated this proposal with a French translation of the Self Description Questionnaire II (SDQII). Hence, a secondary purpose of the study was to test the cross-cultural generalizability of the SDQ II in relation to its factor structure, psychometric properties, age/gender differences, and relations to mental health.

A Multifaceted Model of Self-Concept

Historically, self-concept research was dominated by a unidimensional perspective in which self-concept was typically represented by a single score variously referred to as general self-

concept, total self-concept, global self-worth, or self-esteem (here we treat these terms as synonymous and use the term general self-concept; see Marsh, 1993). In their classic review of self-concept research, theory, and measurement, Shavelson, Hubner and Stanton (1976) developed a multidimensional, hierarchical model of self-concept that fundamentally impacted on self-concept research (Marsh & Hattie, 1996). However, subsequent research showed that the proposed hierarchy was weak and that the specific components of self-concept (e.g., social, academic, physical, emotional) were highly differentiated (Marsh & Craven, 1997; also see Harter, 1998). In many psychological disciplines (e.g., educational, sport, developmental, and social psychology) this multidimensional perspective of self-concept is now widely accepted. In educational psychology, for example, many important academic outcomes (e.g., academic achievement, coursework selection, classroom interventions) are substantially related to academic self-concept but relatively unrelated to general and nonacademic components of self-concept (e.g., Byrne, 1996; Marsh, 1993; Marsh & Craven, 1997). Similarly, Marsh and Peart (1988) demonstrated that results of a physical fitness intervention and physical fitness indicators were substantially related to physical self-concept but not nonphysical self-concepts (also see Marsh, 1997). Marsh, Richards and Barnes (1986) showed that a large-scale Outward Bound intervention had significant effects on self-concept scales judged to be most closely related to the goals of the program prior to the start of the research, but significantly less positive results on scales less closely related to program goals. Furthermore, the positive effects and the differences between more and less relevant components of self-concept were maintained in an 18-month followup. Here we extend previous research by comparing the usefulness of unidimensional and multidimensional perspectives of self-concept in mental health research where a unidimensional perspective is still prevalent.

Alternative Representations of Global Self-Concept

The emphasis of SDQ research has been on the multifaceted nature of self-concept, on the measurement of distinguishable facets of self-concept, and on the relationships between these specific facets and a wide array of external criteria. There is also need, however, for theoretical and empirical research examining an overall, total or general self-concept. Although such a construct is widely inferred, it is typically ill-defined. Whereas Marsh (1990; 1993; Marsh & Craven, 1997; Marsh & Hattie, 1996) evaluated a variety of definitions, two are the focus of the present investigation. The first, a general self-concept inferred from responses to a relatively unidimensional self-concept scale, refers to a separate, distinguishable facet that is comprised of characteristics such as self-confidence and self-competence that are superordinate to, but not specific to, a particular content area. This type of general self-concept is sometimes referred to, albeit ambiguously, as self-esteem. General self-concept may be inferred from stand-alone instruments or one scale in a set of multidimensional self-concept instrument. The second is a higher-order self-concept that refers to an inferred construct that is not directly measured. The general self-concept that appears at the apex of the Shavelson et al. model and the general factor in the hierarchical factor analyses of multidimensional self-concept responses are examples of this second use. These alternative representations – a general self-concept and a higher-order self-concept – are sometimes used interchangeably, and either could be the basis of a unidimensional perspective of self-concept. Support for the construct validity of interpretations of both approaches requires that responses to a general self-concept scale are highly related to the higher-order self-concept factor. Also, it is important to evaluate generalizability of support for the unidimensional perspective of self-concept based on these two alternative representations.

Gender and Age Differences

Historically, reviews (e.g., Wylie, 1979) have reported that general self-concept was almost unrelated to gender and age, although subsequent meta-analyses (Kling, Hyde, Showers, & Buswell, 1999) found small differences favoring boys. Wylie (1979), however, proposed that small gender differences in general self-concept might reflect larger, counter-balancing gender differences in specific components of self-concept. In support of this proposal, Marsh (1989; also see Crain, 1996) found gender differences in specific scales that were consistent with traditional gender stereotypes: (a) boys had higher physical ability, appearance, math, emotional stability, problem solving, and general self-concepts; (b) girls had higher verbal, honesty, and spiritual self-concepts; and (c) gender differences were small for the parents and general school scales. Marsh (1989) also reported that there was a reasonably consistent pattern of self-concepts declining from a young age, leveling out in middle adolescence, and then increasing at least through early adulthood. However, age-by-gender interactions were typically small, suggesting that gender differences were relatively stable from preadolescence to at least early-adulthood. Particularly these gender differences demonstrated why a multidimensional perspective of self-concept was necessary. We hypothesized that these age and gender differences would generalize to responses to the French translations of the SDQII.

Cross-cultural Perspectives

Cross-cultural self-concept research has prompted psychological disciplines to look at the generalisability and validity of their assessment measures, theories and models (Singelis, 2000) broadening their applicability and promoting further development in their respective fields (Segall, Lonner, & Berry, 1998; Sue, 1999). Based on her review of self-concept instruments, Byrne (1996; also see Boyle, 1994; Hattie, 1992; Wylie, 1989) concluded that the Self Description Questionnaire II (SDQII; see Appendix) is the most widely researched multidimensional self-concept assessment instrument for adolescents, having a well-defined multidimensional factor structure and good psychometric properties. Here we introduced a French translation of the SDQII, allowing us to test the generalizability and cross-cultural validity of research based largely on the English version of the instrument. Using our French translation of the SDQII, we tested a priori predictions about the SDQII factor structure, and about age and gender differences in self-concept, and about relations between self-concept and mental health.

Adolescent Mental Health and its Relations to Self-Concept

The Youth Self Report (YSR; Achenbach, 1991 see Appendix) is the most widely used mental health assessment instrument for adolescents (Brown & Achenbach, 1995). Achenbach (1978, 1991, 1995) pursued empirical identification of mental health syndromes, and then demonstrated their generalizability across different informants (parent, teacher, and self-rating instruments) and their construct validity. Song, Singh and Singer (1994) used confirmatory factor analysis (CFA) to evaluate the first- and higher-order factor structure of YSR responses. They found reasonable support for seven first-order (narrow-band) factors, particularly for two higher-order (broad-band) factors hypothesized by Achenbach (1991). Two first-order factors (somatic complaints, anxious/depressed) were reasonably pure measures of the higher-order internalizing factor, whereas two other first-order factors (delinquent behaviors, aggressive behaviors) were reasonably pure measures of externalizing behaviors. The three remaining first-order factors (social problems, thought problems, and attention problems) were more strongly related to the higher-order internalizing factor than the higher-order externalizing factor.

Whereas mental health researchers embraced the multidimensionality of mental health, a unidimensional perspective of self-concept was still prevalent (see Leadbeater, Kupermine, Blatt, & Hertzog, 1999). This is evident in the reliance on a single global self-concept scale in most mental health research. Hence, our overarching purpose is to show that relations among the multiple dimensions of self-concept (SDQII responses) and multiple dimensions of mental health (YSR responses) form a highly differentiated and predictable pattern of relations that undermines the fundamental premise of a unidimensional perspective of self-concept. Based on the advances that have been made in other fields of psychology through the adoption of a multidimensional approach to self-concept, we argued that it is counterproductive to ignore this important aspect of self-concept in mental health research. Although support for this claim constitutes an important new contribution to mental health research, there exists some research in support of our contention.

Leadbeater et al. (1999) related the YSR broad-band (internalizing and externalizing) factors to gender, general self-concept, and other adjustment variables. General self-concept was negatively related to both YSR internalizing and externalizing factors, although the relations with internalizing factors were more negative. These results replicated abundant research showing that general self-concept was negatively related to internalizing constructs such as depression but was less negatively related to externalizing constructs (e.g., Allgood-Merten, Lewinsohn, & Hops, 1990; Robinson, Garber, & Hilsman, 1995; Lewinsohn, Gotlib, & Seeley, 1997). Beck, Steer, Epstein, and Brown (1990) also found that general self-concept in a clinical sample was negatively related to depression and other clinical measures (e.g., psychopathic deviate, paranoia, psychasthenia, schizophrenia, and social introversion scales from the MMPI), but was not significantly related to somatization and hostility.

Research focusing on general measures of self-concept does not contribute to understanding how multiple dimensions of self-concept are differentially related to specific components of mental health. However, Leadbeater et al. (1999) reported that self-perceptions of relations with parents were negatively related to both internalizing and externalizing YSR factors, but the relations with the externalizing factor were much stronger and, stronger than general self-concept. In contrast, self-perceptions of peer relations were substantially related to the internalizing YSR factor, but were much less related to the externalizing YSR factor. Egan and Perry (1998) also reported that externalizing behaviors were not significantly correlated to either general or social self-concept whereas internalizing behaviors were significantly negatively related to general and particularly social self-concepts. Victimization was more positively correlated with internalizing than externalizing and was more negatively correlated with social self-concept than general self-concept. Wells and Rankin (1983) also found that externalizing behaviors (e.g., delinquency, theft/vandalism, interpersonal aggression, school rebellion) were negatively related to general, social, and family self-perceptions, but that self-perceived family relations were more negatively related to the externalizing behaviors than general and social self-concept. Hay (2000) reported that students who had been suspended from their schools for persistent behavior problems (e.g., in-class disruption, verbal or physical aggression) had lower school, parent/child relationships, school/student connectedness, and total self-concepts but that externalizing behaviors were not associated with emotional instability or peer rejection. Marsh, Parada, Yeung, and Healy (2001) related three self-concept factors (same-sex, opposite-sex, and general) to aggressive troublemaking and victimization based on a very large, nationally representative sample of US adolescents. Being a victim was negatively associated with general, same-sex, and opposite-sex self-concepts, but correlations were more negative for same-sex than opposite-sex self-concept. Aggressive troublemaking was only slightly negatively related to general and same-sex self-

concepts, and was (nonsignificantly) positively related to opposite-sex self-concept. Although boys were more likely to be aggressive troublemakers and girls were more likely to be victims, the pattern of relations between these behavioral factors and the self-concept factors were similar for boys and girls. In summary, consistent with speculations by Leadbeater et al. (1999), results reviewed here suggest that an even more differentiated pattern of relations would be evident for responses based on the SDQII self-concept factors than the narrow-band YSR mental health factors (see Appendix).

The Present Investigation

Our overarching purpose was to demonstrate that the relations between self-concept and mental health are best understood from a multidimensional perspective. The SDQII instrument is particularly appropriate for pursuing this issue as it contains both a General self-concept scale that is relevant to the unidimensional perspective and more specific factors that are consistent with a multidimensional perspective. We began by testing a priori predictions that relations between 11 SDQII factors and 7 YSR factors were highly differentiated. Specifically, based on a review of existing research and the content of factors from both instruments, we classified each of the 77 correlations (7 YSR x 11 SDQII factors) into one of four categories in which we predicted the correlations to be close to zero, small, moderate, and large. Examination of these a priori predictions about the highly differentiated, multivariate pattern of relations between these multidimensional constructs provided a strong test of a multidimensional perspective of self-concept.

In additional analyses, we pursued more specific tests of a unidimensional perspective on self-concept based on the SDQII general self-concept scales (a unidimensional, global measure of general self-concept) and hierarchical factor analyses in which the 11 SDQ factors were represented by a single higher-order SDQ factor and the 7 YSR factors were represented by a single higher-order YSR factor. The extent to which relations between the 11 SDQ factors and 7 YSR factors can be explained in terms of a single general self-concept score or higher-order factors, would lend support for a unidimensional perspective.

Methods

Sample

The sample was 903 (49% Males) French-speaking multiethnic Canadian students who were enrolled in Grades 7 or 8 (mean age = 12.6, SD = .82) in one of 10 French public secondary schools in socioeconomically disadvantaged areas of Montreal. The data were the pretest, baseline data from a quasi-experimental evaluation of a primary prevention program designed to promote the psychological competencies of young adolescents (for further detail see Ayotte, Saucier, Bowen, Laurendeau, Fournier, & Blais, in press). Participation in the study required active parental consent with guaranteed anonymity and confidentiality of responses (84% agreed). Classroom teachers administered the materials to intact classes near the start of the school year according to instructions in the SDQII test manual (Marsh, 1992).

Instruments

SDQII Instrument

The SDQ II (Marsh, 1992; see Appendix) is a multidimensional self-concept instrument for adolescents based on the Shavelson et al. (1976; Marsh, Byrne & Shavelson, 1988; Marsh & Shavelson, 1985) model. Previous research with the SDQ instruments (see Marsh, 1990, 1992, 1993; Marsh & Craven, 1997) showed that: (a) factor analyses have consistently identified each a priori SDQII factor; (b) the reliability of each scale was typically in the .80s or low .90s; (c) self-concept responses were consistently correlated with external validity

criteria (e.g., self-concepts in matching areas inferred by significant others, academic achievement, age, gender, locus of control, physical fitness and participation in sports, and self-concept enhancement interventions). Reviews of the SDQII have been very favorable (see, Byrne, 1996; Boyle, 1994; Hattie, 1992; Wylie, 1989), Byrne specifically stated that: "I consider the SDQII to be the most validated self-concept measure available for use with adolescent children ... researchers, clinicians, counselors, and others interested in the welfare of adolescent children, can feel confident in the validity of interpretations based on responses to its multidimensionally-sensitive items" (p. 117).

The present investigation is based on a French translation of the SDQII. Initially, a professional translator translated the English-language version of the instrument into French. Then, based on evaluations of health and educational professionals who worked in the adolescence field, some revisions were made to make the wording more appropriate. Because the translation was intended to be used with a diverse sample of students, there was an emphasis on using simple, common words that would be easily understood by all students. Next, the French translation was back translated into English to ensure its compatibility with the original English version of the instrument. Finally, a preliminary trial was conducted with a small sample of convenience consisting of 32 French-speaking students to ensure that the instrument could be completed in the allocated time and that the format was suitable.

Youth Self-Report (YSR) Instrument

The YSR (see Appendix) is a self-administered assessment tool for children aged 11 – 18. Adolescents self-report whether now or within the past six months, they had experienced each of the target problems using a three-point response scale: 0 (not true or not at all), 1 (sometimes or somewhat true), and 2 (very true or often). The full YSR instrument (112 items) had previously been translated into French using the same procedure as with the SDQII. Here we considered 76 items designed to measure seven YSR scales that were identified by Achenbach (1991, Table 3-1, p. 31) in factor analyses of YSR responses and in the subsequent CFAs by Song et al. (1994; also see Greenbaum & Dedrick, 1998).

Statistical Analyses

CFAs were conducted with LISREL 8 (Joreskog & Sorbom, 1993) using maximum likelihood estimation. Following Marsh, Balla, and Hau (1996; Marsh, Balla & McDonald, 1988) we emphasized the Tucker-Lewis index (TLI), the relative noncentrality index (RNI), and root mean square error of approximation (RMSEA) to evaluate goodness of fit, but also presented the χ^2 test statistic and an evaluation of parameter estimates. The TLI and RNI vary along a 0-to-1 continuum in which values greater than .90 and .95 are typically taken to reflect acceptable and excellent fits to the data. RMSEAs values of less than .05 and .08 are taken to reflect a close fit and a reasonable fit, respectively. The RNI contains no penalty for a lack of parsimony so that improved fit due to the introduction of additional parameters may reflect capitalization on chance, whereas the TLI and RMSEA contain penalties for a lack of parsimony. We estimated the (internal consistency) reliability of each of the 11 SDQII scales and the 7 YSR scales using coefficient omega (McDonald, 1985) was consistent with our CFA emphasis. In further analyses, we conducted higher-order factor analyses to evaluate the extent to which relations among the: (a) 11 SDQ factors could be explained in terms of a single higher-order SDQ factor, (b) 7 YSR factors could be explained by a single higher-order YSR factor, and (c) relations between the 11 SDQ and 7 YSR factors could be explained in terms of higher-order YSR and SDQ factors. We then evaluated whether the factor structures for self-concept (SDQII) and for mental health (YSR) responses were similar for males and females (based on separate covariance matrices for each gender). The minimal condition of factorial

invariance is the invariance of the factor loadings (Marsh & Hocevar, 1985). Of particular relevance in the present investigation was whether relations between multiple dimensions of self-concept and mental health were invariant over gender. Differences between nested models, under appropriate conditions, can be tested for statistical significance (Bentler, 1990) or can be compared in terms of subjective indices of fit like the RNI and TLI emphasized here.

For a set of nested models, Marsh and Hocevar (1985, 1988) also argued that it is also important to scale the goodness of fit of each model in relation to the best and worst fitting models in the sequence, a target coefficient (TC). In the present investigation, the χ^2 for higher-order factor models were scaled in relation to the χ^2 for the corresponding first-order factor model in which all factor correlations were freely estimated (which necessarily fits as well or better than any higher-order model) and the χ^2 for the corresponding first-order model with all first-order factors constrained to be zero (which necessarily fits as well or better than any higher-order model). Hence, the TC varies between 0 and 1, depending on how close the χ^2 for the higher-order model is to the best fitting and poorest fitting model in the sequence. The advantage of the TC is that it targets covariance among first-order factors that is the focus of higher-order factor models, whereas more general evaluations of fit confound this ability to explain covariation among first-order factors with goodness (or badness) of fit in other aspects of the model.

As in other SDQ research and recommended in the test manual (e.g., Marsh, 1990, 1993; Marsh & Hocevar, 1985; Marsh & O'Neill, 1984), factor analyses were conducted on item-pair scores (or parcels) in which the first two items in each scale were averaged to form the first item pair, the next two items were used to form the second pair, and so forth. Similarly, following Song, et al. (1994; also see Greenbaum & Dedrick, 1998), we constructed multiple-item parcels to represent seven YSR mental health factors. All YSR items designed to measure each of the seven YSR factors (Achenbach, 1991, p. 37) were divided into three groups (the first item assigned to the first group, the second item assigned to the second group, etc) so that three item parcels were used to represent each YSR factor. Also following Song et al., YSR items that defined more than one scale according to the Test Manual were assigned to the factor to which they were more strongly related. Following from Cattell (1956), many authors (e.g., Floyd & Widaman, 1995; Marsh & O'Neill, 1984; West, Finch, & Curran, 1995) have noted advantages of using item parcels in that they: a) are more normally distributed; b) are more reliable (and, thus, more valid); c) are less influenced by idiosyncratic characteristics of individual items; and d) necessitate the estimation of substantially fewer parameters particularly when the number of items is large relative to the sample size. In some of our analyses, single-indicator factors representing age, gender, and their interaction were added to determine their relation with the self-concept and mental health factors. For present purposes, the main effects of gender and age were partialled out of the variable representing the age x gender interaction so that the interaction term reflected variance that was independent of the main effects.

There were little missing data for either the SDQII (0.02% of 92,106 responses by 903 students to 102 items) or the YSR (0.4% of 68,628 responses by 903 students to 76 items). A growing body of research has emphasized potential problems with traditional pairwise, listwise, and mean substitution approaches to missing data (e.g., Graham & Hoffer, 2000; Little & Rubin, 1987) leading us to implement the Expectation Maximization Algorithm, the most widely recommended approach to imputation for missing data, as operationalized using missing value analysis in SPSS (SPSS, 1999).

Results

Self-Concept Factor Structure for SDQII Responses

For the CFAs (Table 1) of SDQII responses, our highly restrictive, a priori factor structure provided a good fit to the data (RMSEA = .041, Model 1 in Table 2), and all factor loadings were statistically significant. Correlations among the factors varied from close to zero to moderately positive (-.01 to .74; median $r = .35$). Consistent with previous research, the most positive correlations typically involved the general self-concept factor that was substantially correlated with the general school (.74), emotional stability (.70), appearance (.59), and parents (.57). Although general school self-concept was substantially correlated with math and verbal self-concepts (.61 and .58 respectively), math and verbal self-concepts were nearly uncorrelated with each other (.10). Reliability estimates for the 11 SDQII factors (see Appendix) varied from .80 to .92 ($Md = .88$), indicating good reliability for the SDQII responses. Consistent with previous research (Marsh, 1990, 1992), responses by girls were somewhat more reliable than those by boys, but the differences were not large.

Higher-Order SDQ Factors

To what extent can relations among the 11 first-order factors be explained by a single higher-order self-concept factor? Not surprisingly, given the range of correlations among the SDQII factors, Model 1H (Table 2) positing a single higher-order factor provided a substantially poorer fit to the data than the corresponding Model 1. The target coefficient (TC = .663, Table 2) indicated that 66.3% of the reliable covariation among the SDQII factors could be explained in terms of the higher-order factor (Model 1H), so that approximately 1/3 of the covariation was unexplained.

Marsh and Hocevar (1985, 1988) argued that the strength of a higher-order factor should also be evaluated in terms of the proportion of variance in each first-order factor that could be explained by the higher-order factor. In the present investigation, this was represented by the size of the higher-order factor loadings (Table 1). Consistent with the design of the SDQII, the General self-concept factor clearly had the largest higher-order factor loading (.93 in Table 1), indicating that 87% (.93²) of the reliable variance in this factor was explained by the higher-order factor. However, the higher-order factor explained substantially less variance in most of the other SDQ factors and no more than 25% of the variance for five SDQ factors (those with higher-order factor loadings less than .5 in Table 1). In summary, the HCFA provided clear support for the construct validity of responses to the General self-concept scale, but was not effective in explaining correlations among the SDQII factors and much of the variance in many of the SDQ factors was unexplained by the higher-order self-concept factor. On this basis we rejected Model 1H as an adequate description of the SDQII responses.

Gender Differences in SDQ Factors

Because of the large sample size, even substantively small effects of gender and age were statistically significant so that it was important to evaluate effect sizes as reflected in the sizes of correlations in Table 1. The effects of gender and age (Table 1), consistent with previous research self-concept during these early adolescent years tended to decline with age. This decline was statistically significant for seven factors, the largest being general school ($r = -.24$) and parents ($r = -.20$) self-concepts. Interestingly, however, there were small increases in self-concept in the appearance and opposite sex scales during this adolescent period. There were counter-balancing gender differences – some favoring boys others favoring girls – that were reasonably consistent with gender stereotypes. Girls had significantly lower self-concepts than boys for the physical, math, emotional stability, and general factors, but higher self-concepts

for honesty, verbal, and same sex factors. Consistent with previous research suggesting that the pattern of gender differences was reasonably stable over age, there were no statistically significant age-by-gender interactions.

Summary

The evaluation of parameter estimates, the distinctiveness of the factors, the reliability estimates, and the ability of the a priori model to fit the data all provided good support for this new French translation of the SDQII and, hence, the cross-cultural generalizability of previous results based on the English-language version of the SDQII.

Table 1: Self-concept Factor Structure and Relations with Gender and Age

<i>Factor</i>	<i>Phys</i>	<i>Appr</i>	<i>Osex</i>	<i>SSex</i>	<i>Hons</i>	<i>Prnt</i>	<i>Emot</i>	<i>Genl</i>	<i>Math</i>	<i>Verb</i>	<i>Schl</i>
Factor Loadings (condensed format) ^a											
1	.79*	.76*	.82*	.72*	.57*	.77*	.55*	.70*	.81*	.68*	.53*
2	.83*	.84*	.79*	.64*	.62*	.72*	.58*	.73*	.83*	.78*	.65*
3	.66*	.86*	.82*	.71*	.62*	.78*	.46*	.76*	.85*	.74*	.84*
4	.78*	.84*	.83*	.84*	.63*	.60*	.76*	.69*	.82*	.75*	.87*
5				.64*	.67		.65*	.62*	.91*	.70*	.82*
Factor Correlations											
Phys	1.00										
Appr	.39*	1.00									
Osex	.43*	.69*	1.00								
SSex	.37*	.49*	.63*	1.00							
Hons	.14*	.13*	.07	.14*	1.00						
Prnt	.14*	.26*	.17*	.29*	.47*	1.00					
Emot	.30*	.43*	.30*	.34*	.45*	.55*	1.00				
Genl	.36*	.59*	.43*	.54*	.45*	.57*	.70*	1.00			
Math	.22*	.03	-.01	.07	.31*	.21*	.35*	.37*	1.00		
Verb	.12*	.23*	.15*	.19*	.36*	.34*	.35*	.50*	.10*	1.00	
Schl	.25*	.29*	.15*	.28*	.36*	.38*	.54*	.74*	.61*	.58*	1.00
Relations with Age and Sex											
Age	-.01	.09*	.16*	-.06	-.13*	-.20*	-.17*	-.14*	-.13*	-.15*	-.24*
Sex	-.20*	-.07	-.04	.11*	.15*	-.05	-.12*	-.09*	-.19*	.12*	-.07*
Sex X Age	.03	.05	.03	-.04	.03	-.01	-.01	.01	.03	.01	.05
Higher-order Factor Loadings (see Model 1H in Table 2)											
Loading	.42	.59	.47	.56	.49	.60	.80	.93	.41	.50	.72

Note: A confirmatory factor analysis model was fitted to SDQII responses representing four or five indicators for each of the 11 a priori self-concept factors (see Appendix for a description of SDQII factors). In a subsequent model, age, sex (1 = male, 2 = female), and the age x sex interaction were added to this model to determine how the self-concept factors were related to these background variables. In a higher-order factor analysis (see Model 1H in Table 2), factor loadings relating each first-order factor to the single higher-order factor are presented here.

In the full (51 variables x 11 factor) factor loading matrix, each of the 51 variables had one nonzero factor loading on the factor it was designed to represent and factor loadings constrained to be zero on the remaining 10 factors. In order to conserve space a condensed factor-loading matrix is presented, in which all 51 non-zero (freely estimated) factor loadings are presented but factor loadings constrained to be zero are excluded. Because 4 or 5 variables represented each scale, there were only 4 or 5 nonzero factor loadings for each factor. For example, the five variables representing the General self-concept factor have factor loadings of .70, .73, .76, .69, and .62 respectively on the General factor (see above) and factor loadings constrained to be zero on all of the remaining 10 factors.

* $p < .05$.

Mental Health Factor Structure for YSR Responses

Because the factor structure of the YSR was not the main focus of the present investigation

(see Song, et al., 1994), we summarized these results (see Table 3) only briefly. Factor loadings relating each YRS indicator to its corresponding factor were all large and statistically significant. The goodness of fit for the a priori model of the YSR responses (RMSEA = .060; see Model 2 in Table 2) was reasonable. Correlations among the YRS factors were moderate-to-large, ranging from .23 to .87 (*Md r* = .64). The high correlation between delinquent behaviors and aggressive behaviors ($r = .85$) suggested that these two factors were not well differentiated. Similarly, the high correlations relating the anxious/depressed factor to attention problems (.87) and social problems (.82), and relating the attention and social problems factors (.82) suggested that these factors were not well differentiated. Reliability estimates for the YSR factors (Appendix) varied from .66 to .88 (*Md* = .79), indicating reasonable reliability. Consistent with responses to the SDQII (Table 1), responses by girls were somewhat more reliable than those by boys.

Table 2: Summary of Goodness of Fit For Confirmatory Factor Analysis Models

MODEL	χ^2	DF	RNI	TLI	RMSEA	TCO	Description
SDQII Total Group							
1	2902.21	1169	.928	.921	.041	1.000	11 SDQ(Self-concept) factors
1H	4064.49	1213	.881	.875	.051	.663	11 SDQ, 1 Higher-order (HO) factor
1N	6349.52	1224	.786	.777	.068	.000	11 Uncorrelated SDQ factors
YSR Total Group							
2a	713.12	168	.927	.908	.060	1.000	7 YSR (Mental Health) factors
2H	1085.73	182	.879	.860	.074	.858	7 YSR, 1 Higher-order (HO) factor
2N	3345.65	189	.576	.529	.136	.000	7 Uncorrelated YSR factors
YSR + SDQII Total Group							
3	5481.09	2331	.906	.897	.039	1.000	7 YSR, 11 SDQII factors
3H	7933.80	2465	.837	.831	.050	.673	7 YSR, 11 SDQII factors, 1 HO SDQ, 1 HO YSR
3HN	12970.83	2484	.688	.679	.068	.000	Model 3 with 18 Uncorrelated Factors
Path Models: SDQ Predicting YSR Total Group							
4a	5481.09	2331	.906	.897	.039	1.000	11 SDQ Factors Predicting 7 YSR factors (full model)
4b	5526.43	2338	.905	.896	.039	.968	Model 4a excluding SDQII General
4c	6344.89	2401	.883	.875	.043	.387	Model 4a with only SDQII General
4N	6890.98	2408	.867	.859	.045	.000	Model 4a with No paths from SDQ to YSR
YSR + SDQII Invariance Over Gender							
5a	8249.54	4662	.895	.885	.041		Males & Females, 11 SDQII & 7 YSR, no invariance
5b	8352.81	4716	.893	.884	.041		Model 5a with factor loadings invariant
5c	8398.86	4734	.892	.884	.041		Model 5b factor variances invariant
5d	8664.08	4887	.889	.884	.041		Model 5c factor covariances invariant
5e	8914.88	4959	.884	.880	.042		Model 5d with uniqueness invariant (total Invariance)
5f	8549.48	4810	.890	.883	.042		Model 5d with 77 YSR/SDQII correlations free

Note. RNI = relative noncentrality index, TLI = Tucker-Lewis index, RMSEA = root mean square error of approximation, TC = Target Coefficient. Total N = 903 (445 Males, 458 females) students. For higher-order Models 1H, 2H, and 3H and path models 4a-4c, there are corresponding “null” Models 1N, 2N, 3H, and 4N that constrain some parameters to be zero in order to define the lower-bound (zero value) for the TC, but are intended to be considered in isolation. Models 5a-5f test the invariance factor solutions based on responses by males and females. In a higher-order factor analysis (see Model 2H in Table 2), factor loadings relating each first-order factor to the single higher-order factor are presented here.

The fit of Model 2H positing a single higher-order mental health factor was significantly poorer than the corresponding first-order Model 2 (Table 3). However, the TC = .858 (Model 2H,

Table 2) indicated that the higher-order YSR factor explained 85.8% of the variation among the first-order factors. Also, all of the higher-order factor loadings were substantial (Table 2) with two exceeding .8 (Attention .98, Anxiety .89) and only one less than .7 (Delinquent Behavior .60). Hence, the strength of the hierarchical structure (the extent to which covariation and variance can be explained in terms of a single higher-order factor) was much stronger for YSR responses than SDQII responses.

Mental health decreased significantly with age for all seven YSR factors (Table 3), although these age effects were modest ($r_s = .09$ to $.14$, with higher scores reflecting poorer mental health). Girls had significantly higher somatic complaints and anxious/depressed scores, but significantly lower delinquent behavior scores. No age-by-gender interactions were statistically significant.

Table 3: Youth Self Report Factor Structure and Relations with Gender and Age

Factor								
Indicator	Somt	Anx	Socl	Tght	Attn	Delq	Agrrs	
Factor loadings (in condensed format) ^a								
1	.73*	.82*	.65*	.70*	.73*	.49*	.75	
2	.84*	.75*	.64*	.61*	.65*	.69*	.74	
3	.58*	.84*	.48*	.64*	.64*	.71*	.69	
Factor Correlations								
Somatic	1.00							
Anx/Depress	.63*	1.00						
Social	.47*	.82*	1.00					
Thought	.67*	.69*	.59*	1.00				
Attention	.68*	.87*	.82*	.72*	1.00			
Delinquent	.48*	.42*	.23*	.62*	.53*	1.00		
Aggressive	.53*	.57*	.50*	.69*	.73*	.85*	1.00	
Relations with Age and Sex								
Age	.12*	.09*	.09*	.09*	.12*	.14*	.09*	
Sex	.22*	.12*	-.07	.02	.05	-.14*	-.07	
Sex X Age	.03	.00	.07	.02	.02	.03	-.01	
Higher-order Factor Loadings (see Model 2H in Table 2)								
Loading	.70	.89	.80	.78	.98	.60	.75	

Note: See Appendix for a description of each YSR factor and reliability estimates. A confirmatory factor analysis model was fitted to YSR responses representing three indicators for each of the seven a priori mental health factors. In a subsequent model, age, sex (1 = male, 2 = female), and the age x sex interaction were added to this model to determine how the YSR factors are related to these background variables.

^a See footnote a in Table 1

* $p < .05$.

Relations Between Self-Concept (SDQII) and Mental Health (YSR) Responses

In Model 3 (Table 2), we combined responses to the YSR and SDQII into a single model. Not surprisingly, parameter estimates for the SDQII responses were nearly the same as those in Table 1 and parameter estimates for the YSR responses were nearly the same as those in Table 3. Hence, our focus for this combined model was on the relations between the 11 SDQII self-concept factors and the 7 YSR mental health factors that were the major focus of the present investigation.

In order to provide structure to the discussion, we derived a priori predictions of the pattern of relations between the 11 self-concept and the 7 mental health factors (Table 4) based on research reviewed earlier and the content of the factors. We predicted all 77 correlations between self-concept factors and YSR factors to be negative (i.e., YRS factors reflected psychological problems whereas SDQII factors represented areas of positive self-concept).

We predicted that these negative relations would fall into one of four categories: close to zero (0); small (1); moderate (2); and large (3). We predicted the smallest correlations – the 8 classified as “0” in Table 4 -- to occur between the four self-concept factors representing the physical (physical ability and appearance) and social (same sex and opposite sex) self-concept factors and the externalizing (delinquent and aggressive behaviors) YSR factors. We predicted the most negative correlations – the 8 classified as “3” in Table 4 -- to occur between two SDQII scales (emotional and general) and two YSR factors (anxious/depressed and attention problems), between parents self-concept and the externalizing (delinquent behaviors and aggressive behaviors) YSR factors, and between two social self-concept factors (opposite sex and same sex) and the YSR social problems factor. We predicted that a total of 19 correlations would be “2” (moderately negative). These included correlations involving emotional stability self-concept, general self-concept, and the remaining YSR scales. Because the YSR attention problems were relevant to school performance (one of the items referred to poor school performance), we predicted this factor to be moderately, negatively related to the three academic self-concepts (math, verbal, school). We predicted the YSR social problem factor to be moderately negatively correlated to physical appearance self-concepts. We predicted the YSR delinquent and aggressive behavior factors to be moderately, negatively correlated with the SDQII honesty factor. We predicted the YSR anxious/depressed factor to be moderately, negatively correlated with appearance, same sex, and opposite sex factors. We predicted all remaining correlations between the YSR and SDQII factors to be small negative correlations (category 1 in Table 4).

The observed correlations, as predicted, were mostly negative (mean $r = -.35$) but varied substantially from $-.83$ to $+.11$. These observed correlations were substantially related to our a priori classification ($r = .88$, $p < .001$; see Figure 1). Correlations in each of the four predicted categories differed systematically from each other: close to zero ($-.18$ to $+.11$, mean $r = -.07$), small ($-.46$ to $-.13$, mean $r = -.28$), moderate ($-.61$ to $-.34$, $r = -.47$), and large ($-.83$ to $-.57$, $r = -.68$). In summary, the substantial, highly statistically significant differences between the four groups of correlations, as reflected in the large correlation ($r = .88$) between our a priori classification and observed results, provided an elegant and parsimonious summary of support for our a priori predictions. Because correlations between specific YSR and SDQII factors varied from close to zero to extremely large and were consistent with our a priori predictions, the results provided convincing support for the multidimensional perspective of self-concept that is the main focus of the present investigation.

Although most of the observed correlations fit well into the a priori predicted categories, it was informative to consider those that did not (e.g., those falling near or outside of the 90% confidence intervals in Figure 1). We predicted all 77 correlations to be negative, but the correlation between the YSR delinquent behaviors and the SDQII opposite sex self-concept ($r = .11$) was significantly positive. This finding was consistent with the Marsh, et al. (2001) finding that aggressive troublemaking was positively related to the SDQII opposite sex scale, but negatively related to same sex self-concept. More generally, in support for the need to separate same-sex and opposite-sex self-concepts, same-sex self-concepts were more negatively related to mental health problems – particularly externalizing behaviors - than were opposite-sex self-concepts.

Honesty self-concept was more negatively related to anxious/depressed and to attention problems (both $r_s = -.46$) than expected (see Figure 1). The content of the honesty self-concept factor included being trustworthy, dependable, and doing the right thing, suggesting that young adolescents who did not live up to these standards felt guilty, anxious and

depressed (and may be important for intervention). Although the higher than expected correlation between honesty self-concept and attention problems was not easily explained, the attention factor was so highly correlated ($r = .87$) with the YSR anxious/depressed factor that these two YSR factors were not easily distinguishable. Although predicted a priori, it was also interesting to note the substantial negative correlation between honesty self-concept and the externalizing factors (-.46, aggressive behaviors; -.48 delinquent behaviors).

Table 4: Predicted and Observed Patterns of Relations Between 11 Self-concept (SDQII) Factors and 7 Youth Self-rating (YSR) Factors

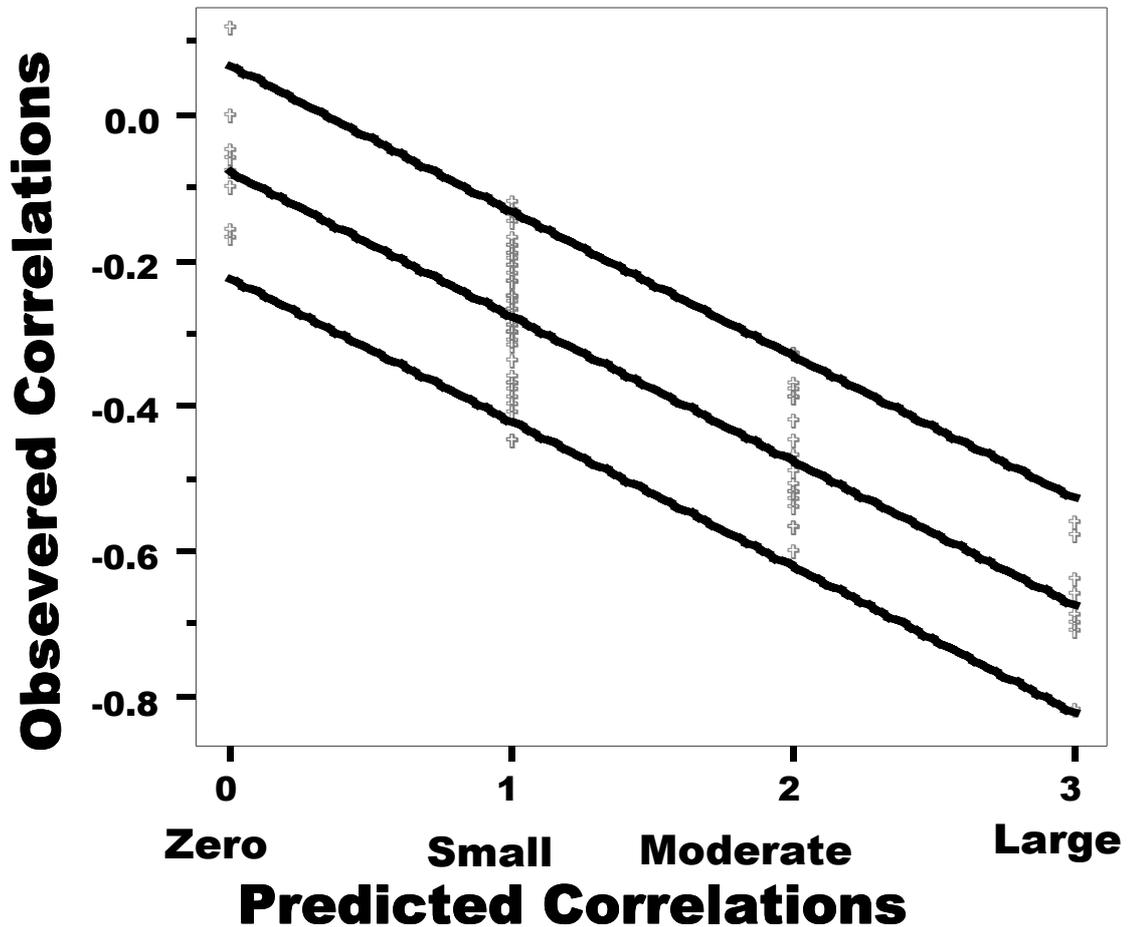
YSR Factors	Self-Concept Factors										
	Phys	Appr	OSex	SSex	Prnt	Hons	Emot	Math	Verb	Schl	Genr
Residual											
Predicted Pattern of Relations											
Somatic	1	1	1	1	1	1	2	1	1	1	2
Anx/Depress	1	2	2	2	1	1	3	1	1	1	3
Social	1	2	3	3	1	1	2	1	1	1	2
Thought	1	1	1	1	1	1	2	1	1	1	2
Attention	1	1	1	1	1	1	3	2	2	2	3
Delinquent	0	0	0	0	3	2	2	1	1	1	2
Aggressive	0	0	0	0	3	2	2	1	1	1	2
Observed Relations											
Somatic	-.24*	-.26*	-.16*	-.27*	-.24*	-.39*	-.54*	-.24*	-.20*	-.31*	-.40
.02											
Anx/Depress	-.31*	-.53*	-.43*	-.50*	-.21*	-.46*	-.71*	-.23*	-.19*	-.40*	-.65
.02											
Social	-.38*	-.52*	-.59*	-.72*	-.20*	-.32*	-.55*	-.14*	-.22*	-.35*	-.58
.01											
Thought	-.13*	-.22*	-.15*	-.28*	-.31*	-.37*	-.53*	-.19*	-.18*	-.28*	-.34
.04											
Attention	-.33*	-.41*	-.31*	-.42*	-.38*	-.46*	-.83*	-.38*	-.39*	-.61*	-.67
.07											
Delinquent	-.06	-.07*	.11*	-.09*	-.70*	-.46*	-.40*	-.26*	-.29*	-.30*	-.34
.04											
Aggressive	-.11*	-.18*	-.01	-.17*	-.57*	-.48*	-.58*	-.26*	-.26*	-.30*	-.34
.00											
Residual	-.00	-.04	.09	-.04	.02	-.09	-.06	.06	.06	-.06	.06
.00											

Note. See Appendix for a description of each SDQII (self-concept) and YSR (mental health) factors. Results are based on a confirmatory factor analysis of both SDQII and YSR responses. Because factor loadings and correlations are nearly identical to those in Tables 1 and 3, only correlations between SDQII and YSR factors are presented. All correlations between SDQII and YSR factors are predicted to be negative and to be close to zero (0), small (1), moderate (2), or large (3), depending on the particular factors involved. Residuals are the differences between observed and predicted correlations (see Figure 1) averaged across all correlations involving each of the 11 SDQII factors and each of the 7 YSR factors.

* $p < .05$.

General self-concept was less negatively correlated to thought problems, delinquent behaviors, and aggressive behaviors (all $r_s = -.34$) than expected (Figure 1). The smaller than expected relations between general self-concept and the two externalizing YSR factors (delinquent and aggressive behaviors) may be consistent with suggestions that some students with initially low general self-concept may derive a sense of esteem from aggressive troublemaking, physical violence, and bullying (Marsh, et al., 2001). More generally, general self-concept was less negatively correlated with the seven YSR mental health factors than we predicted. It was also interesting to juxtapose the corresponding relations involving general self-concept and emotional self-concept. Although the predicted patterns were the same for both self-concept factors, emotional self-concept was more negatively correlated with each of the YSR scales (except social problems) than was general self-concept.

Figure 1: Predicted and Observed Correlations Between 11 Self-concept (SDQII) and 7 Mental Health (YSR) Factors (see Table 4). Also presented are the regression equation and 90% confidence interval for the relation between predicted categories and observed correlations.



The juxtaposition between the math and verbal self-concepts and general school self-concept was also interesting. Whereas the same patterns of relations between these academic self-concepts and the seven YSR factor was predicted, the observed correlations were more negative for general school self-concept than the more specific academic components. Thus, correlations of math and verbal self-concepts were less negative than expected (mean residuals were $+0.06$ for both scales), whereas those for the global school factor were more negative than expected (mean residual was -0.06). This suggested that the more specific academic factors that were tied more closely to work in a specific school subject were less related to mental health problems than was the more general school self-concept factor.

Tests of a Unidimensional Perspective of Self-Concept

In order to test specifically the unidimensional perspective, we evaluated the extent to which relations between self-concept (SDQII) and mental health (YSR) factors in Model 3 could be explained in terms of a single higher-order SDQ factor and a single higher-order YSR factor

(Model 3H in Table 2). The fit of Model 3H was significantly poorer than Model 3 according to the χ^2 difference test ($\Delta\chi^2 = 7933.80 - 5481.09$, $\Delta df = 2465 - 2331$, $p < .001$) as well as all the goodness of fit indexes (Table 2). The target coefficient for Model 3H ($TC = .673$, Table 2) indicated that 67.3% of the covariation among the 18 first-order factors could be explained by two higher-order factors. Logically, unexplained covariation (32.7%) can be divided into unexplained covariation among the 11 SDQ factors, among the 7 YSR factors, and between the 11 SDQ and 7 YSR factors. Because the unexplained covariation among the 11 SDQ factors was also about one third (Model 1H) and that for the 7 YSR factors was only 14%, it follows that the largest component was due to the unexplained covariation between the SDQ and YSR factors. This result is consistent with the observation that correlations among YSR factors are all substantially positive (Table 3) and correlations among SDQII factors were all at least moderately positive (Table 1), whereas correlations between SDQII and YSR factors varied from close to zero to substantially negative (Table 4).

We also evaluated the unidimensional perspective in terms of the General self-concept scale from the SDQII. More specifically, we asked to what extent the mental health (YSR) factors can be predicted by the entire set of 11 SDQ factors (Model 4a in Table 2), by the set of 10 specific self-concept (excluding the General Self-concept factor, Model 4b), and by the General self-concept factor alone (excluding the 10 specific self-concept factors, Model 4c). To provide a basis of comparison, we also included a null model in which relations among the 11 SDQ and 7 YSR factors were posited to be zero. Whereas Model 4a provided a good fit to the data, the exclusion of the General self-concept factor (Model 4b) had almost no impact on goodness of fit ($TC = .968$, Table 2). Consistent with this finding, 4 of 7 path coefficients leading from General self-concept to the 7 YSR factors in Model 4a (not shown) were nonsignificant despite the large N , and 2 of the 3 significant paths were not even in the predicted direction (SDQII General self-concept contributed positively to YSR Aggressive Behavior and Thought Problems). In Model 4c only paths between General self-concept and the 7 YSR factors were freely estimated (all other paths were constrained to be zero). Model 4c provided a significantly poorer fit to the data than the full path model (Model 4a in Table 2). Importantly, the $TC = .377$ for Model 4c, indicated that the General self-concept scale alone was able to explain only 38.7% of the reliable covariation between the SDQ and YSR factors.

In summary, both tests based on both the higher-order SDQII factor and the General self-concept factor provided further evidence against the unidimensional perspective. Whereas the substantial correlation ($r = .93$) between the two provided support for the construct validity of interpretations based on both factors, neither was able to provide an adequate summary of the relations between the 11 SDQII and 7 YSR factors. Hence, these results provide further evidence against the adequacy of the unidimensional perspective of self-concept.

Invariance of the Self-Concept (SDQII) and Mental Health (YSR) Factor Structures over Gender

The purposes of analyses summarized here were to evaluate invariance over gender of the factor structures for self-concept (SDQII) responses, mental health (YSR) responses, and in particular, relations between self-concept and mental health responses. In tests of the invariance of the factor structure for SDQII and YSR responses (Table 2, Models 5a – 5e), there was good support for the invariance of factor loadings (Model 5b), factor variances (Model 5c), and factor covariances (Model 5d). Thus, for example, the $RMSEA = .041$ for the baseline model (Model 5a) with no invariance did not differ as more restrictive invariance constraints were added in Models 5b – 5d. There was, however, some evidence that

uniquenesses were not invariant over gender (Model 5e), consistent with the slightly higher reliability estimates for girls than boys for both SDQII and YSR responses (Appendix). This pattern – support for the invariance of factor loadings, factor variances, factor correlations, but slightly more reliable responses by girls – was replicated in unreported separate analyses of each instrument.

In Model 5f, we tested an additional model in which the 77 correlations relating the 11 SDQII and 7 YSR factors were not constrained to be invariant. The fit of this model, according to the indices that control for model parsimony (TLI and RMSEA in Table 2), was no better or slightly worse than the corresponding model in which these 77 covariances were constrained to be the same for boys and girls. The tests of invariance provided strong support for the invariance over gender of the relations between self-concept and mental health. Consistent with this observation, the mean of these 77 correlations based on the total sample (mean $r = -.35$, Table 4) was nearly the same as the mean correlation for boys (mean $r = -.34$) and for girls (mean $r = -.36$). Similarly, the substantial correlation between the observed and predicted correlations based on the total sample (mean $r = .88$; Table 4 & Figure 1) was nearly the same for separate analyses based on responses by boys (mean $r = .87$) and by girls (mean $r = .87$).

In summary, the results provided very strong support for the invariance over gender – the similarity for boys and girls – of the SDQII factor structure, the YSR factor structure, and relations between the SDQII factors and the YSR factors.

Discussion

Consistent with a large body of research based on the English-language version of the SDQII instrument, the results of the present investigation provided strong support for our French translation of the instrument. CFAs demonstrated that the SDQII factors were reliable, well defined, very distinct, and invariant over responses by boys and girls. The multidimensional perspective that is a particular strength of the SDQII was supported by the failure of a higher-order SDQII factor model. In particular, the covariation among the 11 self-concept first-order factors was not adequately explained by a single higher-order SDQII factor and the substantial portions of variance in all but the first-order General self-concept factor were unexplained by the higher-order SDQII factor. These results contribute to the growing literature showing the strong psychometric properties of responses to the SDQII and their generalizability across gender, age, culture, and nationality.

Based on previous research and the content of the YSR and SDQII scales, we developed detailed predictions about the pattern of correlations between scales from these two instruments. Thus, for example, consistent with predictions, physical ability, physical appearance, opposite sex relations, and same sex relations self-concepts were almost unrelated to the YSR externalizing factors (delinquent behaviors and aggressive behaviors), whereas emotional stability self-concept was substantially related to particularly the anxious/depressed (-.71) and attention problem (-.83) mental health factors. A priori predictions of the pattern of relations between the 11 SDQII factors and the 7 YSR factors were very accurate (the correlation between predicted categories and obtained values was .88). Importantly, the sizes of the correlations varied substantially. For example, when examining the relations between opposite sex relations self-concept and delinquency we found a slightly positive, statistically significant correlation (.11) rather than a substantial negative correlation as might be expected from a unidimensional perspective of self-concept.

These findings replicate previous work by Marsh et al (2001), suggesting that behavioral difficulties, such as delinquency and troublemaking, did not have negative consequences on young adolescent's self-perception of their relations with the opposite sex. More research is needed to determine whether the use of such externalizing behaviors is motivated by an attempt to increase opposite-sex self-concept (see Marsh, et al.). This is an important distinction that may affect the outcome of targeted treatments for these populations, particularly those that require empathy retraining. Our findings suggest that aggressive youth differentiate the effect of their behavior on others, depending on the gender of the target. For example, for young males, self-perceived relations with girls may increase as a consequence of their externalizing behaviors whereas self-perceived relations with other boys do not. Further studies in this area would be beneficial.

In order to evaluate the unidimensional and multidimensional perspectives of self-concept in relation to mental health measures, it was useful to compare predicted and observed correlations involving the SDQII general self-concept factor with those based on the other, specific components of self-concept. We predicted General self-concept to be moderately negatively correlated with all seven YSR problem factors and all the correlations were negative. However, for each of the YSR narrow-band factors, the correlation with at least one specific self-concept factor was more negative than the corresponding correlation with the General Self-concept factor (Table 4). Importantly, these more negative correlations were consistent with a priori predictions. It is also useful to evaluate the pattern of relations for the broad-band YSR factors. Consistent with a priori predictions, general self-concept was substantially negatively correlated with the two relatively pure YSR internalizing factors (somatic and anxious/depressed problems), although the corresponding correlations with the SDQII emotional stability factor were more negative. For the two relatively pure YSR externalizing factors, however, the pattern of correlations with the SDQII factors was much more differentiated. The correlations involving general self-concept were moderate (-.34); slightly more negative than those involving the three academic self-concept factors (-.30 to -.26) and substantially less negative than those involving Honesty, Emotional Stability, and particularly Parent Relations (-.70 to -.40). In dramatic contrast to the consistently negative correlations between general self-concept and mental health problems, the two externalizing mental health factors were nearly uncorrelated with physical, appearance, same-sex, and opposite-sex SDQII factors (correlations vary from -.17 to +.11). Whereas the correlations between these externalizing YSR factors and general Self-concept were somewhat less negative than expected, this pattern of results was also consistent with a priori predictions. In summary, consistent with a priori predictions, the pattern of relations between specific self-concept factors and YSR factors was more differentiated than relations with the general self-concept factor. On the basis of these findings, we concluded that our results favored the multidimensional perspective of self-concept over the unidimensional perspective for mental health research. Importantly, however, we do not argue that general self-concept should be excluded— which is why this factor is retained as part of the SDQII instrument. Rather, we argue that it should be only one of the multidimensional self-concept factors that need to be considered in order to understand better relations between self-concept and mental health.

We also pursued more specific tests of the adequacy of the unidimensional perspective of self-concept by determining the extent to which covariation between self-concept (SDQ) and mental health (YRS) factors could be explained by either the SDQII General self-concept factor or a higher-order SDQII factor. The substantial correlation ($r = .93$) between the first-order General self-concept and higher-order SDQII factors provided support for the construct validity of both constructs and their appropriateness for testing the unidimensional

perspective. However, neither of these measures of overall self-concept provided an adequate summary of the covariation between self-concept and mental health factors. This consistent pattern of results in favor of the multidimensional approach based on two alternative representations of global self-concept also supports the generalizability of the results.

A more detailed profile of self-concept facets, rather than relying on a single dimension of self-concept, may also have important implications for preventive interventions. Thus, for example, the substantially negative relations between honesty self-concept and the externalizing behaviours suggested that the young adolescents in our study had a sufficiently developed moral framework to recognize the difference between right and wrong. More generally the results suggested that several specific dimensions were associated with depression and anxiety and this might also facilitate the development of more appropriately targeted interventions for mental health problems. In another implication of our research, the quality and continuity of caregiving and parental roles have been linked to the level of risk for various emotional and behavioral difficulties in children (Wyman, et al., 1999). Our results showed that there was a strong relation between adolescent's self-perceptions of their interactions with their parents and their mental health. The negative correlations between parent relations self-concept and the YSR factors ranged from $-.20$ for the YSR Social scale to as high as $-.70$ for the YSR delinquent scale. The notably high correlations between the SDQII parent relation scale and both the YSR externalizing factors were consistent with research suggesting that the quality of parental relationships as perceived by adolescents were strongly, negatively associated with engagement in these anti-social activities (see Farrington, 2000). This systematic, predicted pattern of relations between SDQII responses and a widely used measure of behavioral and emotional difficulties in adolescence provided strong new support for the usefulness of a multidimensional perspective of self-concept in mental health research.

Although not a major focus of the present investigation, our multiple group CFAs provided stronger tests of gender differences in self-concept, mental health, and the relations between these two multidimensional constructs than previously available. In evaluating such gender differences, it was important to distinguish gender differences in mean levels of self-concept and mental health factors from gender differences in the factor structures underlying these constructs. The factor loadings for both constructs were reasonably invariant over gender, suggesting that the factors being measured were similar for boys and girls. There were, however, small but systematic gender differences in mean levels of both the self-concept and mental health factors that were largely consistent with gender stereotypic differences found in previous research. Thus, for example, girls had higher verbal, same-sex, and honesty self-concepts and higher anxious/depressed scores and somatic complaints, whereas boys had higher physical, math, emotional stability, and general self-concepts and higher externalizing behaviors. In contrast to the mean level differences, correlations among the 11 self-concept factors, among the 7 mental health factors, and between factors from the two sets of constructs were similar for boys and girls. Thus, for example, externalizing behaviors were slightly positively related to opposite-sex self-concepts and very negatively related to parent relations self-concepts, but these relations were similar for boys and girls.

Potential Limitations and Directions For Further Research

Although psychometric support for the YSR responses was reasonable, limitations were the relatively modest reliability estimates and the very large correlations among many of the YSR factors (also see Song, et al., 1994). These results undermine support for the discriminant validity and diagnostic value of the narrow-band scales. Because these

correlations were relations among latent constructs (that have been corrected for unreliability), they were systematically larger than those reported in the YSR manual and other research that has not corrected scale score correlations for unreliability. Clearly, there is a need for more research on the construct validity of the narrow-band scales to determine, for example, whether the lack of discriminant validity for the narrow-band scales is inherent in the constructs or idiosyncratic to the YSR. This also impacts on conclusions based on the present investigation in that a more differentiated measure of mental health would result in stronger support for the multidimensional perspective espoused here. However, as emphasized by Song et al. (1994), the pattern of relations among these narrow-band scales was consistent with broad-band (internalizing and externalizing) scales that form the basis of most research based on the YSR and was the focus of the present investigation.

A potential limitation of the present investigation involved the generalizability of our results based on disadvantaged French-Canadian students. Although not the major focus of the present investigation, the study provided a test of the cross-cultural generalizability of predictions based on the original English version of the SDQII to this new setting. As emphasized by many cross-cultural psychologists, testing the generalizability of results and predictions derived from one culture to another provides an important test of the construct validity of interpretations. Clearly, the results indicated that the translated SDQII was appropriate for these French-Canadian students. Importantly, neither the SDQII instrument nor the detailed set of a priori predictions about psychometric properties of the SDQII responses and relations between SDQII and YSR factors was based on this sample. Hence, the results of the present investigation support a priori predictions about the generalizability of the SDQII factor structure and its psychometric properties, about age and gender differences in self-concept responses, and about relations between multiple dimensions of self-concept and mental health problems. Thus, in relation to support for a priori predictions reported in the present investigation, the issue of the generalizability appears to be strength rather than a limitation. Nevertheless, it is important to evaluate further the generalizability of the results in diverse settings, including non-disadvantaged samples and English-speaking samples based on the original English-language versions of the two instruments.

Conclusion

In conclusion, the present investigation provides strong support for the generalizability of the strong psychometric properties reported with the English version of the SDQII to those based on our French translation of the instrument. Extending previous research, we evaluated the construct validity of the SDQII multidimensional factors in relation to multiple dimensions of mental health. However, our most important contribution was to demonstrate support for a highly differentiated pattern of correlations between multiple dimensions of self-concept and multiple dimensions of mental health. Although the multidimensionality of self-concept is strongly supported by a considerable body of theory and research, most research relating self-concept to mental health has relied on a unidimensional perspective of self-concept in which only a single general self-concept scale (like the SDQII general self-concept scale) has been considered. Our results strongly supported our claim that a unidimensional approach to the study of mental health problems in adolescents cannot adequately reflect the diversity of specific self-concept domains and their relation to mental health. A multidimensional perspective to both mental health and self-concept can lead to a better understanding of the complexity of self in different contexts, to more accurate predictions of a wide variety of behaviors, as well as appropriate outcome measures for diverse interventions, and a deeper understanding of how self-concept relates to other mental health constructs. As appears to be

the case in other subdisciplines of psychology, over-reliance on a single self-concept scale was counter-productive in describing the relations between self-concept and mental health. As suggested by Leadbeater et al. (1999) and our review of other research, the pattern of relations was more complex – and more informative – when we took a multidimensional perspective of self-concept. On the basis of our research, we recommend that mental health researchers and practitioners abandon counter-productive unidimensional perspectives of self-concept that are prevalent in mental health research embracing instead, a multidimensional perspective that has been productive in other areas of psychology.

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Appendix 1

A Summary Description of the Scales From the Self-concept and Mental Health Instruments

Self Description Questionnaire (SDQ) Self-Concept Scales ^a

Physical Ability (Phys; reliability = .88, .86, .89). Participant's self-perceptions of their skills and interest in sports, games, and physical activities.

Physical Appearance (Appr; reliability = .91, .91, .91). Participant's self-perceptions of their physical attractiveness, how their appearance compares with others, and how others think they look.

Opposite Sex Relationships (Osex; reliability = .90, .91, .89). Participant's self-perceptions of their popularity with members of the opposite sex, how easily they make friends with members of the opposite sex, and the quality of their interactions with members of the opposite sex.

Same Sex Relationships (SSex; reliability = .86, .87, .84). Participant's self-perceptions of their popularity with members of the same sex, how easily they make friends with members of the same sex, and the quality of their interactions with members of the same sex.

Honesty/Trustworthiness (Hons; reliability = .80, .79, .80). Participant's self-perceptions of their honesty, reliability and trustworthiness.

Parent Relationships (Prnt; reliability = .83, .81, .85). Participant's self-perceptions of how well they get along with their parents, whether they like their parents, and the quality of their interactions with their parents.

Emotional Stability (Emot; reliability = .80, .78, .82). Participant's self-perceptions of themselves as being calm and relaxed, their emotional stability, and how much they worry.

General (Genl; reliability = .84, .82, .85). Participant's self-perceptions of themselves as effective, capable individuals who have self-confidence and self-respect and are proud and satisfied with the way they are.

Verbal (Verb; reliability = .89, .89, .89). Participant's self-perceptions of their verbal skills, verbal reasoning ability and interest in verbal activities.

Math (Math; reliability = .92, .91, .92). Participant's self-perceptions of their mathematical skills, mathematical reasoning ability and interest in mathematics.

School (Schl; reliability = .89, .88, .90). Participant's self-perceptions of their skills, ability and interest in school subjects in general.

Youth Self Report (YSR) Mental Health Scales^b

Somatic Complaints (Somt; reliability = .81, .78, .83). nausea, aches, headaches.

Anxious/Depressed (Anx; reliability = .88, .89, .88). sad, worthless, thinks about killing self, nervous.

Social Problems (Socl; reliability = .66, .66, .68). not liked by other kids, teased, acts too young.

Thought Problems (Tght; reliability = .79, .79, .80). strange behaviors, strange ideas, hears things.

Attention Problems (Attn; reliability = .73, .73, .73). trouble concentrating, daydreams, poor school performance, cannot sit still.

Delinquent Behavior (Delq; reliability = .72, .68, .77). steals things at home, hangs around bad kids, lies or cheats.

Aggressive Behaviors (Agrs; reliability = .81, .80, .83). threatens to hurt people, gets into fights, disobedient at school.

Note. Each of the 11 SDQII scales and 7 YSR scales used in this study are presented with the full name of the scale, the abbreviation for the scale used in Tables 1-4, reliability estimates based on the present investigation for the total sample ($n = 903$), males ($n = 445$), and females ($n = 458$) respectively, and a summary of the content of the scale.

^aEach SDQII scale was based on 8 to 10 items to which participants responded according to a 6-point response scale (1 = false, 2 = mostly false, 3 = more false than true, 4 = more true than false, 5 = mostly true, 6 = true). ^bEach YSR scale was based on responses to brief problems to which responses were made along a three-point response scale: 0 (not true or not at all), 1 (sometimes or somewhat true), 2 (very true or often). Not considered were the items called "other problems" that do not form one of the YRS syndromes and the Withdrawn scale that was not found by Achenbach (1991) in his factor analysis of YRS responses and was thus excluded by Song, et al. (1994) in their evaluation of the YSR.