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Adolescents' Body Image Trajectories: A Further Test of the Self-Equilibrium Hypothesis

Alexandre J.S. Morin*, Department of Psychology, Concordia University, Montreal, Canada

Christophe Maïano*, Cyberpsychology Laboratory, Department of Psychoeducation and Psychology, Université du Québec en Outaouais (UQO), Canada

L. Francesca Scalas, Università degli Studi di Cagliari, Italy

Michel Janosz, School Environment Research Group, School of Psychoeducation, University of Montréal, Canada

David Litalien, Faculté des sciences de l'éducation, Université Laval, Canada

* Since the first two authors (A. J. S. M. & C. M.) contributed equally to the preparation of this paper, their order of appearance was determined at random: all should be considered first authors.

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Corresponding author:
Alexandre J.S. Morin,
Department of Psychology, Concordia University
7141 Sherbrooke W, Montreal, QC, Canada, H3B 1R6
Email: Alexandre.Morin@concordia.ca

Abstract

The self-equilibrium hypothesis underlines the importance of having a strong core self, which is defined as a high and developmentally stable self-concept. This study tested this hypothesis in relation to body image (BI) trajectories in a sample of 1006 adolescents (M_{age} = 12.6, including 541 males and 465 females) across a four-year period. The results supported the self-equilibrium hypothesis among three profiles of adolescents, all characterized by matching BI levels and stability: (a) *High* (48.0%); (b) *Increasing* (34.1%); (c) *Decreasing* (17.9%). Boys presented higher levels of BI, and the quality of relationships with peers and parents predicted initially more desirable trajectories across gender. By the end of the study, more positive academic outcomes were associated with the *Decreasing* profile, lower internalizing problems with the *High* profile, and lower externalizing problems with the *High* and the *Increasing* profiles.

Keywords. Body Image, Adolescence, Trajectories, Self-Equilibrium, Peers, Parents, Developmental Outcomes, Growth Mixture.

Positive psychology emphasizes the importance of exploring the ways individuals get the most out of life (Seligman & Csikszentmihalyi, 2000). This approach coalesces with the quest for broadband drivers of successful development, such as the need for individuals to achieve balance, or equilibrium, with their environments. Such person-environment equilibrium is illustrated by the successful negotiation of core developmental tasks and is a major component of the transactional (Sameroff, 2009) and stage-environment fit (Eccles et al., 1993) theories of human development. Alternatively, others have emphasized the more central need for within-person balance or equilibrium. Global self-concept (GSC), which refers to the positive or negative way individuals feel about themselves as a whole (Brown, Dutton, & Cook, 2001)[1], is a key indicator of person-environment fit and within-person equilibrium, and a major driver of optimal functioning across the lifespan (Bandura, 2006; Craven & Marsh, 2008). However, GSC also provides a critical perspective on within-person equilibrium (Craven & Marsh, 2008; Leary & Tangney, 2012). A key area of uncertainty is whether it is preferable to have a high self-concept, or a stable self-concept. Traditionally, research has focused on self-concept level, assuming that the main determinant of psychosocial adaptation was the presence of a high positive self-concept (Craven & Marsh, 2008; Harter, 1999, 2012). Others have rather stressed that self-concept stability (i.e., reflected in the presence of few time-related deviations around one estimated longitudinal trajectory) was the key determinant of psychosocial adaption, although contradictory perspectives are present in this regard. Some noted the importance of self-concept flexibility as a mechanism of adaptation to changing life circumstances (Markus & Kunda, 1986; Paulhus & Martin, 1988). Others emphasized that self-concept variability reflects confusion, lack of self-consistency, and heightened situational reactivity (Crocker & Park, 2004; Campbell et al., 1996).

Research stemming in part from Kernis (2003, 2005) suggested that self-concept instability may be a more important [negative] predictor of adaptation than self-concept level, and tended to predict a higher risk for multiple difficulties (Oyserman et al., 2012; Zeigler-Hill & Showers, 2007). Implicit in this research is the relative independence of the self-concept level and instability (Kernis, 2003, 2005), and their dual role in the prediction of key developmental outcomes (Bos, Huijding, Muris, Vogel, & Biesheuvel, 2010; Zeigler-Hill et al., 2013; Zeigler-Hill & Wallace, 2012). However, a recent meta-analysis (Okada, 2010) shows a negative correlation between self-concept level and instability (r = -.31), suggesting that higher self-concepts tend to be significantly more stable.

To reconcile these perspectives, Morin, Maïano, Marsh, Janosz, and Nagengast (2013) proposed

the self-equilibrium hypothesis, predicting that individuals with trajectories characterized by higher self-concept levels should be characterized by more stable self-concepts (show less time-specific deviations from the estimated trajectory). These authors noted that such high-stable trajectories would reflect the presence of a strong core self (Oyserman et al., 2012; Showers & Zeigler-Hill, 2012) that may protect individuals against the deleterious effects of negative life events (Brown, 2010; Zeigler-Hill, 2011). Conversely, individuals with trajectories characterized by lower self-concept levels should be characterized by a greater level of instability (show more time-specific deviations from the estimated trajectory). Such low-unstable trajectories would thus reflect a greater level of reactivity or permeability to external or internal events (Crocker, Luhtanen, Cooper, & Bouvrette, 2003; Crocker & Park, 2012). More precisely, Morin, Maïano et al. (2013) propose this strong core self to underpin self-equilibration mechanisms necessary to the development of a positive self-concept able to withstand changing life circumstances, challenges, and setbacks. In contrast, unstable self-concepts are assumed to be lower due to their higher levels of reactivity to external and internal contingencies (Crocker et al., 2003; Crocker & Park, 2012). A key component of the self-equilibrium hypothesis is that self-concept level and stability are interdependent and inseparable, reinforcing the need to consider both components jointly to obtain a complete picture of the processes at play in self-concept development (Morin, Maïano et al., 2013). Thus, the self-equilibrium hypothesis does not position either one of these components (level and stability) as more critical than the other. Rather, it highlights their indivisibility and suggests that to understand the development of high or low self-concepts, it is important to take into account the fact that they respectively tend to be more and less stable over time.

Multidimensional Self-Concept and BI Trajectories in Adolescence

Self-concept is a hierarchical and multidimensional construct, best represented as a pyramid, with GSC located at the apex and more specific constructs at the next-lower "domain" level, such as the academic self, the social self, and the physical self, which includes BI (Harter, 2012; Shavelson et al., 1976). GSC is seen as relatively stable compared to more specific self-concepts, such as BI, typically seen as more transient (Fox, 2000; Marsh & Cheng, 2012; Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995; Shavelson et al., 1976). The influence of fluctuations in specific self-concepts on GSC is also well-documented (Morin, Maïano, Marsh, Janosz, & Nagengast, 2011a).

In the current study, we test the self-equilibrium hypothesis relative to one of the most critical dimension of adolescents' self-concept, their body image (BI; Harter, 2012; Lindwall, Aşç1, Palmeira,

Fox, & Hagger, 2011). This construct refers "to the multifaceted psychological experience of embodiment" which "encompasses one's body-related self-perceptions and self-attitudes, including thoughts, beliefs, feelings, and behaviors" (Cash, 2004, p.1-2). While we acknowledge the inherent multifaceted nature of BI, the present study, anchored in the self-concept tradition (e.g., Fox & Corbin, 1989; Harter, 2012; Marsh, 1990), relies on a more generic representation of BI referring to the positive or negative nature of adolescents' global self-evaluations of their own physical appearance and attractiveness (e.g., Clark & Tiggeman, 2008; Smolak, 2004). More precisely, BI thus refers to the extent to which they feel satisfied, or not, about their physical appearance. Interestingly, BI has consistently demonstrated the strongest relations with GSC out of all other dimensions of individuals' multidimensional self-conceptions (Harter, 2012; Lindwall et al., 2011; Morin & Maïano, 2011).

Adolescence is a critical period for the development of self-conceptions in general and BI in particular. Adolescents enter a new school context in which they implicitly and explicitly learn about themselves and social relationships, while simultaneously experiencing the major physical changes associated with puberty, which in turn influence how they perceive themselves and interact with others (Eccles et al., 1993; Smolak, 2004; Steinberg & Morris, 2001). Numerous studies have looked at the evolution of BI during adolescence. However, their results have been inconsistent, showing either a decrease (Eisenberg, Neumark-Sztainer, & Paxton, 2006; Frisén, Lunde, & Berg, 2015; Lunde, Frisén, & Hwang, 2007), an increase (Holsen, Jones, & Birkeland, 2012; Lindwall, Aşç1, & Crocker, 2014; Morin, Maïano et al., 2011a; Young & Mroczeck, 2003), or stability (Bearman, Presnell, Martinez, & Stice, 2006; Shapka & Keating, 2005; Spray, Warburton, & Stebbings, 2013) in average levels of BI. However, one consistent result is that BI levels tend to be higher among adolescent males relative to females (Frisén et al., 2015; Holsen et al., 2012; Markey, 2012; Morin, Maïano et al., 2011a).

The main limitation of these studies is that they focus on average growth trajectories, potentially ignoring inter-individual variations in the shape of these trajectories. Indeed, all of these analyses relied on the assumption that all participants were drawn from a single population following a similar growth trajectory (Bollen & Curran, 2006). Most previous studies of inter-individual heterogeneity around the estimated average trajectory found it to be important (Bearman et al., 2006; Frisén et al., 2015; Lindwall et al., 2014; Young & Mroczeck, 2003). However, these studies were not designed to test whether this heterogeneity was related to the presence of unobserved subgroups following qualitatively distinct trajectories (Muthén, 2002). Person-centered analyses, such as Growth Mixture

Analyses (GMA; Muthén, 2002), are specifically designed to explain heterogeneity by separating a general population into subgroups following qualitatively and quantitatively distinct trajectories characterized by different levels and stability indicators (Morin, Maïano, Nagengast, Marsh, Morizot, & Janosz, 2011b; Morin, Rodriguez, Fallu, Maïano, & Janosz, 2012; Morin, Maïano et al., 2013).

In the first and only study formally dedicated to test the self-equilibrium hypothesis, Morin, Maïano et al. (2013) identified four profiles of adolescents following distinct GSC trajectories: high-stable (13.5%), moderately high and moderately stable (56.2%), increasingly high and increasingly stable (11%), and low-unstable (19.3%). These results thus supported the self-equilibrium hypothesis, showing that GSC levels were intimately related to GSC stability, so that profiles characterized by higher GSC levels also tended to be more stable whereas low GSC levels fluctuated over time. Furthermore, the increasing profile included adolescents who started the study with low-unstable trajectories and later switched to the high-stable trajectory, showing that increases in GSC levels tended to be accompanied by parallel increases in stability. To the best of our knowledge, a single study has investigated developmental profiles of BI trajectories, using a measure of body dissatisfaction, among a sample of 259 early adolescent girls. In this study Rodgers, McLean, Marques, Dunstan and Paxton (2016) also identified four profiles of girls following distinct body dissatisfaction trajectories: high body dissatisfaction (9.3%), moderate-increasing (16.6%), moderate-decreasing (30.9%), and low (43.2%). Three of these profiles display similarity in levels to those identified by Morin, Maïano et al. (2013), whereas the remaining one suggests that at least one profile is characterized by decreases in BI (or increases in body dissatisfaction). Unfortunately, this study was not designed to test the self-equilibrium hypothesis, and relied on a model that assumed equivalent time-specific residuals (i.e., the indicator of developmental instability around the estimated average trajectories in tests of the self-equilibrium hypothesis) in each of the identified longitudinal profiles.

Thus, although theory and preliminary evidence supports the self-equilibrium hypothesis, direct evidence is limited to a single study, to a single self-concept dimension (GSC), and the developmental outcomes of these trajectories remain undocumented. This last limitation is critical given the importance of documenting the construct validity of person-centered solutions through the demonstration of meaningful relations to predictors and outcomes (Meyer & Morin, 2016; Morin, Morizot, Boudrias, & Madore, 2011). This study extends tests of the self-equilibrium hypothesis to the BI area, aiming to document better the predictors and developmental outcomes of these trajectories.

Social Predictors of BI Trajectories

BI research has generally focused on predictors having a direct relevance to youths' "objective" physical appearance or changes in physical appearance, such as pubertal development, body mass index, physical activity, and sex (e.g., Frisén et al., 2015; Guzman & Nishina, 2014; Holsen et al., 2012; Lindwall et al., 2014). There is also increasing evidence that sociocultural norms in terms of desirable physical attributes, as well as their transmission through parents, peers, and media through communication, pressure, or teasing, negatively influence BI levels and trajectories in adolescence (McCabe & Ricciardelli, 2003, 2004; Rodgers et al., 2016; Schutz & Paxton, 2007; Stice & Whitenton, 2002). A major limitation of many of these studies is their focus on "negative" predictors, or rather, on predictors associated with decreases in BI levels (or increases in body dissatisfaction). Thus, despite their importance, these studies provided limited information regarding complementary positive sources of influence on the development of a strong, positive, and stable BI.

These studies also solely focused on the prediction of BI levels, without consideration of BI stability. According to the self-equilibrium hypothesis, BI level and stability need to be considered jointly as a core self-equilibration process characterizing youths' ability to maintain stable-high self-concepts. Arguably, these self-equilibration processes are likely to emerge from the ability of social contexts to fulfill basic developmental needs, leading youth to internalize the idea that they have intrinsic value irrespective of life setbacks and contingencies (Morin, Maïano et al., 2013). In this regard, it is hard to explain how these "negative" predictors could lead to the development of a capacity to maintain a positive BI image over time irrespective of these external or internal pressures.

To better understand the development of self-equilibration processes, one needs to adopt a positive psychology perspective (Cash & Pruzinsky, 2002; Tylka, 2011, 2012) and to theoretical models of positive psychosocial development. Stage-environment fit (Eccles et al. 1993) and self-determination (Ryan & Deci, 2000, 2012) theories both emphasize the role of family and peers in fulfilling adolescents' needs for autonomy, relatedness, and competence, which are themselves seen as critical to the construction of a well-integrated sense of identity. These contexts are complementary in providing unconditional support, acceptance, and emotional security in a time of increasing self-awareness, and may thus help adolescents to maintain stable positive self-images in the midst of major physical changes (Bearman et al., 2006; Schutz & Paxton, 2007). The ability to rely on stable support may help youth to resist socio-cultural thinness ideals as the only way to achieve a satisfactory

appearance and social acceptance (Stice & Whitenton, 2002). These propositions are consistent with the sociometer theory (Leary, 2008; Leary & Baumeister, 2000), which defines self-concept as a social construct reflecting the extent to which youth regard their social relationships as satisfactory.

In relation to BI, members of the immediate social environment (i.e., family and peers) occupy a critical position to help adolescents successfully negotiate the biopsychosocial changes associated with puberty while maintaining a positive and stable self-image (Bearman et al., 2006; Presnell et al., 2004; Schutz & Paxton, 2007; Stice & Whitenton, 2002). The family context is likely to play a key role in fulfilling adolescents' needs for autonomy when parents encourage youth to make their own decisions in a supportive manner combined with the use of democratic control practices, balancing control with warmth and responsiveness (Darling & Steinberg, 1993). Indeed, studies examining family support and democratic control have generally supported the association between these factors and higher BI levels in adolescence (e.g., Barker & Galambos, 2003; Bearman et al., 2006; Holsen et al., 2012; Stice & Whitenton, 2002). Similarly, as adolescents gain independence from their families, the ability to join stable and meaningful peer groups including both same-sex and opposite-sex members is likely to play a critical role in fulfilling their needs for relatedness and social competence. Results generally show that the quality of peer relationships positively predicts BI levels in adolescence (e.g., Ata et al., 2007; Bearman et al., 2006; Holsen et al., 2012; Stice & Whitenton, 2002), and supports the complementary role of adolescents' relationships with same-sex and opposite-sex peers (Davison & McCabe, 2006). Unfortunately, although research supports the role of these social factors in BI development, their role in the emergence of BI self-equilibration mechanisms has yet to be examined.

Our focus on positive characteristics of the family (support, democratic control) and peers (positive relationships) does not suggest that all family and peer relationships exert solely beneficent effects on adolescents' BI. As noted above, these contexts also play a role in promoting thin-ideal internalization or restrictive dietary behaviors (e.g., Eisenberg & Neumark-Sztainer, 2010; Rancourt, Conway, Burk, & Prinstein, 2013; Webb & Zimmer-Gembeck, 2014), as is the role of breakdowns in these relationships (pressure, teasing, jealousy, conflict) in the promotion of body dissatisfaction (e.g., Gerner & Wilson, 2005; Lavallee & Parker, 2009; Schutz & Paxton, 2007). We simply argue that it is also important for research to focus on the complementary role of positive social experiences.

As noted above, prior research also shows that studies of BI development cannot realistically ignore the effects of sex, in part given the clear demonstration that BI levels tend to be higher among

males relative to females over the course of adolescence (Frisén et al., 2015; Holsen et al., 2012; Morin, Maïano et al., 2011a). Although these differences are likely to be explained by the different socio-cultural appearance standards to which boys and girls are exposed, and possibly to girls greater reactivity to these standards (Grabe & Hyde, 2006; Morin, Maïano et al., 2011a; McCabe, Ricciardelli, & Finemore, 2002), sex is likely to play a moderating role in relation to a much wider set of predictors. Indeed, girls tend to attribute more importance to social relationships and intimacy than boys, who tend to place more value on achievement and status than girls (Cross & Madson, 1997; Helgeson, 1994; Hyde, 2014). In particular, social relationships with parents and peers tend to be particularly transformed during adolescence (Eccles et al., 1993), which coupled with girls' higher reactivity to the physiological changes occurring during this developmental period (e.g., Morin, Maïano et al., 2011a), suggest that girls BI trajectories may show a greater level of sensitivity to their relationships with parents and peers relative to boys.

Developmental Outcomes of BI Trajectories

So far, research has documented the positive developmental outcomes associated with higher BI levels in adolescence. Although an important part of this research has focused on outcomes of direct relevance to physical appearance or characteristics such as disturbed eating attitudes and behaviors (e.g., Stice & Shaw, 2002; Zeigler-Hill & Noser, 2015) or physical activity (e.g., Croll, Neumark-Sztainer, Story, & Ireland, 2002; Inchley, Kirby, & Currie, 2011; Lindwall et al., 2014), results also show relations between BI levels, negative emotions and internalizing outcomes (Holsen, Kraft, & Røysamb, 2001; Paxton, Neumark-Sztainer, Hannan, & Eisenberg, 2006). Relations between low levels of BI and externalized disorders have also been reported. Although stemming from cross-sectional research, these associations suggest that substance use and abuse may represent maladaptive ways to manage one's weight or to reduce the emotional discomfort associated with poor BI (Palmqvist & Santavirta, 2006; Schinke, Fang, & Cole, 2008). Similarly, involvement in externalizing activities might represent an attempt to manage negative emotions (such as those that emerge from Low BI) through the search for alternative sources of social reinforcements (e.g., Snyder, 2002; Snyder & Stoolmiller, 2002). It has also been proposed that low levels of BI may contribute to generate social anxiety and cognitive intrusions in the classroom context, which may in turn lead to difficulties in the academic area (Yanover & Thompson, 2008). A key objective of the present study is to consider, through longitudinal analyses, a broader range of developmental outcomes of BI

trajectories than what has typically been taken into account in prior research, to better document the role of BI as a broadband predictor of psychosocial adaptation.

Indeed, several biopsychosocial or sociocultural models have positioned BI as a broadband driver of multifinal developmental outcomes (e.g., Fredrickson & Roberts, 1997; Thompson et al., 1999; Rodgers, Paxton, & McLean, 2014). For instance, Objectification Theory (Fredrickson & Roberts, 1997) suggests that the repeated experience of objectifying the body (typically, the female body) through interpersonal interactions and media, typical of Westernized cultures, increases the risk for mental health problems in people exposed to such body objectification. In particular, self-objectification increases body shame, anxiety (appearance anxiety and physical safety anxiety), internal awareness, and disrupts peak motivational states. These variables, in turn, affect depression (Grabe & Hyde, 2009; Harrison & Fredrickson, 2003; Impett, Henson, Breines, Schooler, Tolman, 2011; Kahumoku et al., 2011; Tolman et al., 2006; Jones & Griffits, 2015) as well as a variety of other psychological disorders. Some experimental studies have demonstrated that self-objectification negatively affects cognitive performance (Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998; Gapinski, Brownell, & LaFrance, 2003; Gay & Castano, 2010; Guizzo & Cadinu, 2016). Finally, some connections between self-objectification and drug abuse have been found (Carr & Szymanski, 2011). Although applications of Objectification theory have typically be limited to understanding the role of BI in women's development, additional theoretical perspectives, such as Thompson et al.'s (1999) tripartite model and Rodgers, Paxton, and McLean's (2014) biopsychosocial model have reinforced the role of BI as a broadband driver of multifinal developmental outcomes, covering the biological psychological, and social areas (e.g., Keery, van den Berg, & Thompson, 2004; Rodgers, Chabrol, & Paxton, 2011; Shroff and Thompson 2006; van den Berg, Thompson, Obremski-Brandon, & Coovert, 2002; Yamamiya, Shroff, & Thompson et al. 2008). They show that sociocultural (family, peer, media) pressures, internalization, and appearance comparison leads to a low BI, which in turn is associated with a low self-esteem and disordered eating. In sum, these various theoretical models showed that BI may be associated with broad psychosocial functioning.

However, another key limitation of prior research and theoretical perspectives has been to focus on the developmental consequences of BI levels without simultaneously considering the combined role of BI stability. In contrast, if we consider the highest level of the self-concept hierarchy, both levels and stability of GSC have been found to be jointly involved in the prediction of developmental outcomes

encompassing physical and psychological health and wellbeing, academic achievement, and social integration (Bos et al., 2010; Oyserman et al., 2012; Zeigler-Hill & Showers, 2007; Zeigler-Hill & Wallace, 2012; Zeigler-Hill et al., 2013). Research has also suggested that high self-concept may protect individuals against the effects of negative social experiences (Brown, 2010; Brown & Dutton, 1995; Brown, Cai, Oakes, & Deng, 2009), thus contributing to suggest how levels and stability of GSC may come to be so intimately associated. Measures of self-concept stability have themselves been found to relate negatively to measures of contingent self-esteem (Kernis et al., 2008), and to a tendency to react more negatively to external (e.g., social, academic) relative to internal contingencies (Crocker et al., 2003). Thus, in the present research, we address this limitation by considering academic (achievement, dropout), internalizing (depression, anxiety, loneliness) and externalizing (behavioral disorders, drug-related difficulties) outcomes BI self-equilibrium trajectories.

The Present Study

The present study aims to address three substantive questions. First, we test the extent to which Morin, Maïano et al.'s (2013) self-equilibrium hypothesis adequately depicts BI trajectories profiles identified across grades 7-10. According to this hypothesis, trajectory profiles should be characterized by matching levels and stability of BI (i.e., high-stable, low-unstable). Similarly, profiles characterized by increasing or decreasing levels of BI over time should likewise be characterized by increasing or decreasing BI stability over time. Second, to ascertain the construct validity of the extracted trajectory profiles, we verify whether membership in these profiles can be significantly, and differentially, predicted by familial (support and democratic control) and peer-related (relationships with same-sex and opposite-sex peers) factors. We also test if the relations between these predictors and BI trajectories are moderated by sex. Third, as a further test of construct-validity, we verify whether membership in these profiles significantly, and differentially, predict key developmental outcomes, such as academic success (achievement, dropout), internalizing symptoms (depression, anxiety, loneliness) and externalizing symptoms (behavioral disorders, drug-related difficulties).

Method

Participants and Procedure

This study uses data from a four-year six-wave prospective longitudinal study of over 1000 Canadian adolescents (Morin, Janosz, & Larivée, 2009). All seventh-grade students from five Montreal-area secondary schools were asked to participate in the project in September 2000,

immediately after their secondary school transition. Parents of the 1553 eligible adolescents were informed of the project through a letter and consent form and had the option to call the research team to withdraw their child from the study (only 10 parents did so). The consent form referred to the initial year of the study, including three data collection points: September/October 2000 (Time 1 measure of BI), February 2001 (Time 2 measure of BI) and May/June 2001 (BI was not measured). The remaining 1543 adolescents were asked to sign a consent form similar to the parental one. A total of 1370 agreed to participate and completed Time 1 measures and at least one of the two remaining measurement points. Time 1 was conceptualized as the baseline control, and as such included multiple measures aiming to assess participants' life situations which were not necessarily repeated over time.

These 1370 participants were contacted during their second year of secondary school (8^{th} grade: 2001-2002), to participate in a longer-term follow-up comprising three additional years, with one measurement period per year (Time 3-8^{th} grade, 4-9^{th} grade, and 5-10^{th} grade, with Time 3 being close to one year after Time 2 and at the same period of the year). Of those participants, 1034 were included in the longer-term study: (a) 58 refused to sign the consent form in year 2, (b) 142 were absent or had changed schools and could not be located during year 2 and (c) 136 were excluded due to parental refusal (for additional details on the sample and procedure, see Morin et al., 2009). The research ethics certificate precluded the inclusion in longitudinal analyses of participants who did not consent (or had no signed parental consent) to the longer-term follow-up study.

Of those 1034 participants, 1006 are included in the present study. The remaining 28 failed to complete ratings of BI. The sample was predominantly of a French-speaking Canadian descent (79.2%) and included a similar number of males (N = 541 males; 53.8%) and females (N = 465; 46.2%). At Time 1, the mean age of the participants was 12.6 years (SD = 0.6). Out of five possible time-specific measurement occasions for BI, these 1006 participants provided a total of 4626 time-specific observations, with each individual providing between 3 and 5 time-specific observations (M = 4.60; with 102 participants providing 3 time-specific observations, 200 providing 4 time-specific observations, and 704 providing 5 time-specific observations). More precisely, 976 (97%) of the participants completed Time 1 measures, 967 (96.1%) completed Time 2 measures, 978 (97.2%) completed Time 3 measures, 896 (89.1%) completed Time 4 measures, 809 (80.4%) completed Time 5 measures. As noted above, all eligible participants were allowed to participate in the study in an in-and-out basis for all data collection points occurring during the first year of the study. Then, out of the

1370 participants who participated in the first year of the study, 1034 agreed to be part of the longer term follow up study, of whom 1006 completed BI measurements. These participants were also allowed to participate in the study in an in-and-out basis for all remaining data collection points. When compared to these 1006 participants on the measures of the variables included in the present study taken during the first year of the study, the participants who dropped out (n = 364) were found to be slightly younger (12.75 years old versus to 12.86 years old, $p \leq .05$), and to come from families characterized by slightly higher levels of parental democratic control ($p \leq .05$). No other difference was observed.

Measures

Body Image. The French adaptation (Guerin, Marsh, & Famose, 2003) of the perceived physical appearance scale from Marsh's (1990) Self-Description Questionnaire-II (SDQ-II) was used at Times 1, 2, 3, 4 and 5. The eight items (e.g., *I am good-looking*) are rated on a four-point scale ranging from *strongly agree* (4) to *strongly disagree* (1), rather than on the original six-point scale to ensure consistency across the rating scales used in the project. Validation studies of this questionnaire revealed adequate psychometric properties (Guerin et al., 2003; Marsh, 1990). In this study, scale score reliability (α) coefficients vary from .88 to .90 across the five yearly measurement points.

Predictors: Parents. Parental support and democratic control were assessed at Time 1 with 26 items from LeBlanc's (1996) Measures of Quebec Adolescent' Social and Personal Adjustment. Parental support assesses the support provided by the parents to the adolescent, parental awareness of their adolescent's activities and the quality of the parent-adolescents relations (15 items; e.g., *How often do your parents support you or praise you for things you have done?*). Parental democratic control assesses the presence of rules at home, fairness of these rules, the possibility to discuss rules and whether rules can be enforced without relying on harsh punishment (11 items; e.g., *In your home, is there a rule concerning how often you can go out with your friends?*). These scales have been validated by LeBlanc (1996) on a representative sample of Quebec adolescents and found to present adequate validity and reliability (α = .82-.95). Items were rated on a variety of response scales (yes-no, behaviorally anchored, Likert-type) corresponding to those used in the original instrument.

Predictors: Peers. Relationships with same-sex and opposite-sex peers were assessed at Time 1 using subscales from the French adaptation (Guerin et al., 2003) of Marsh's (1990) SDQ-II. This instrument includes a total of six items referring to same-sex peers (e.g., *I have good friends who are*

members of my own sex), four items referring to peers of the opposite sex (e.g., *I have lots of friends of the opposite sex*), four items referring to girls (e.g., *I am popular with girls*), and four items referring to boys (e.g., *I make friends easily with boys*). The last two types of items are recoded into the appropriate subscale depending on respondents' sex, leading to one 10-item subscale for relationships with same-sex peers (α = .82 for male; .79 for females) and one eight-item subscale for relationships with opposite-sex peers (α = .85 for male; .84 for females). These items were rated on a four-point Likert scale ranging from *strongly agree* (4) to *strongly disagree* (1).

***Outcomes*: *Academic*.** Grade point average (GPA; provided on a 0 to 100 scale) one year after the end of the study (i.e., corresponding to the end of secondary school for participants who never repeated a grade) and school dropout within one year of the expected graduation date (i.e., corresponding to two years after the end of the study for participants who never repeated a grade) were obtained from the Quebec Ministry of Education records. Official GPA levels were also available at the end of each school year for the duration of the study.

***Outcomes*: *Externalizing*.** Levels of behavioral disorders were assessed with 19 items (α = .79) from Le Blanc's (1996) Measures of Quebec Adolescent' Social and Personal Adjustment, which has been validated on a representative sample of Quebec adolescents. Items assessing the frequency of behavioral deviance (e.g., *Used hashish or marijuana, skipped school*) and criminal delinquency, including theft (e.g., *Stole something worth between $10 and $100*) and aggression (e.g., *Carry a weapon*) were retained. Participants were asked how often (on a four-point scale ranging from *never* to very *often*) they committed the listed acts since the beginning of the school year. The presence of drug-related social and personal difficulties was evaluated with nine items (α = .93) developed for this study on the basis of: (i) Zoccolillo, Vitaro, and Tremblay's (1999) adaptation of Ewing's (1984) questionnaire for drug-related problems, and (ii) the items used in the Epidemiological Catchment Area Study to assess the social consequences of drug abuse (Robins & Regier, 1991). These items are rated on a combination of yes-no answer scales (e.g., *Were you ever drugged at school*? *Did you ever feel bad or guilty about your drug use*?), and behaviorally anchored scales (e.g., *In which circumstances do you most often use drugs: never, alone, with friends at school, with friends out of school*). All externalizing outcomes were assessed at the last time point (Time 5) of the study, but were also available at the end of each year of the study, with the exception of drug-related difficulties, which was not assessed during the first year of the study.

***Outcomes*: *Internalizing*.** Levels of anxiety, loneliness, and depression were assessed using, respectively: (a) the 21 items (α = .90) from the French adaptation (Freeston, Ladouceur, Thibodeau, Gagnon, & Rhéaume, 1994) of the Beck Anxiety Inventory (Beck & Steer, 1993a); (b) five items (α = .81) from the French adaptation (Vitaro, Pelletier, Gagnon, Baron, 1995) of the Asher, Hymel, and Renshaw (1984) questionnaire; (c) the 21-item (α = .92) French version (Gauthier, Morin, Thériault, & Lawson, 1982) of the Beck Depression Inventory (Beck & Steer, 1993b). The Beck Anxiety Inventory includes 21-item measuring symptoms of anxiety (e.g., *nervous*, *difficulty breathing*) rated on a four-point scale ranging from (0) *not at all* to (3) *severely* according to how much participants were bothered by them during the past week. To assess loneliness, the items with the highest loadings in Asher et al.'s (1984) study were retained (e.g., *I feel lonely at school*, *I don't have any friends at school*) and rated on a four-point scale ranging from (1) *not true* to (4) *very true*. The Beck Depression Inventory includes 21 items assessing the severity of depression symptoms during the past week including today, using a behaviorally anchored rating scale ranging from 0 (*absence of symptoms*) to 3 (*severe symptoms*). All internalizing outcomes were assessed at the last time point (Time 5) of the study, but were also available at the end of each year of the study.

Analyses

Descriptive statistics and correlations are reported in Table 1. As noted by Morin, Maïano et al. (2013), tests of the self-equilibrium hypothesis require a model that is able to differentiate two distinct sources of time-related fluctuations in BI levels: (a) time-structured evolution; (b) residual state-like variation net of the time-structured variation. Latent curve models (LCM; e.g., Bollen & Curran, 2006) are able to disaggregate these two sources of variability, providing distinct estimates of individual-specific intercepts (representing the mean initial level of BI), slopes (representing linear or non-linear time-structured evolution in BI levels) and time-specific residuals (representing state-like deviations from the time-structured trajectories: BI variability). However, in these models, the time-specific residuals are assumed to be unrelated to the intercepts and slopes of the trajectories (i.e., the levels), thus precluding tests of the self-equilibrium hypothesis. GMA (Muthén, 2002; Muthén & Shedden, 1999) seek to identify latent profiles of participants characterized by distinct LCM solutions. GMA thus allow for the identification of profiles differing from one another on the basis of both their evolving BI levels and degree of BI variability.

In this study, GMA models with one to six latent BI trajectories were estimated and compared,

allowing all model parameters (time codes, intercepts and slope means, variances and covariances, and time-specific residuals) to be estimated freely in all latent profiles as recommended by Diallo, Morin, & Lu (2016a; also see Morin, Maïano et al., 2011b)[2]. Although time codes are usually fixed and constrained to equality across groups in LCM or across profiles in GMA, only two of them need to be fixed to 0 and 1 respectively (Bollen & Curran, 2006). The remaining time codes can be freely estimated to model non-linearity with greater precision (Ram & Grimm, 2007, 2009), which is the approach taken in the current study. In these models the slope mean reflects the total change occurring during the study (between the time periods coded 0 and 1) and the freely estimated time codes represent the proportion of change occurring between each time point. Here, the time codes of 0 and 1 were fixed at Time 2 and 5, to reflect the fact that Time 1 was conceptualized as the baseline control of the project (thus allowing the temporal ordering of predictors and intercept)[3].

Analyses were performed using Mplus 7.31 robust maximum likelihood estimator (MLR; Muthén & Muthén, 2015) with full information maximum likelihood (FIML) procedures (Enders, 2010) to handle missing data. To avoid converging on a local maximum likelihood stemming from inadequate start values, 10000 random sets of start values were requested, and the 500 best were retained for final optimization values using a total of 1000 iterations (Hipp & Bauer, 2006; Morin & Wang, 2015). All models converged on a replicated solution and can be assumed to reflect a "real" maximum likelihood.

Once the final unconditional model was chosen, predictors and outcomes were incorporated into this model (Diallo, Morin, & Lu, 2016b). A baseline conditional model was first estimated in which predictors were allowed to predict profile membership through a multinomial logistic regression. Tests were then conducted on additional models in which predictors were also allowed to influence directly within-profile variation in the intercepts and slopes of the trajectories, and in which these effects were allowed to vary from one profile to another. These tests were first conducted using the predictors, and then incorporating tests of interactions with sex (coded 0 for males and 1 for females). Due to the testing of interactions and to minimize non-essential multicollinearity among predictors, all predictors were group-mean centered prior to the analyses (Marsh, Hau, Wen, Nagengast, & Morin, 2013). Finally, outcomes levels were contrasted across profiles using a model-based approach proposed by Lanza, Tan, and Bray (2013) and implemented through the Auxiliary (DCON) function (Asparouhov & Muthén, 2014). This allowed for the comparison of probabilities-based profiles on the outcomes without allowing these outcomes to change the nature of the profiles (e.g., Morin & Wang, 2016).

Results

BI Trajectories

The results converged on a three-profile solution. The rational supporting this solution is reported in online supplements (see Table S2). This solution is graphically presented in Figures 1 and 2, and specific parameter estimates are available in Table S3 of the online supplements. The results show qualitative differences between the profiles, and clear positive associations between BI levels and BI stability, thus supporting the self-equilibrium hypothesis. These three latent BI trajectory profiles are characterized by: (a) *High* levels of BI and BI stability (48.0%); (b) *Decreasing* levels of BI and decreasing BI stability (17.9%); (c) *Increasing* levels of BI levels and increasing BI stability (34.1%).

High Level, High Stability Profile. The largest profile (Figure 2a) is characterized by high levels of BI (intercept = 25.86, close to the highest point on the 8-32 scale) remaining stable over time (i.e., the slope factor is non-significant and shows little variability between adolescents corresponding to this profile). Most members of this profile follow reasonably stable trajectories, as illustrated by the low time-specific residuals [$SD(\varepsilon_t)$ = 1.43 to 2.32, corresponding approximately to .25 to .40 *SD*]. This result suggests that high levels of BI are stable throughout adolescence and present strong trait-like properties (Morin, Maïano et al., 2011a). However, the remaining profiles show that changes in trait-levels of BI remain possible and frequent over the 4-year period considered here.

Increasing Level, Increasing Stability Profile. The second largest profile (34.1%; see Figure 2c) presents initially low levels of BI (intercept = 18.33, more than 1 *SD* below the levels observed in the High profile) that start to increase after Time 2 to reach levels closer to the sample mean by the end of the study (slope = 3.91, corresponding approximately to .75 *SD*). This profile also demonstrates a clear self-equilibrium pattern, presenting initially high time-specific residuals [$SD(\varepsilon_1)$ = 4.91, corresponding approximately to .85 *SD*] indicative of initial instability. However, these time-specific residuals decrease by more 50% over the course of the study [$SD(\varepsilon_5)$ = 2.40, corresponding approximately to .45 *SD*], paralleling the increase in BI levels.

Decreasing Levels, Decreasing Stability Profile. The last and smallest profile (17.9%, see Figure 2b) shows the opposite pattern, characterized by initially high levels of BI comparable to those observed in the High profile (intercept = 25.17) that substantially decrease over time (particularly between Time 2 and 3) to reach a level comparable to the sample mean by the end of the study (slope = -1.85). This profile demonstrates a clear self-equilibrium pattern, characterized by initially

low time-specific residuals [$SD(\varepsilon_1)$ = 2.27, corresponding to the residuals observed in the High profile] indicative of initial stability. However, these residuals show an increase of close to 50% for the last three time points at which BI levels are markedly lower [$SD(\varepsilon_{3\text{-}5})$ = 4.25 to 4.75]. Thus, in addition to supporting the self-equilibrium hypothesis, these results also show that lower levels of BI present a profile that suggests highly reactive state-like properties.

Profile Comparisons. A careful examination of the parameter estimates associated with these three profiles and their 95% confidence intervals (CI) reveals that the intercepts (reflecting the level of BI at the start of the study) are significantly lower in the Increasing (intercept = 18.33; CI = 17.34 to 19.32) profile that in the High (intercept = 25.86; CI = 25.19 to 26.53) and Decreasing (intercept = 25.17; CI = 23.71 to 26.63) profiles, which are indistinguishable from one another. Similarly, model-estimated levels of BI at the end of the study are significantly higher in the High (26.11; CI = 25.57 to 26.64) profile than in the Decreasing (23.32; CI = 21.84 to 24.79) and Increasing (22.24; CI = 21.50 to 22.98) profiles, which are significantly indistinguishable from one another. Furthermore, instability levels are significantly higher in the Increasing ($SD(\varepsilon_1)$ = 4.91; CI = 4.32 to 5.44; $SD(\varepsilon_2)$ = 4.10; CI = 3.34 to 4.74) profile relative to the High ($SD(\varepsilon_1)$ = 2.32; CI = 1.68 to 2.81; $SD(\varepsilon_2)$ = 1.90; CI = 1.48 to 2.25) and Decreasing ($SD(\varepsilon_1)$ = 2.26; CI = -1.93 to 3.74; $SD(\varepsilon_2)$ = 1.83; CI =-0.38 to 2.62) profiles (indistinguishable from one another) at Time 1 and 2. Then, at Time 3 and 4, instability levels increase in the Decreasing ($SD(\varepsilon_3)$ = 4.25; CI = 3.08 to 5.15; $SD(\varepsilon_4)$ = 4.32; CI =2.84 to 5.40) profile to reach the level observed in the Increasing ($SD(\varepsilon_3)$ = 4.24; CI = 3.79 to 4.64; $SD(\varepsilon_4)$ = 3.31; CI =2.69 to 3.84) profile, while they remain lowest in the High ($SD(\varepsilon_3)$ = 1.95; CI = 1.66 to 2.21; $SD(\varepsilon_4)$ = 1.92; CI =1.64 to 2.16) profile. By Time 5, instability levels decrease in the Increasing ($SD(\varepsilon_5)$ = 2.40; CI = -0.71 to 3.47) profile to reach those of the High ($SD(\varepsilon_5)$ = 1.43; CI = 0.58 to 1.94) profile, and remain highest in the Decreasing ($SD(\varepsilon_5)$ = 4.75; CI = 3.64 to 5.65) profile.

Predictors

The results from the final predictive model are reported in Table 2, and the sequence of model comparisons leading to the selection of this final model is described in the online supplements.

Sex. This model comparison process revealed the absence of interactions between sex and the various predictors considered in this study. Still, the results show that girls tend to present significantly lower initial levels of BI than boys, and that they also tend to present BI trajectories characterized by a lower rate of change over time relative to boys. However, males and females appear equally likely to

be a member of the three latent trajectories profiles.

Relations with Peers. Regarding the remaining predictors, sharing positive relationships with peers of the same-sex as well as with peers of the opposite-sex both predict a higher initial level of BI and lower rates of changes over time among adolescents, although these effects appear more pronounced for relationships with peers of the opposite sex. Adolescents who share positive relationships with opposite-sex peers are more likely to be members of the High (1) and Decreasing (2) profiles relative to the Increasing (3) profile, whereas those who share positive relationships with same-sex peers are more likely to correspond to the Decreasing profile relative to the Increasing one.

Relations with Parents. Adolescents who benefit from higher levels of parental support tend to present higher levels of BI at the beginning of the study, whereas those who benefit from higher levels of parental democratic control are more likely to correspond to the Decreasing (2) profile relative to the Increasing (3) one.

Lack of Differences between the High Profile and the Decreasing Profile. Overall, predictors failed to differentiate between the High (1) and Decreasing (2) profiles. However, it must be kept in mind that the average levels of BI observed in these profiles at the beginning of the study were almost indistinguishable, and that all of the predictors were also measured at the beginning of the study. This observation suggests that whatever differentiates these two profiles may occur later in adolescence, reinforcing the need to investigate developmental outcomes.

Outcomes

Results from the comparison of outcomes across profiles are reported in Table 3. These results reveal a clear differentiation between the three profiles on the outcomes considered here, and that the pattern of associations between profiles and outcomes differs as a function of the type of outcome.

Academic Outcomes. The most positive academic outcomes (i.e., higher GPA and lower dropout) are associated with the Decreasing (2) profile, relative to the Increasing (3; GPA and dropout) and High (Profile 1; dropout) profiles. In contrast, the High (1) and Increasing (3) profiles cannot be differentiated from one another in terms of academic outcomes.

Externalizing Outcomes. The most positive externalizing outcomes (i.e., lower levels of behavioral disorders and drug-related difficulties) are associated with the High (1; behavioral disorders and drug-related difficulties) and Increasing (3; drug-related difficulties) relative to the Decreasing (2) profile. In contrast, the High (1) and Increasing (3) profiles cannot be differentiated from one another.

Internalizing Outcomes. The most positive internalizing outcomes (i.e., lower levels of anxiety, depression, and loneliness) are associated with the High (1) profile, relative to the Decreasing (2) and Increasing (Profile 3) profiles, which cannot be differentiated from one another.

Supplementary Analyses: Time-Specific Associations between Profiles and Outcomes

Given the interest and clear level of differentiation in the pattern of associations between profiles and outcomes observed across types of outcomes, we decided to more thoroughly investigate time-varying associations between the BI trajectory profiles and measures of the outcomes taken at previous measurement points, when these were available. These supplementary analyses were conducted to more fully investigate the extent to which outcomes differences followed change in BI trajectories within each profile, and the specific moment at which the differences observed at the end of the study would start to emerge. Outcome measures were available at the end of each school year (Grades 7-10 for anxiety, loneliness, depression, and behavioral disorders, Grades 8-10 for drug-related difficulties, and Grades 7-11 for GPA), with the exception of school dropout, which was only assessed at the end of the study and will not be considered here. For purposes of clarity, standardized outcomes levels in each of the BI trajectory profiles are graphically represented in Figures 3 (GPA), 4 (externalizing outcomes), and 5 (internalizing outcomes). The exact time-specific mean-levels of outcomes in each profile, as well as tests of significant differences, are reported in Table S4 of the online supplements.

Academic Outcomes. The previous analyses revealed that the most positive academic outcomes at the end of the study were associated with the Decreasing (2) profile, with the High (1) and Increasing (3) profiles presenting similar levels of academic outcomes. Examination of Figure 3 reveals that the superior GPA associated with the Decreasing profile only emerges at the end of the study (Grade 11 being the last year of secondary school in Quebec) before the post-secondary school transition, although small increases in GPA levels can still be observed in this profile from the beginning of the study. Similarly, GPA levels tend to be higher in the High (1) relative to the Increasing (3) profile until Grade 8 (the moment at which BI trajectories start to increase in the Increasing profile), to become undistinguishable thereafter.

Externalizing Outcomes. The previous analyses revealed that the most positive externalizing outcomes at the end of the study were similarly associated with the High (1) and Increasing (3) profiles relative to the Decreasing (2) profile. Examination of Figure 4 reveals that the lack of differences observed between the High (1) and Increasing (3) are fairly stable over time for behavioral

disorders, while the higher levels of behavioral disorders observed in the Decreasing (2) profile emerge in Grade 8, when the BI trajectory observed in this profile start to decrease. In terms of drug-related difficulties, it is interesting to note that the higher levels observed in the Decreasing (2) profile are fairly stable over time (keeping in mind that no measure of this outcome is available prior to Grade 8), while the similar levels observed in the High (1) and Increasing (3) only appear at the end of the study given that the Increasing (3) profile rather tends to exhibit levels of drug-related difficulties similar to those observed in the Decreasing (2) profile earlier on.

Internalizing Outcomes. The previous analyses revealed that the most positive internalizing outcomes at the end of the study were associated with the High (1) profile relative to Decreasing (2) and Increasing (3) profiles. Examination of Figure 5 reveals that, for anxiety and depression, although some fluctuations are apparent over time, these differences remain fairly stable over the course of the study. For loneliness, the differences rather appear progressively over time, with the High (1) and Decreasing (2) profiles being more similar to one another in Grades 7 and 8 before levels of loneliness start to progressively increase thereafter in the Decreasing (2) profile. Interestingly, although the levels of loneliness observed in the Increasing (3) profile are the highest throughout the study, these levels show a constant decrease over the course of the study as levels of BI becomes higher and more stable.

Discussion

Self-Equilibration Processes in BI Development

The self-equilibrium hypothesis (Morin, Maïano et al., 2013) reconciles two traditions in self-concept research, one focusing on self-concept level (Craven & Marsh, 2008; Harter, 1999; 2012) and the other on self-concept stability (Kernis, 2003, 2005; Zeigler-Hill & Showers, 2007). The self-equilibrium hypothesis underlines the indivisibility of these two components, and the importance of having a strong core self, characterized by both high levels and stability (Morin, Maïano et al., 2013). The main objective of this study was to verify whether the self-equilibrium hypothesis would generalize to BI. Although our findings differ in many ways from Morin, Maïano et al. (2013), suggesting that distinct developmental mechanisms may be at play for BI than for GSC, they also supported the self-equilibrium hypothesis, showing clear associations between BI levels and stability.

More precisely, our findings revealed that BI trajectories followed three distinct profiles. A first profile (*High*) displayed persistently high and stable levels of BI over the course of adolescence, which is consistent with the results from previous studies showing that BI levels tend to remain high for a

majority of adolescents (Morin, Maïano et al., 2011a). This profile is similar to one GSC profile identified in Morin, Maïano et al.'s (2013) study, albeit much larger (48.0% vs. 13.5% in Morin, Maïano et al., 2013). Still, this profile is also similar, and of a similar size (43.2%), to the profile presenting persistently low levels of body dissatisfaction identified by Rodgers et al. (2016).

Morin, Maïano et al. (2013) identified three profiles, including 89% of their sample, characterized by constant trait-like GSC trajectories (high and stable, moderate and moderately stable, low and unstable), and one small (11%) profile characterized by a change in GSC levels and stability (low and unstable; increasing and increasingly stable). In contrast, this study revealed two "switching" profiles (52.0%), and no profile characterized by persistently low or average BI levels. This observation is consistent with multidimensional representations of the self-concept suggesting that self-domains (such as BI) situated lower in the self-concept hierarchy should be more transient than global self-conceptions (such as GSC) (Harter, 2012; Shavelson et al., 1976). This conclusion is also partially consistent with Rodgers et al.'s (2016) study, in which 47.5% of participants presented "switching" trajectories, although they did also identify a small (9.3%) profile characterized by low levels of body dissatisfaction. However, this difference could be related to their reliance on a more restricted form of GMM (Diallo et al., 2016a; Morin, Maïano, et al., 2011), or to a different measure of BI.

The first of those switching profiles (*Increasing*) was large (34.1%) and corresponded to Morin, Maïano et al.'s (2013) low and increasing profile, as well as to Rodgers et al.'s (2016) profile characterized by moderate-decreasing level of body dissatisfaction, which represented a similar proportion of participants (30.9%). This *Increasing* profile was characterized by initially low and unstable BI that became increasingly high and increasingly stable over the course of the study. These results are encouraging and show that, by the end of adolescence, a majority of youth (82.1%: *High* + *Increasing* profiles) seem to have integrated the multiple changes characterizing their physical appearance into strong and stable BI self-concepts. These results also provide one further disconfirmation of Hall's (1904) "Storm and Stress" theory, depicting adolescence as a period of identity crisis covering multiple areas (Arnett, 1999; Molloy, Ram, & Gest, 2011).

The remaining (*Decreasing*), and smallest (17.9%), profile is the most concerning, as it was characterized by initially high and highly stable BI that became lower and less stable over time. Once again, this profile shows similarity to Rodgers et al.'s (2016) profile characterized by moderate-increasing levels of body dissatisfaction (16.6%). This result parallels those from Morin, Maïano et al.

(2013) in showing that by the end of adolescence about one out of five adolescents will present low and unstable self-concepts. For both the *Increasing* and *Decreasing* profiles, the transition in BI trajectories occurs after Grade 8 (Time 2), a time at which most adolescents can be considered to have entered puberty (Eccles et al., 1993; Steinberg & Morris, 2001), supporting the idea that true physiological characteristics (e.g., pubertal changes) remain a key predictor of BI in adolescence (Frisén et al., 2015; Guzman & Nishina, 2014; Holsen et al., 2012; Lindwall et al., 2014).

Social Determinants of BI Self-Equilibration Processes

BI is more than just objective physical appearance. It is also the integration and acceptance of one's bodily characteristics into more or less satisfactory self-conceptions. In accordance with stage-environment fit (Eccles et al. 1993), self-determination (Ryan & Deci, 2000, 2012) and sociometer (Leary, 2008; Leary & Baumeister, 2000) theories, the self-equilibrium hypothesis (Morin, Maïano et al., 2013) suggests that the stabilization processes inherent in the ability to internalize one's own intrinsic value and to maintain it irrespective of life contingencies are likely to depend on the ability of social contexts to fulfill youths' basic developmental needs. In accordance with this proposal we found support for the idea that sharing positive relationships with peers of the same and opposite sex predicted higher initial BI levels, lower rates of change in BI levels over time, and a greater likelihood of membership into profiles characterized by higher and more stable BI at the start of the study (*High*, and *Decreasing*). It is noteworthy that these results are also well aligned with those from prior research focusing on BI levels (Ata et al., 2007; Bearman et al., 2006; Davison & McCabe, 2006; Holsen et al., 2012; Stice & Whitenton, 2002). Consistent with the importance of emerging romantic relationships in adolescence (Collins, 2003; Collins et al., 2009), the effects of relationships with peers of the opposite sex were more pronounced than those of relationships with same-sex peers.

Our results also supported the idea that parental support had positive effects of BI development (Barker & Galambos, 2003; Bearman et al., 2006; Holsen et al., 2012; Stice & Whitenton, 2002), predicting higher initial levels of BI. In contrast, the results also showed that higher levels of parental democratic control predicted an increased likelihood of membership into the *Decreasing*, relative the *Increasing* profile. In explaining this unexpected result, it is important to keep in mind that the predictors were only assessed at the beginning of the study, a point at which the *Decreasing* profile was characterized by higher and more stable levels of BI than the *Increasing* one. Harder to explain is the fact that this prediction did not involve the *High* profile, which presented a similar initial level of

BI. This observation suggests that parental democratic control might thus be particularly helpful for adolescents who may need a little extra regulatory help to maintain self-equilibration processes in the midst of internal or external changes (i.e., the *Decreasing* profile), but not for students whose self-equilibrium processes are more solidly anchored in a strong sense of identity (i.e., the *High* profile). As adolescents become older, relationships with parents become more egalitarian (e.g., Sabatelli & Mazor, 1985), and relationships with peers become increasingly important (e.g., Eccles, 1999; Helsen, Vollenbergh, & Meeus, 2000), leaving less opportunities for parents to exert any form of control on developing adolescents. Taken together, these various observations suggest that parental democratic control may be important for a subgroup of student who require some external help at regulating their own sense of identity and that, as this level of external control diminishes, so does their ability to maintain a strong core sense of identity. Still, this interpretation remains at this stage speculative, and would require additional research efforts looking at longitudinal associations between BI trajectories and fluctuations in parental levels of democratic control offered to the developing adolescent.

Perhaps most importantly, although our results supported that girls tend to present less favorable trajectories of BI across adolescence (lower initial levels, and less pronounced positive changes), they revealed that profile membership was not associated with sex. Similarly, the effects of family and peer relationships on BI trajectories were also not moderated by sex. This result supports the idea that BI self-equilibration processes are more intimately related to internal psychological mechanisms of self-acceptance and self-integration than to the direct effects of more objective sex-differentiated bodily characteristics, and with the observation that sex differences in psychological processes might be less important than initially assumed (e.g., Hyde, 2014). This important observation thus suggests that it might be more important for intervention purposes to focus on global mechanisms of self-acceptance and self-integration, rather than on specific bodily characteristics. Still, it is also important to acknowledge that prior research in which sex-differentiated BI determinants have been identified have generally tended to focus on factors presenting a more direct relation to objective body characteristics (e.g., BMI, puberty) or on socio-cultural norms in terms of desirable physical attributes and their social transmission (Rodgers et al., 2016), all factors to which girls tend to show an increased level of reactivity (e.g., Grabe & Hyde, 2006; Morin, Maïano et al., 2011a; McCabe et al., 2002). Similarly, it remains possible to expect clearer sex-differentiated processes to emerge when considering more specific BI measures focusing, for instance, on muscularity (more important for boys) and thinness

(more important for girls) (e.g., Cafri & Thompson, 2004; Thompson, 2004). It would thus be interesting for future research to devote more attention to the associations between these more typical sex-differentiated predictors and the current set of sex-undifferentiated predictors to better document whether their relation to global, versus more specific, measures of BI are simply complementary (i.e., additive), or whether one set of predictors is able to either limit, or amplify, the effect of the other.

The results also failed to demonstrate differentiated relations between the predictors and adolescents' likelihood of membership in the *High* versus the *Decreasing* profiles, despite the fact that these profiles are characterized by highly differentiated BI trajectories. One must keep in mind that these two profiles presented comparable BI level and stability at the beginning of the study, and became distinct two years after the beginning of the study. In contrast, the predictors were assessed at the beginning of the study, making it impossible to test whether later changes in predictors could differentially influence membership into these two profiles. Future studies should devote more attention to the association of these BI trajectory profiles and time-varying predictors. Our results suggest that attention should be specifically focused on the transition from Grade 8 to 9, or perhaps to the moment at which pubertal development becomes the norm within peer groups (Eccles et al., 1993; Steinberg & Morris, 2001). Given that our results demonstrated well-differentiated associations between all profiles and a series of key developmental outcomes, it appears important for future research to document better the factors involved in the emergence of these three different BI trajectories, particularly on what happens to differentiate the *High* from the *Decreasing* profiles.

Developmental Outcomes of BI Self-Equilibration Processes

The present study is the first to document systematically the developmental outcomes of self-equilibration processes, and the results have particularly rich implications. Looking first at the developmental outcomes of these three BI trajectories profiles, the results revealed that, by the end of the study, the highest levels of academic achievement (75.9 on a 0 to 100 scale) and lowest levels of school dropout (13.9%) were associated with the *Decreasing* profile, which presented the lowest, and most unstable, levels of BI at the end of the study. These academic outcomes were significantly more positive than those observed in the *Increasing* profile, and rates of school dropout were even significantly lower than those observed in the *High* profile. However, no significant difference was noted between the *High* and *Increasing* profiles, both of which presented similar academic outcomes. Although these differences might appear surprising at first glance, it must be noted that they remain of

a relatively small magnitude (the GPA difference between the *Decreasing* and *Increasing* profiles correspond to .30 *SD*, and that between the *Decreasing* and *High* profiles to .13 *SD*).

These results suggest that the *Decreasing* profile might reflect a "*Geek*" profile: adolescents who, for one reason or another, came over time to overinvest the academic area relative to the physical area. In this regard, it is interesting to note that the superiority of this profile in terms of academic achievement only emerges in Grade 11, prior to the post-secondary school transition. It is true that research underlines the fact that youth who feel good about themselves in various areas tend to perform better at school (Craven & Marsh, 2008; Harter, 2012), and that involvement in physical activities tends to benefit both BI and academic achievement (Eccles & Barber, 1999; Eccles, Barber, Stone, & Hunt, 2003). Still, the internal/external (I/E) frames of reference model suggest that opposed self-concept areas might be negatively related to one another due to an internal comparison process between one's own relative "accomplishments" in these areas, even though these objective "accomplishments" may themselves be positively correlated (Marsh et al., 2014, 2015). However, variable-centered research generally reveals small positive correlations between self-concepts in the physical relative to the academic area (Arens & Morin, 2016; Marsh, 2007). Yet, these variable-centered correlations represent an average of the relations identified in the total sample, whereas our results suggest that these relations might differ within specific subgroups of adolescents.

Although the current study focuses solely on BI, research adopting a multidimensional self-concept perspective has highlighted the importance for individuals of anchoring their identity into multiple sources of self-worth as a key determinant of psychosocial adaption and of the ability to maintain a strong and stable core self-concept (Oyserman et al., 2012; Showers & Zeigler-Hill, 2012; Zeigler-Hill & Showers, 2007; but also see Rafaeli-Mor & Steinberg, 2002). Thus, individuals who anchor their self-worth in multiple domains (what we hereafter refer to as *self-complexity* following Lindville, 1985, 1987) should be more likely to adapt to disturbances in a subset of these domains through compensatory mechanisms tapping into other areas of self-valorisation. In other areas of research, it has been well documented that overinvesting some specific life domains in an extreme manner tends to be associated with negative consequences and reduced levels of investments into other life domains (Morin, Vandenberghe, Turmel, Madore, & Maïano, 2013; Vallerand, 2015). Perhaps more realistically, reciprocal effects can be anticipated through which self-equilibrium in not only anchored in self-complexity, but also helps self-complexity to be well-integrated into a coherent

whole (Ryan, LaGuardia, & Rawsthorne, 2005). From this perspective, the results obtained for the academic outcomes suggest that members of the *Decreasing* profile might compensate BI decreases by an overinvestment in the academic area, or perhaps to underinvest the physical area in order to focus more energy in the academic area. Future research is needed to document the processes underlying the transition from a high-stable BI to a low-unstable BI.

If self-complexity is indeed a key mechanism of adaptation, this over-investment of one area relative to others that appears to characterize the *Decreasing* profile should be accompanied by at least some negative consequences. Indeed, this is what our results show, by demonstrating that the more equilibrated *High* profile presents the lowest levels of internalizing outcomes (anxiety, loneliness, and depression). In contrast, the *Decreasing* and *Increasing* profiles were impossible to distinguish in terms of internalizing outcomes at the end of the study. This observation suggests that the high levels of BI observed in the *Decreasing* profile are not sufficient to ensure low levels of internalizing outcomes, and need to be accompanied by self-equilibration processes through which these high levels can remain stable across life contingencies. In particular, the evolution of levels of loneliness over time is consistent with the previously noted integration into peer groups, as levels of loneliness tend to increase over time in the *Decreasing* profile, and to decrease over time in the *Increasing* profile. Yet, there appears to be advantages to having high levels of BI irrespective of whether these levels remain stable over the course of adolescence, as illustrated by the fact that the lowest levels of externalizing outcomes at the end of the study are equally shared by the *High* and *Increasing* profiles. The *Decreasing* profile is also the one presenting the highest levels of drug-related difficulties, reinforcing the fact that the benefits of low and unstable BI in terms of academic outcomes come at a cost in terms of psychosocial adaptation. This observation is consistent with the idea that involvement in externalizing activities may represent maladaptive ways to reduce the discomfort associated with poor BI (Palmqvist & Santavirta, 2006; Schinke et al., 2008), or to seek alternative sources of social reinforcement (Snyder, 2002; Snyder & Stoolmiller, 2002). It is interesting to note that the evolution of these differences over time appear to follow BI trajectories. Once again more research is needed to examine more carefully these developmental processes as they unfold over time.

Limitations and Directions for Future Research

A series of limitations must be kept in mind in the interpretation of our results. This study involves a short-term (4-year) follow-up of a convenience sample of adolescents starting right after the

transition into secondary school and ending before the transition out of secondary school. This underscores the need to replicate the findings with representative samples and a greater variety of time periods. Our sample was reasonably homogenous in terms of racial and ethnic background, which limits the generalizability of the results, especially given the effects of ethnicity on BI trajectories (Morin, Maïano et al., 2011a). In terms of time period, transitions in and out of secondary school, as well as other life transitions, are often associated with major restructuring of identity processes (Dietrich, Parker, & Salmela-Aro, 2012; Sameroff, 2009). To understand better the emergence of self-equilibration processes, longitudinal research cÙovering key life transition points would be necessary.

Additionally, although we relied on a state-trait analogy in the interpretation of the trajectory profiles (Morin, Maïano et al., 2011a, 2013), this study comprises widely spaced time points not ideally suited to state-trait analyses. Nevertheless, studies based on more intensive longitudinal designs covering shorter time periods may not be ideally suited to understand the long-term evolution of the trait-component of BI (i.e., the slope factor in the models considered here), which may not need to be modelled with such data. Yet, studies covering longer time intervals may also not be ideally suited to achieving a complete picture of BI reactivity to internal and external events and of state-like instability in BI. Both designs would provide important complementary information, suggesting that future research might benefit from the consideration of a greater variety of time intervals. In addition, a particularly interesting perspective would be to more specifically study how the self-equilibration processes identified in the present study relate to the already well-established literature on contingent self-esteem, which more directly focuses on self-esteem reactivity to internal and external events (e.g., Bos et al., 2010; Crocker et al., 2003; Kernis et al., 2008; Zeigler-Hill & Noser, 2015). Furthermore, although the time-ordering of the predictors and intercepts of the trajectories was appropriate, it remains impossible to attribute clearly the results to the "effects" of the predictors, given that key differentiation occurred later in time between profiles that could not be explained by the predictors. It appears particularly important to extend this study through the inclusion of time-varying covariates to understand the relations between what occurs later in adolescence and BI trajectories.

It is also important to keep in mind, as noted in the introduction, that our decision to focus on positive characteristics of adolescents' social lives does not imply that peer and parental effects on the development of BI are necessarily solely positive. Indeed, these social contexts are also known to play a potentially key role in the promotion of body dissatisfaction, maladaptive thin-ideal standards, and

restrictive dietary behaviors (e.g., Eisenberg & Neumark-Sztainer, 2010; Gerner & Wilson, 2005; Lavallee & Parker, 2009; Rancourt et al., 2013; Schutz & Paxton, 2007; Webb & Zimmer-Gembeck, 2014), reinforcing the need for future research to adopt a more comprehensive operationalization of these critical social contexts. An interesting complementary perspective would be to consider measures of adolescents' popularity with peers, in addition to self-reports of the quality of their peer-relations. Indeed, the effects of peer popularity on BI and eating pathologies are less clear, with some research evidence suggesting that popularity might in some circumstance be associated with BI concerns and problematic dieting behaviors as a maladaptive way to maintain this popularity (e.g., Rancourt & Prinstein, 2010; Wang, Houshyar, & Prinstein, 2006).

Despite our explicit objective to focus on psychosocial predictors of BI self-equilibrium trajectories with no direct relevance to youth objective physical characteristics, it is important to acknowledge the absence of such objective measures of youth physical characteristics (e.g., weight, height, BMI, pubertal status) as an additional limitation of the present study. Indeed, as shown in a recent study of BI trajectories (Rodgers et al., 2016), BMI represents a significant predictor of BI trajectories. This suggests, for instance, that losing weight or gaining fat free mass (muscle) might also represent a significant predictor of membership into the Increasing profile, whereas weight gain may be more closely associated with membership into the Decreasing profile. Furthermore, these weight gains or losses might respectively accompany increasing, or decreasing, involvement in the academic area which may themselves share relations with increasing, or decreasing relations with parents. For these reasons, it would be important for further studies to expand on the current results by the incorporation of a proper control for youth physical characteristics.

Finally, it seems important for future research to examine the extent to which the self-equilibration processes identified in this study generalize to other dimensions of the self-concept in addition to GSC and BI (e.g., academic self-concept), to dimensions of the more global BI construct (e.g., appearance, weight; Mendelson, Mendelson, & White, 2001), and even to conceptually-related constructs (e.g., motivation, wellbeing). Perhaps even more importantly, we relied on a global assessment of participants' satisfaction regarding their physical appearance, an evaluative component which represents a relatively small component of youths' overall multifaceted BI (Cash, 2004). Whereas this measure has the advantage of being short, reliable, and centered on global feelings of BI, it also excludes multiple important components of BI, such as the more perceptual component of BI

(Gardner, 2011), as well as evaluative and perceptual facets of more specific dimensions of BI centered for example on weight, muscularity, fitness, as well as on the accuracy of BI perceptions (Cash, 2004; Thompson, 2004). In particular, given the well-documented observation of sex-differentiation in regards to specific BI facets, with males ascribing more importance to muscularity and females to thinness, it is possible that the lack of sex differences reported in this study could be due to our reliance on a more generic evaluative measure of BI (e.g., Cafri & Thompson, 2004; Thompson, 2004). For this reason, future research would do well to rely on more comprehensive measures of BI (e.g., Brown, Cash, & Mikulka, 1990; Cash, 2000) or at least on a combination of measures providing a more comprehensive coverage of BI.

Conclusion

This study supported the self-equilibrium hypothesis, demonstrating that BI levels and stability are not orthogonal. Moreover, both levels and stability of BI appear important to achieve a global picture of youths' psychosocial adaptation. However, these results also suggest the importance for future research to examine carefully the mechanisms involved in these developmental processes, and their relations with key predictors and outcomes, as they unfold over time. The results further suggest that research on the self-equilibrium hypothesis would do well to incorporate a self-complexity perspective through which multiple areas of self-worth are simultaneously considered. Previous research on BI has tended to focus on predictors sharing a direct relation with objective physical characteristics (e.g., puberty, BMI, sport) or normative beauty standards, revealing sex-differentiated processes. Although the current results confirmed the well-documented higher levels of BI among males relative to female, they also demonstrated that self-equilibration processes respond to more internal mechanisms of self-acceptance and self-integration, rather than solely to physiological changes. Future research would do well to look more carefully at these mechanisms, and at how they interrelate across self-concept dimensions through complementary self-complexity mechanisms.

References

Arens, A. K., & Morin, A. J. S. (2016). Examination of the structure and grade-related differentiation of multidimensional self-concept instruments for children using ESEM. *The Journal of Experimental Education, 82,* 330-355.

Arnett, J. J. (1999). Adolescent storm and stress, reconsidered. *American Psychologist*, *54*, 317–326.

Asher, S. R., Hymel, S., & Renshaw, P. D. (1984). Loneliness in children. *Child Development*, *55*,

1456-1464.

Asparouhov, T., & Muthén, B. (2014) Auxiliary variables in mixture modeling: Three-step approaches using Mplus. *Structural Equation Modeling*, *21*, 329-341.

Ata, R. N., Ludden, A. B., & Lally, M. M. (2007). The effects of gender and family, friend, and media influences on eating behaviors and body image during adolescence. *Journal of Youth and Adolescence*, 36, 1024-1037.

Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on Psychological Science, 1*, 164-180.

Barker, E. T., & Galambos, N. L. (2003). Body dissatisfaction of adolescent girls and boys: Risk and resource factors. *The Journal of Early Adolescence*, 23, 141-165

Bauer, D. J., & Curran, P. J. (2003). Distributional assumptions of growth mixture models over-extraction of latent trajectory classes. *Psychological Methods, 8*, 338-363.

Bearman, S. K., Presnell, K., Martinez, E., & Stice, E. (2006). The skinny on body dissatisfaction: A longitudinal study of adolescent girls and boys. *Journal of Youth and Adolescence, 35*, 229-24.

Beck, A. T., & Steer, R. A. (1993a). *Beck Anxiety Inventory manual*. New York, NY: The Psychological Corporation.

Beck, A. T., & Steer, R. A. (1993b). *Beck Depression Inventory manual*. New York, NY: The Psychological Corporation.

Bollen, K. A., & Curran, P. J. (2006). *Latent curve models: A structural equation perspective*. Hoboken, NJ: Wiley.

Bos, A. E. R., Huijding, J., Muris, P., Vogel, L. R. R., & Biesheuvel, J. (2010). Global, contingent, and implicit self-esteem and psychopathological symptoms in adolescents. *Personality and Individual Differences*, *48*, 311-316.

Brown, J. D. (2010). High self-esteem buffers negative feedback: Once more with feeling. *Cognition and Emotion*, *24*, 1389-1404.

Brown, J. D., Cai, H., Oakes, M. A., & Deng, C. (2009). Cultural similarities in self-esteem functioning: East is East and West is West, but sometimes the twain do meet. *Journal of Cross-Cultural Psychology, 40*, 140-157.

Brown, T. A., Cash, T. F., & Mikulka, P. J. (1990). Attitudinal body image assessment: Factor analysis of the Body-Self Relations Questionnaire. *Journal of Personality Assessment*, *55*, 135-144.

Brown, J. D., & Dutton, K. A. (1995). Truth and consequences: The costs and benefits of accurate self-knowledge. *Personality and Social Psychology Bulletin*, *21*, 1288-1296.

Brown, J. D., Dutton, K. A., & Cook, K. E. (2001). From the top down: Self-esteem and self-evaluation. *Cognition & Emotion*, *15*, 615-631.

Butler, R. J., & Gasson, S. L. (2005). Self esteem/self concept scales for children and adolescents: A review. *Child and Adolescent Mental Health*, *10*, 190-201.

Byrne, B. M. (2002). Validating the measurement and structure of self-concept: Snapshots of past, present, and future research. *American Psychologist*, *57*, 897-909.

Cafri, G., & Thompson, J.K. (2004). Measuring male body image: A review of the current methodology. *Psychology of Men & Masculinity*, *5*, 18-29.

Campbell, J. D., Trapnell, P. D., Heine, S. J., Katz, I. M., Lavallee, L. F., & Lehman, D. R. (1996). Self-concept clarity: Measurement, personality correlates, and cultural boundaries. *Journal of Personality and Social Psychology*, *70*, 141-156.

Carr, E.R., & Szymanski, D.M. (2011). Sexual objectification and substance abuse in young adult women. *The Counseling Psychologist*, *39*, 39-66.

Cash, T. F. (2000). *MBSRQ users' manual (3rd Ed.)*. Norfolk, VA : Old Dominion University.

Cash, T. F. (2004). Body image: Past, present, and future. *Body image, 1*, 1-5.

Cash, T. F., & Pruzinsky, T. (2002). Future challenges for body image theory, research, and clinical practice. In T. F. Cash & T. Pruzinsky (Eds.), *Body image: A handbook of theory, research, and clinical practice* (pp. 509–516). New York, London: Guilford.

Clark, L., & Tiggemann, M. (2008). Sociocultural and individual psychological predictors of body image in young girls: A prospective study. *Developmental Psychology,* 44, 1124-1134.

Collins, W.A. (2003). More than myth: The developmental significance of romantic relationships during adolescence. *Journal of Research on Adolescence*, *13*, 1-24.

Collins, W. A., Welsh, D. P., & Furman, W. (2009). Adolescent romantic relationships. *Anula Review of Psychology*, *60*, 631-652.

Craven, R., & Marsh, H. W. (2008). The centrality of the self-concept construct for psychological wellbeing and unlocking human potential: Implications for child and educational psychologists. *Educational & Child Psychology*, *25*, 104-118.

Crocker, J., Luhtanen, R. K., Cooper, M. L., & Bouvrette, A. (2003). Contingencies of self-worth in

college students. *Journal of Personality and Social Psychology, 85,* 894-908.

Crocker, J., & Park, L. (2004). The costly pursuit of self-esteem. *Psychological Bulletin, 130,* 392-414.

Crocker, J., & Park, L. E. (2012). Contingencies of self-worth. In M. R. Leary, & J. Tangney (Eds.). *Handbook of Self and Identity, 2nd edition* (pp. 309-326). New York, NY: Guildford

Croll, J., Neumark-Sztainer, D., Story, M., & Ireland, M. (2002). Prevalence and risk and protective factors related to disordered eating behaviors among adolescents: Relationship to gender and ethnicity. *Journal of Adolescent Health, 31,* 166-175.

Cross, S., & Madson, L. (1997). Models of the self: Self-construals and gender. *Psychological Bulletin, 122,* 5-37.

Darling, N., & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin, 113,* 487-496.

Diallo, T. M. O, Morin, A. J. S. & Lu, H. (2016a). Impact of misspecifications of the latent variance-covariance and residual matrices on the class enumeration accuracy of growth mixture models. *Structural Equation Modeling, 23,* 507-531.

Diallo, T. M. O, Morin, A. J. S. & Lu, H. (2016b, In Press). The impact of total and partial inclusion or exclusion of active and inactive time invariant covariates in growth mixture models. *Psychological Methods*.

Dietrich, J., Parker, P. D., & Salmela-Aro, K. (2012). Phase-adequate engagement at the post-school transition. *Developmental Psychology, 48,* 1575-1593.

Eccles, J. (1999). The development of children ages 6-14. *The Future of Children, 9,* 30-44.

Eccles, J. S., & Barber, B. L. (1999). Student council, volunteering, basketball, or marching band: What kind of extracurricular activity matters? *Journal of Adolescent Research, 14,* 10-43.

Eccles, J. S., Barber, B. L., Stone, M., & Hunt, J. (2003). Extracurricular activity and adolescent development. *Journal of Social Issues, 59,* 865-889.

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C., Reuman, D., Flanagan, C., & Mac Iver, D. (1993). Development during adolescence: The impact stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist, 48,* 90-101.

Eisenberg, M. E., & Neumark-Sztainer, D. (2010). Friends' dieting and disordered eating behaviors among adolescents five years later. *Journal of Adolescent Health, 47,* 67-73.

Eisenberg, M. E., Neumark-Sztainer, D., & Paxton, S. J. (2006). Five-year change in body satisfaction

among adolescents. *Journal of Psychosomatic Research, 61,* 521-527.

Enders, C. K. (2010). *Applied missing data analysis*. New York, NY: Guilford.

Ewing, J. A. (1984). Detecting Alcoholism: The CAGE Questionnaire, *Journal of the American Medical Association, 252,* 1905-1907.

Fox, K. R. (2000). Self-esteem, self-perceptions and exercise. *International Journal of Sport Psychology, 31,* 228-240.

Fox, K. R., & Corbin, C. B. (1989). The Physical Self-Perception Profile: Development and preliminary validation. *Journal of Sport and Exercise Psychology, 11,* 408-430.

Fredrickson, B. L., & Roberts, T. A. (1997). Objectification theory: Toward understanding women's lived experience and mental health risks. *Psychology of Women Quarterly, 21,* 173–206.

Fredrickson, B.L., Roberts, T., Noll, S.M., Quinn, D.M., & Twenge, J.M. (1998). That swimsuit becomes you: Sex differences in self-objectification, restrained eating, and math performance. *Journal of Personality and Social Psychology, 75,* 269-284.

Freeston, M. H., Ladouceur, R., Thibodeau, N., Gagnon, F., & Rhéaume, J. (1994). L'inventaire d'anxiété de Beck: Propriétés psychométriques d'une traduction française [The Beck Anxiety Inventory: Psychometric properties of a French adaptation]. *L'Encéphale, 20,* 47-55.

Frisén, A., Lunde, C., & Berg, A. I. (2015). Developmental patterns in body esteem from late childhood to young adulthood: A growth curve analysis. *European Journal of Developmental Psychology, 12,* 99-115.

Gapinski, K. D., Brownell, K. D., & LaFrance, M. (2003). Body objectification and "fat talk": Effects on emotion, motivation, and cognitive performance. *Sex Roles, 48,* 377–388.

Gardner, R. M. (2011). Perceptual measures of body image for adolescents and adults. In T. F. Cash & L. Smolak (Eds.), *Body image: A handbook of science, practice, and prevention* (pp. 146-153). New York: Guilford.

Gauthier, J., Morin, C., Thériault, F., & Lawson, J.S. (1982). Adaptation française d'une mesure d'auto-évaluation de l'intensité de la dépression [French adaptation of a self-report measure of depression intensity]. *Revue Québécoise de Psychologie, 3,* 13-27.

Gay, R.K., Castano, E. (2010). My body or my mind: The impact of state and trait objectification on women's cognitive resources. *European Journal of Social Psychology, 40,* 695-703.

Gerner, B., & Wilson, P.H. (2005). The relationship between friendship factors and adolescent girls'

body image concern, body dissatisfaction, and restrained eating. *International Journal of Eating Disorders*, *37*, 313-320.

Grabe, S., & Hyde, J. (2006). Ethnicity and body dissatisfaction among women in the United States: A meta-analysis. *Psychological Bulletin*, *132*, 622-640.

Grabe, S., Hyde, J.S. (2009). Body objectification, MTV, and psychological outcomes among female adolescents. *Journal of Applied Social Psychology*, *39*, 2840–2858.

Guerin, F., Marsh, H. W., & Famose, J.-P. (2003). Construct validation of the self-description questionnaire II in a French sample. *European Journal of Psychological Assessment*, *19*, 142-150.

Guizzo F. & Cadinu, M. (2016). Effects of objectifying gaze on female cognitive performance: The role of flow experience and internalization of beauty ideals. *British Journal of Social Psychology*. Early view: doi:10.1111/bjso.12170.

Guzman, N. S., & Nishina, A. (2014). A longitudinal study of body dissatisfaction and pubertal timing in an ethnically diverse adolescent sample. *Body Image, 11*, 68-71.

Hall, G.S. (1904). *Adolescence: Its psychology and its relation to physiology, anthropology, sociology, sex, crime, religion, and education*. Englewood Cliffs, NJ: Prentice-Hall.

Harrison, K., & Fredrickson, B.L. (2003). Women's sports media, self-objectification, and mental health in black and white adolescent females. *Journal of Communication, 53,* 216–232

Harter, S. (1999). *The construction of the self: A developmental perspective*. New York, NY: Guilford.

Harter, S. (2012). *The construction of the self: Developmental and sociocultural foundations* (2nd. ed). New York, NY: Guildford.

Helgeson, V.S. (1994). Relation of agency and communion to well-being: Evidence and potential explanations. *Psychological Bulletin, 116,* 412-428.

Helsen, M., Vollebergh, W., & Meeus, W. (2000). Social support from parents and friends and emotional problems in adolescence. *Journal of Youth and Adolescence, 29,* 319-335.

Hipp, J.R., & Bauer, D.J. (2006). Local solutions in the estimation of growth mixture models. *Psychological Methods*, *11*, 36-53.

Holsen, I., Kraft, P., & Røysamb, E. (2001). The relationship between body image and depressed mood in adolescence: A 5-year longitudinal panel study. *Journal of Health Psychology, 6,* 613-627.

Holsen, I., Jones, D. C., & Birkeland, M. S. (2012). Body image satisfaction among Norwegian adolescents and young adults: A longitudinal study of the influence of interpersonal relationships

and BMI. *Body Image*, *9*, 201-208.

Hyde, J. S. (2014). Gender similarities and differences. *Annual Review of Psychology*, *65*, 373-398.

Impett, E.A., Henson, J.M., Breines, J.G., Schooler, D., & Tolman, D.L. (2011). Embodiment feels better: girls' body objectification and well-being across adolescence. *Psychology of Women Quarterly*, *35*, 46–58.

Inchley, J., Kirby, J., & Currie, C. (2011). Longitudinal changes in physical self-perceptions and associations with physical activity during adolescence. *Pediatric Exercise Science*, *23*, 237-249.

Jones, B. & Griffiths, K. (2015). Self-objectification and depression: An integrative systematic review. *Journal of Affective Disorders*, *171*, 22-32.

Kahumoku, E.P., Vazsonyi, A.T., Pagava, K., Phagava, H., Alsaker, F.D., Michaud, P.-A., 2011. Objectified body consciousness and mental health in female adolescents: cross-cultural evidence from Georgian and Swiss national samples. *Journal of Adolescent Health*, *49*, 141–147.

Keery, H., van den Berg, P., & Thompson, J. (2004). An evaluation of the tripartite influence model of body dissatisfaction and eating disturbance with adolescent girls. *Body Image*, *1*, 237–251.

Kernis, M. (2003). Toward a conceptualization of optimal self-esteem. *Psychological Inquiry*, *14*, 1-26.

Kernis, M. (2005). Measuring self-esteem in context: The importance of stability of self-esteem in psychological functioning. *Journal of Personality*, *73*, 1569-1605.

Kernis, M. H., Lakey, C. E., & Heppner, W. L. (2008). Secure versus fragile high self-esteem as a predictor of verbal defensiveness: Converging findings across three different markers. *Journal of Personality*, *76*, 477-512.

Lanza S. T., Tan X., & Bray B. C. (2013). Latent class analysis with distal outcomes: A flexible model-based approach. *Structural Equation Modeling*, *20*, 1-26.

Lavallee, K., & Parker, J. (2009). The role of inflexible friendship beliefs, rumination, and low self-worth in preadolescents' friendship jealousy and adjustment. *Journal of Abnormal Child Psychology*, *37*, 873-885.

Leary, M. F. (2008). Functions of the self in interpersonal relationships: What does the self actually do? In J. V. Wood, A. Tesser, & J. G. Homes (Eds.), *The self and social relationships* (pp. 95-115). New York, NY: Psychology Press.

Leary, M. F., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M.P. Zanna (Ed.), *Advances in experimental social psychology, Volume 32* (pp. 1-62). San

Diego, CA: Academic Press.

Leary, M. R., & Tangney, J. (2012). *Handbook of self and identity* (2nd ed). New York, NY: Guilford.

LeBlanc, M. (1998). *Manual for the questionnaire package for the assessment of the social and personal adaption of quebec adolescents*. Montreal, Quebec: University of Montreal; 1998.

Lindwall, M., Aşç1, F. H., Palmeira, A., Fox, K. R., & Hagger, M. S. (2011). The importance of importance in the physical self: Support for the theoretically appealing but empirically elusive model of James. *Journal of Personality, 79*, 303-334.

Lindwall, M., Aşç1, F. H., & Crocker, P. (2014). The physical self in motion: Within-person change and associations of change in self-esteem, physical self-concept, and physical activity in adolescent girls. *Journal of Sport & Exercise Psychology*, *36*, 551-563.

Linville, P.W. (1985). Self-complexity and affective extremity: Don't put all your eggs in one cognitive basket. *Social Cognition*, *3*, 94-120.

Linville, P.W. (1987). Self-complexity as a cognitive buffer against stress-related illness and depression. *Journal of Personality and Social Psychology*, *52*, 663-676.

Lo, Y., Mendell, N., & Rubin, D. (2001). Testing the number of components in a normal mixture. *Biometrika, 88*, 767-778.

Lubke, G., & Neale, M. (2006). Distinguishing between latent classes and continuous factors: Resolution by maximum likelihood? *Multivariate Behavioral Research*, *41*, 499-532.

Lubke, G., & Neale, M. (2008). Distinguishing between latent classes and continuous factors with categorical outcomes: Class invariance of parameters of factor mixture models? *Multivariate Behavioral Research*, *43*, 592-620.

Lunde, C., Frisén, A., & Hwang, C. P. (2007). Ten-year-old girls' and boys' body composition and peer victimization experiences: Prospective relations with body satisfaction. *Body Image*, *4*, 11-28.

Markus, H., & Kunda, Z. (1986). Stability and malleability of the self-concept. *Journal of Personality and Social Psychology*, *51*, 858-866.

Marsh, H. W. (1990). *Self-Description Questionnaire-II (SDQ-II): Manual and research monograph*. New York, NY: The Psychological Corporation.

Marsh, H.W. (2007). *Self-concept theory, measurement and research into practice: The role of self-concept in educational psychology*. Leicester, UK: British Psychological Society.

Marsh, H. W., Abduljabbar, A. S., Parker, P., Morin, A. J. S., Abdelfattah, F., Nagengast, B., Möller,

J., & Abu-Hilal, M. M. (2015). The internal/external frame of reference model: Age-cohort and cross-national differences in paradoxical relations between TIMSS math and science achievement, self-concept and intrinsic motivation. *American Educational Research Journal*, *52*, 168-202.

Marsh, H. W., & Cheng, J. H. S. (2012). Physical self-concept. In G. Tenenbaum, R. Eklund, & A. Kamata (Eds), *Handbook of measurement in sport and exercise psychology* (pp. 215–226). Champaign, IL: Human Kinetics.

Marsh, H.W., Hau, K.-T., Wen, Z., Nagengast, B., & Morin, A.J.S. (2013). Moderation. In T.D. Little (Ed.), *Oxford handbook of quantitative methods, Vol. 2* (pp. 361-386), New York, NY: Oxford University Press.

Marsh, H. W., Kuyper, H., Seaton, M., Parker, P., Morin, A.J.S., Möller, J., & Abduljabbar, A.S. (2014). Dimensional comparison theory: An extension of the internal/external frame of reference effect on academic self-concept formation. *Contemporary Educational Psychology, 39*, 326-341.

McCabe, M. P., & Ricciardelli, L. A. (2003). Sociocultural influences on body image and body changes among adolescent boys and girls. *Journal of Social Psychology*, *143*, 5-26.

McCabe, M. P., & Ricciardelli, L. A. (2004). Body image dissatisfaction among males across the lifespan: A review of past literature. *Journal of Psychosomatic Research*, *56*, 675-685.

McCabe, M. P., Ricciardelli, L. A., & Finemore, J. (2002). The role of puberty, media and popularity with peers on strategies to increase weight, decrease weight and increase muscle tone among adolescent boys and girls. *Journal of Psychosomatic Research*, 52, 145-154.

Mendelson, B. K., Mendelson, M. J., & White, D.R. (2001). Body-esteem scale for adolescents and adults. *Journal of Personality Assessment*, *76*, 90-106.

Metha, P. D., & West, S. G. (2000). Putting the individual back into individual growth curves. *Psychological Methods*, *5*, 23-43.

Meyer, J. P., & Morin, A. J. S. (2016, in press). A person-centered approach to commitment research: Theory, research, and methodology. *Journal of Organizational Behavior*. doi: 10.1002/job.2085

Mitchison, D., Morin, A. J. S., Mond, J., Slewa-Younan, S., & Hay, P. (2015). The bidirectional relationship between quality of life and eating disorder symptoms: A 9-year community-based study of Australian women. *PLOS One*, *10*, e0120591.

Molloy, L. E., Ram, N., & Gest, S. (2011). The storm and stress (or calm) of early adolescents' self-concepts: Within- and between-subjects variability. *Developmental Psychology*, *47*, 1589-1607.

Morin, A. J. S., Arens, A. K., & Marsh, H. W. (2016). A bifactor exploratory structural equation modeling framework for the identification of distinct sources of construct-relevant psychometric multidimensionality. *Structural Equation Modeling*, *23*, 116-139.

Morin, A. J. S., Janosz, M., & Larivée, S. (2009). The Montreal Adolescent Depression Development Project. *Psychiatry Research Journal*, *1*, 1-50.

Morin A. J. S., & Maïano C. (2011). Cross-validation of the short form of the Physical Self-Inventory (PSI-18) using Exploratory Structural Equation Modeling (ESEM). *Psychology of Sport & Exercise*, *12*, 540-554.

Morin, A. J. S., Maïano, C., Marsh, H. W., Janosz, M., & Nagengast, B. (2011a). The longitudinal interplay of adolescents' self-esteem and body image: A conditional autoregressive latent trajectory analysis. *Multivariate Behavioral Research*, *46*, 157-201.

Morin, A. J. S., Maïano, C., Marsh, H. W., Nagengast, B., & Janosz, M. (2013). School life and adolescents' self-esteem trajectories. *Child Development*, *84*, 1967-1988.

Morin, A. J. S., Maïano, C., Nagengast, B., Marsh, H. W., Morizot, J., & Janosz, M. (2011b). General growth mixture analysis of adolescents' developmental trajectories of anxiety: The impact of untested invariance assumptions on interpretations. *Structural Equation Modeling*, *18*, 613-648.

Morin, A.J.S., Meyer, J.P., Creusier, J., & Biétry, F. (2016). Multiple-group analysis of similarity in latent profile solutions. *Organizational Research Methods*, *19*, 231-254.

Morin, A. J. S., Morizot, J., Boudrias, J.-S., & Madore, I. (2011). A multifoci person-centered perspective on workplace affective commitment: A latent profile/factor mixture analysis. *Organizational Research Methods*, *14*, 58-90.

Morin, A. J. S., Rodriguez, D., Fallu, J.-S., Maïano, C., & Janosz, M. (2012). Academic achievement and adolescent smoking: A general growth mixture model. *Addiction*, *107*, 819-828.

Morin, A. J. S., Vandenberghe, C., Turmel, M., Madore, I., & Maïano, C. (2013). Commitment nonlinear relationships to work outcomes. *Journal of Managerial Psychology*, *28*, 202-223.

Morin, A. J. S., & Wang, J. C. K. (2016). A gentle introduction to mixture modeling using physical fitness data. In N. Ntoumanis, & N. Myers (Eds.), *An introduction to intermediate and advanced statistical analyses for sport and exercise scientists* (pp. 183-210). London, UK: Wiley

Muthén, B. O. (2002). Beyond SEM: General latent variable modeling. *Behaviormetrika*, *29*, 81-117.

Muthén, B. O. (2003). Statistical and substantive checking in growth mixture modeling: Comment on

Bauer and Curran (2003). *Psychological Methods, 8,* 369-377.

Muthén, B. O., & Shedden, K. (1999). Finite mixture modeling with mixture outcomes using the EM algorithm. *Biometrics, 55,* 463–469.

Muthén, L. K., & Muthén, B. O. (2015). *Mplus user's guide.* Los Angeles, CA: Muthén & Muthén.

Nylund, K. L., Asparouhov, T., & Muthén, B. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling, 14,* 535–569.

Okada, R. (2010). A meta-analytic review of the relation between self-esteem level and self-esteem stability. *Personality and Individual Differences, 48,* 243-246.

Oyserman, D., Elmore, K., & Smith, G. (2012). Self, self-concept, and identity. In M. R. Leary & J. Tangney (Eds.), *Handbook of self and identity, 2nd Edition* (pp. 69-104). New York, NY: Guilford.

Palmqvist, R., & Santavirta, N. (2006). What friends are for: The relationships between body image, substance use, and peer influence among Finnish adolescents. *Journal of Youth and Adolescence, 35,* 192-206.

Paulhus, D. L., & Martin, C. L. (1988). Functional flexibility: A new conceptualization of interpersonal flexibility. *Journal of Personality and Social Psychology, 55,* 88-101.

Paxton, S. J., Neumark-Sztainer, D., Hannan, P. J., & Eisenberg, M. E. (2006). Body dissatisfaction prospectively predicts depressive mood and low self-esteem in adolescent girls and boys. *Journal of Clinical Child and Adolescent Psychology, 35,* 539-549.

Presnell, K., Bearman, S. K., & Stice, E. (2004). Risk factors for body dissatisfaction in adolescent boys and girls: A prospective study. *International Journal of Eating Disorders, 36,* 389-401.

Rafaeli-Mor, E., & Steinberg, J. (2002). Self-complexity and well-being: A review and research synthesis. *Personality and Social Psychology Review, 6,* 31-58.

Ram, N., & Grimm, K.J. (2007). Using simple and complex growth models to articulate developmental change: Matching theory to method. *International Journal of Behavioral Development, 31,* 303-316.

Ram, N., & Grimm, K. (2009). Growth mixture modeling: A method for identifying differences in longitudinal change among unobserved groups. *International Journal of Behavioral Development, 33,* 565-576.

Rancourt, D., Conway, C.C., Burk, W.J., & Prinstein, M.J. (2013). Gender composition of

preadolescents' friendships groups moderates peer socialization of body change behaviors. *Health Psychology*, *32*, 283-292.

Rancourt, D., & Prinstein, M. J. (2010). Peer status and victimization as possible reinforcements of adolescent girls' and boys' weight-related behaviors and cognitions. *Journal of Pediatric Psychology*, *35*, 354-367.

Robins, L. N., & Regier, D.A. (1991). *Psychiatric disorders in America: The epidemiological catchment area study*. New-York, NY: The Free Press.

Rodgers, R. F., Chabrol, H., & Paxton, S. J. (2011). An exploration of the tripartite influence model of body dissatisfaction and disordered eating among Australian and French college women. *Body Image*, *8*, 208–215.

Rodgers, R.F., McLean, S.A., Marques, M., Dunstan, C.J., & Paxton, S.J. (2016). Trajectories of body dissatisfaction and dietary restriction in early adolescent girls: A latent class growth analysis. *Journal of Youth and Adolescence*, *45*, 1664-1667.

Rodgers, R. F., Paxton, S. J., & McLean, S. A. (2014). A biopsychosocial model of body image concerns and disordered eating in early adolescent girls. *Journal of Youth and Adolescence*, *43*(5), 814–823.

Rosenberg, M., Schooler, C. Schoenbach, C. & Rosenberg, F. (1995). Global self-esteem and specific self-esteem: different concepts, different outcomes. *American Sociological Review*, *60*, 141–156.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*, 68-78.

Ryan, R. M., & Deci, E. L. (2012). Multiple identities within a single self: A Self-Determination Theory perspective on internalization within contexts and cultures. In M. R. Leary & J. Tangney (Eds.). *Handbook of self and identity, 2nd edition.* (pp. 225-246). New York, NY: Guildford.

Ryan, R. M., LaGuardia, J., & Rawsthorne, L. (2005). Self-complexity and the authenticity of self-aspects: Effects on wellbeing and resilience to stressful events. *North American Journal of Psychology*, *7*, 431-448.

Sabatelli, R., & Mazor, A. (1985). Differentiation, individuation, and identity formation: The integration of family system and individual perspectives. *Adolescence*, *20*, 619-633.

Sameroff, A. J. (2009). *The transactional model of human development: How children and context shape each other*. Washington, DC: APA.

Schinke, S. P., Fang, L., & Cole, K. C. (2008). Substance use among early adolescent girls: Risk and protective factors. *Journal of Adolescent Health, 43,* 191-194.

Shroff, H., & Thompson, J. K. (2006). The tripartite influence model of body image and eating disturbance: A replication with adolescent girls. *Body Image, 3,* 17–23.

Schutz, H. K., & Paxton, S. J. (2007). Friendship quality, body dissatisfaction, dieting and disordered eating in adolescent girls. *British Journal of Clinical Psychology, 46,* 67-83.

Seligman, M. E. P., & Csikszentmilhalyi, M. (2000). Positive Psychology: An introduction. *American Psychologist, 55,* 5-14.

Shapka, J. D., & Keating, D. P. (2005). Structure and change in self-concept during adolescence. *Canadian Journal of Behavioural Science, 37,* 83-96.

Shavelson, R. J., Hubner, J. J., & Stanton, G. C. (1976). Validation of construct interpretations. *Review of Educational Research, 46,* 407-441.

Showers, C.J., & Zeigler-Hill, V. (2012). Organization of self-knowledge. In M. R. Leary & J. Tangney (Eds.), *Handbook of self and identity, 2nd Ed* (pp. 105-123). New York, NY: Guilford.

Smolak, L. (2004). Body image in children and adolescents. *Body Image, 1,* 15-28.

Snyder, J. (2002). Reinforcement and coercion mechanisms in the development of antisocial behavior: Peer relationships. In J. B. Reid, G. R. Patterson, & J. Snyder (Eds.), *Antisocial behavior in children and adolescents* (pp. 101–122). Washington, DC: APA.

Snyder, J., & Stoolmiller, M. (2002). Reinforcement and coercion mechanisms in the development of antisocial behavior: The family. In J. B. Reid, G. R. Patterson, & J. Snyder (Eds.), *Antisocial behavior in children and adolescents* (pp. 65–100). Washington, DC: APA.

Spray, C. M., Warburton, V. E., & Stebbings, J. (2013). Change in physical self-perceptions across the transition to secondary school: Relationships with perceived teacher-emphasised achievement goals in physical education. *Psychology of Sport and Exercise, 14,* 662-669.

Steinberg, L., & Morris, A. (2001). Adolescent development. *Annual Review Psychology, 52,* 83-110.

Stice, E., & Shaw, H. E. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology: A synthesis of research findings. *Journal of Psychosomatic Research, 53,* 985–993.

Stice, E., & Whitenton, K. (2002). Risk factors for body dissatisfaction in adolescent girls: A longitudinal investigation. *Developmental Psychology, 38,* 669-678.

Thompson, J. K., Heinberg, L. J., Altabe, M. N., & Tantleff-Dunn, S. (1999). *Exacting beauty:*

Theory, assessment, and treatment of body image disturbance. Washington DC: American Psychological Association.

Tofighi, D., & Enders, C. (2008). Identifying the correct number of classes in growth mixture models. In G.R. Hancock & K.M. Samuelsen (Eds.), *Advances in latent variable mixture models* (pp. 317-341). Charlotte, NC: Information Age.

Tolman, D.L., Impett, E., Tracy, A., & Michael, A. (2006). Looking good, sounding good: femininity ideology and adolescent girls' mental health. *Psychology of Women Quarterly*, *30*, 85–95.

Tolvanen, A. (2007). *Latent growth mixture modeling: A simulation study*. PhD dissertation, Department of Mathematics, University of Jyväskylä, Jyväskylä, Finland

Tylka T.L. (2011). Positive psychology perspectives on body image. In T.F. Cash & L. Smolak (Eds.), *Body image: A handbook of science, practice, & prevention* (pp. 56- 64). New York: Guilford.

Tylka, T. L. (2012). Positive psychology perspectives on body image. In T. F. Cash (Ed.), *Encyklopedia of body image and human appearance* (pp. 657-663). London, UK: Academic Press.

Vallerand, R. J. (2015). *The psychology of passion: A dualistic model*. New York: Oxford University.

van den Berg, P., Thompson, J. K., Obremski-Brandon, K., & Coovert, M. (2002). The Tripartite Influence model of body image and eating disturbance: A covariance structure modeling investigation testing the mediational role of appearance comparison. *Journal of Psychosomatic Research*, *53*, 1007–1020.

Vitaro, F., Pelletier, D., Gagnon, C., & Baron, P. (1995). Correlates of depressive symptoms in early adolescence. *Journal of Emotional and Behavioral Disorders*, *3*, 241-251.

Wang, S. S., Houshyar, S., & Prinstein, M. J. (2006). Adolescent girls' and boys' weight-related health behaviors and cognitions: Associations with reputation- and preference-based peer status. *Health Psychology*, *25*, 658-663.

Webb, H. J., & Zimmer-Gembeck, M. J. (2014). The role of friends and peers in adolescent body dissatisfaction: A review and critique of 15 years of research. *Journal of Research on Adolescence*, *24*, 564-590.

Yamamiya, Y., Shroff, H., & Thompson, J. K. (2008). The tripartite influence model of body image and eating disturbance: A replication with a Japanese sample. *International Journal of Eating Disorders*, *41*, 88–91.

Yanover, T., & Thompson, J. K. (2008). Eating problems, body image disturbances, and academic

achievement: Preliminary evaluation of the eating and body image disturbances academic interference scale. *International Journal of Eating Disorders*, *41*, 184-187.

Young, J. M., & Mroczeck, D. K. (2003). Predicting intraindividual self-concept trajectories during adolescence. *Journal of Adolescence*, *26*, 586-600.

Zeigler-Hill, V. (2011). The connections between self-esteem and psychopathology. *Journal of Contemporary Psychotherapy*, *41*, 157-164.

Zeigler-Hill, V., Li, H., Masri, J., Smith, A., Vonk, J., Madson, M. B., & Zhang, Q. (2013). Self-esteem instability and academic outcomes in American and Chinese college students. *Journal of Research in Personality*, *47*, 455-463.

Zeigler-Hill, V., & Noser, A. (2015). Will I ever think I'm thin enough? A moderated mediation study of women's contingent self-esteem, body image discrepancies, and disordered eating. *Psychology of Women Quarterly*, *39*, 109-118.

Zeigler-Hill, V., & Showers, C.J. (2007). Self-structure and self-esteem stability: The hidden vulnerability of compartmentalization. *Personality and Social Personality Bulletin*, *33*, 143-159.

Zeigler-Hill, V., & Wallace, M. T. (2012). Self-esteem instability and psychological adjustment. *Self and Identity*, *11*, 317-342.

Zoccolillo, M., Vitaro, F., & Tremblay, R.E. (1999). Problem drug use in a community sample of adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, *38*, 900-907.

Endnotes

[1] In the present study, we use the label GSC to interchangeably refer to the constructs of "global self-concept" and "global self-esteem". It is generally accepted in the scientific literature that GSC represents the descriptive and evaluative component of individual's global self-conceptions, whereas global self-esteem (or self-esteem) simply represents the evaluative component of these individual's global self-conceptions (Butler & Gasson, 2005; Marsh & Cheng, 2002; Shavelson et al., 1976). However, as suggested by Shavelson, Hubner, and Stanton (1976) "*the distinction between self-description and self-evaluation has not been clarified either conceptually or empirically*" (p. 414). More recently, Byrne (2002, p. 901) notes that "*one remaining difficulty relates to the lack of distinctiveness between self-concept and self-esteem. Indeed, despite conceptual claims supporting their distinctiveness, construct validity research to date has been unsuccessful in providing empirical evidence of such discriminability*". Consequently, these term have been used interchangeably in the scientific literature (Butler & Gasson, 2005; Hughes, 1984; Shavelson et al., 1976).

[2] To ascertain that our decision to rely on manifest, rather than latent, indicators of BI did not induce biases due to unstable measurement, we conducted preliminary longitudinal measurement invariance analyses on BI measure. One specific BI factor was included at each time point, as well as one orthogonal method factor reflecting the methodological artefact related to negatively-worded items (Morin, Arens, & Marsh, 2016), and a priori correlated uniqueness among the matching indicators of BI utilized at the different time points (e.g., Mitchison et al., 2015). The results from these tests are reported in Table S1 of the online supplements and supported the strict invariance of the model.

[3] Participants are close in age and of the same grade level. However, Metha and West (2000) show that relying on uniform time codes when participants differ in age may result in estimation biases, unless: (1) the regression of the intercept factor of a latent curve model on age is equal to the slope factor, and (2) the regression of the slope factor on age is equal to zero. Both conditions were met in this study, as shown by non-significant χ^2difference tests between an unconstrained latent curve model and models including these equality constraints (condition 1: $\Delta\chi^2 = 0.447$, $df = 1$; Condition 2: $\Delta\chi^2 = 0.730$, $df = 1$; Conditions 1 and 2: $\Delta\chi^2 = 6.543$, $df = 2$).

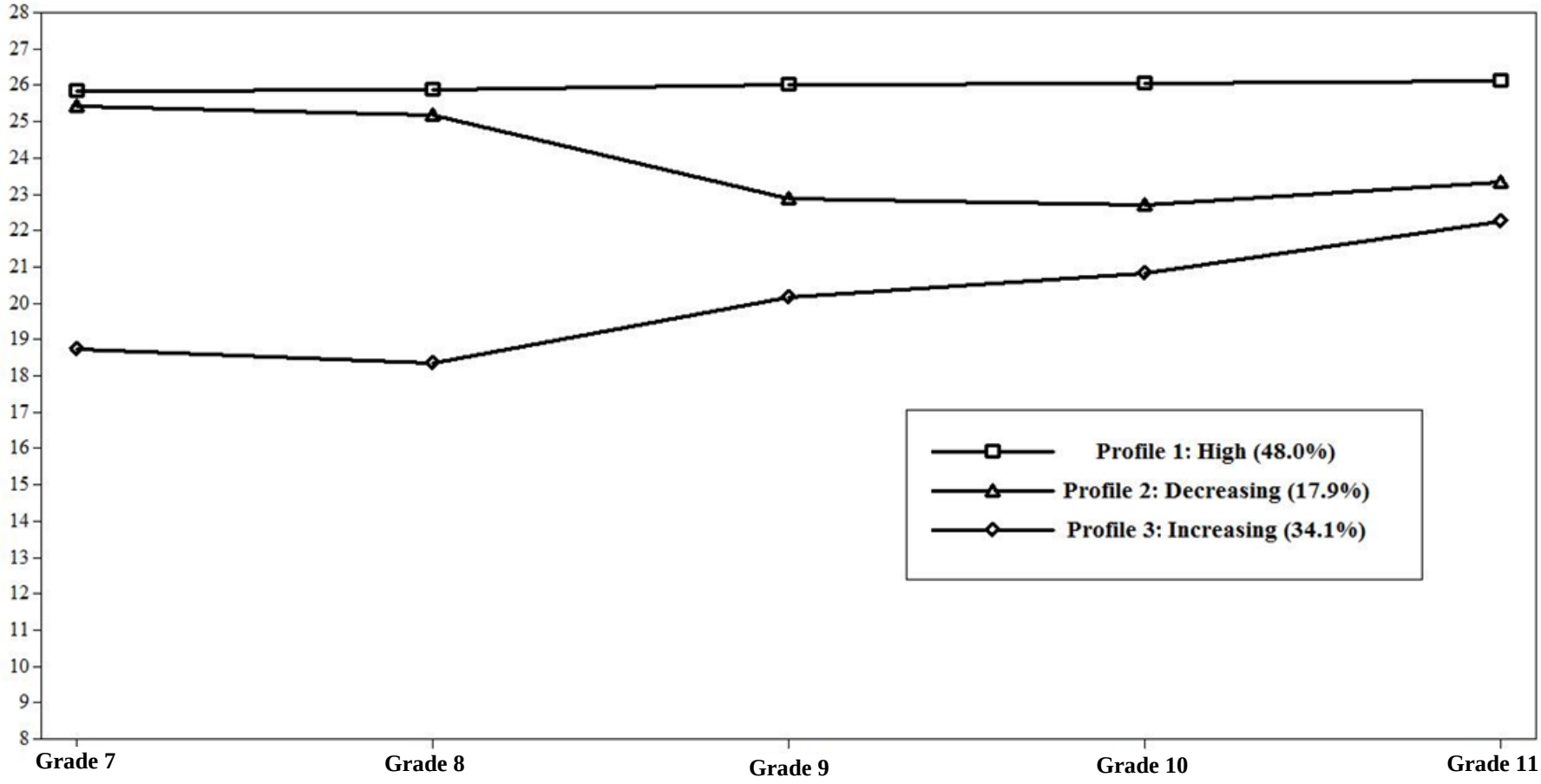
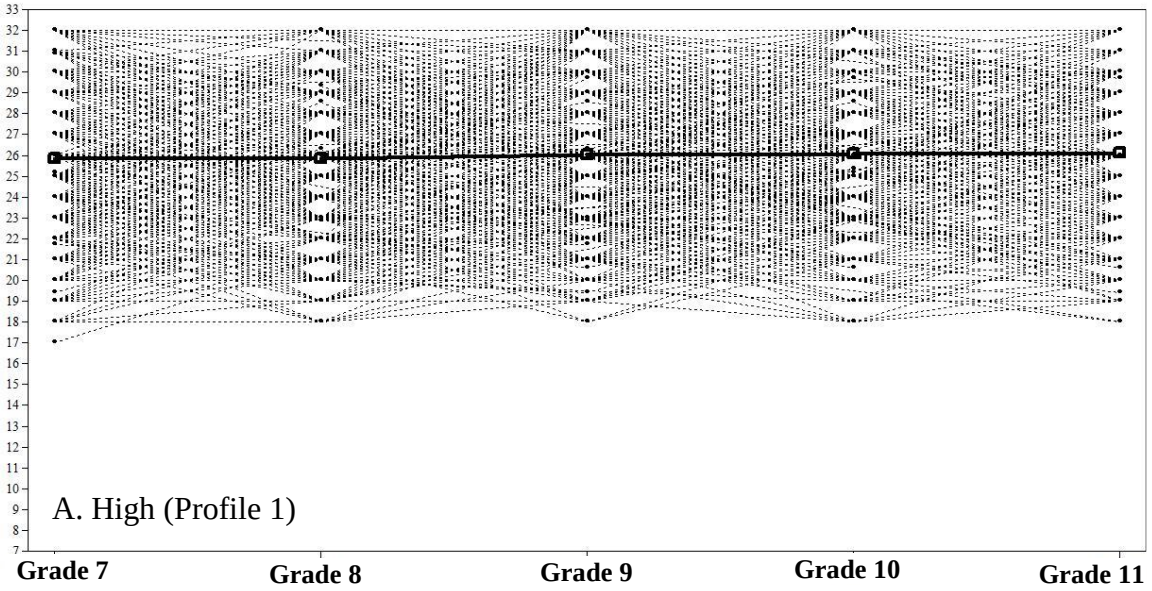
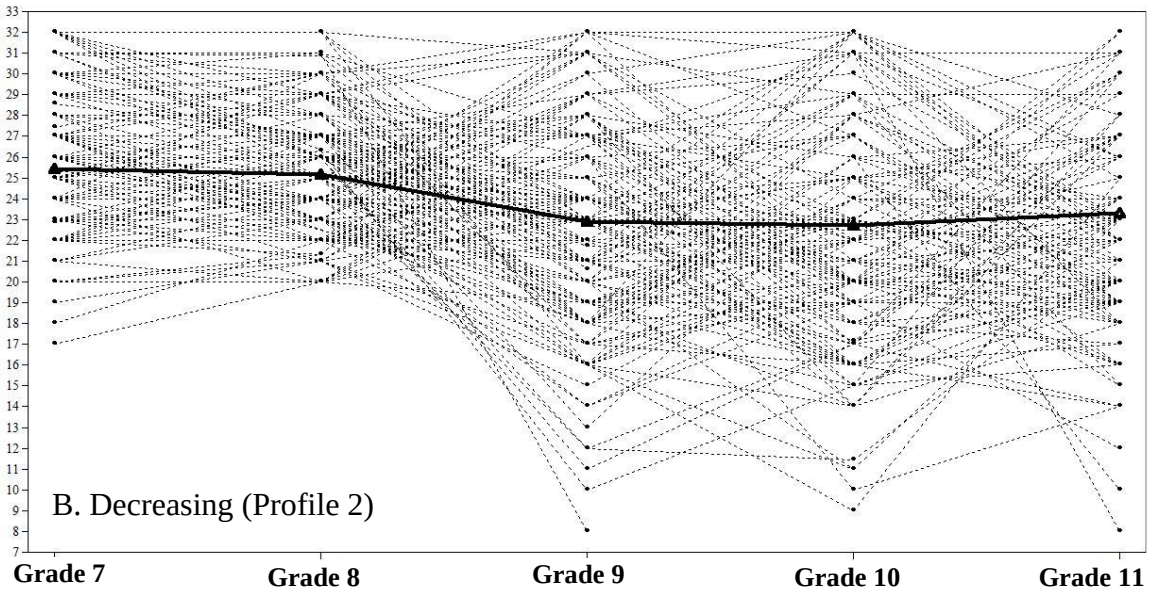


Figure 1. Estimated BI Trajectories





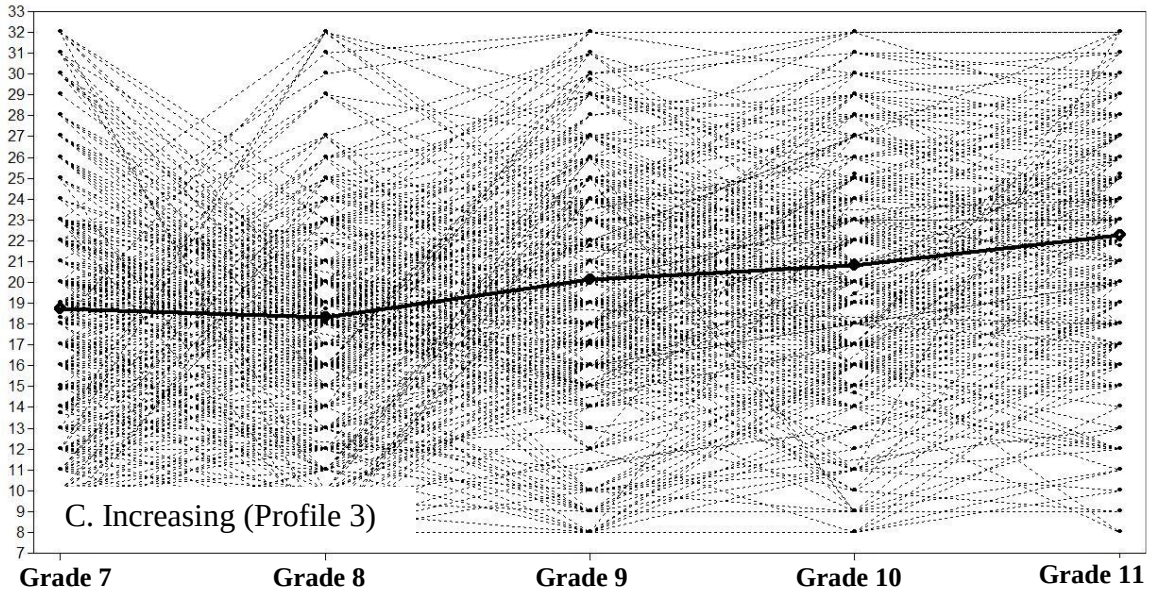


Figure 2. Estimated BI Trajectories and Observed Individual Values in Each Profile

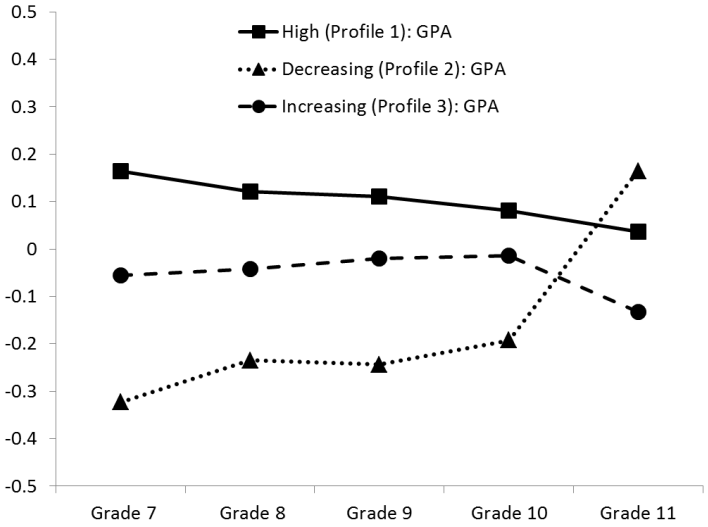


Figure 3. Time-Specific Standardized Levels of Academic Achievement

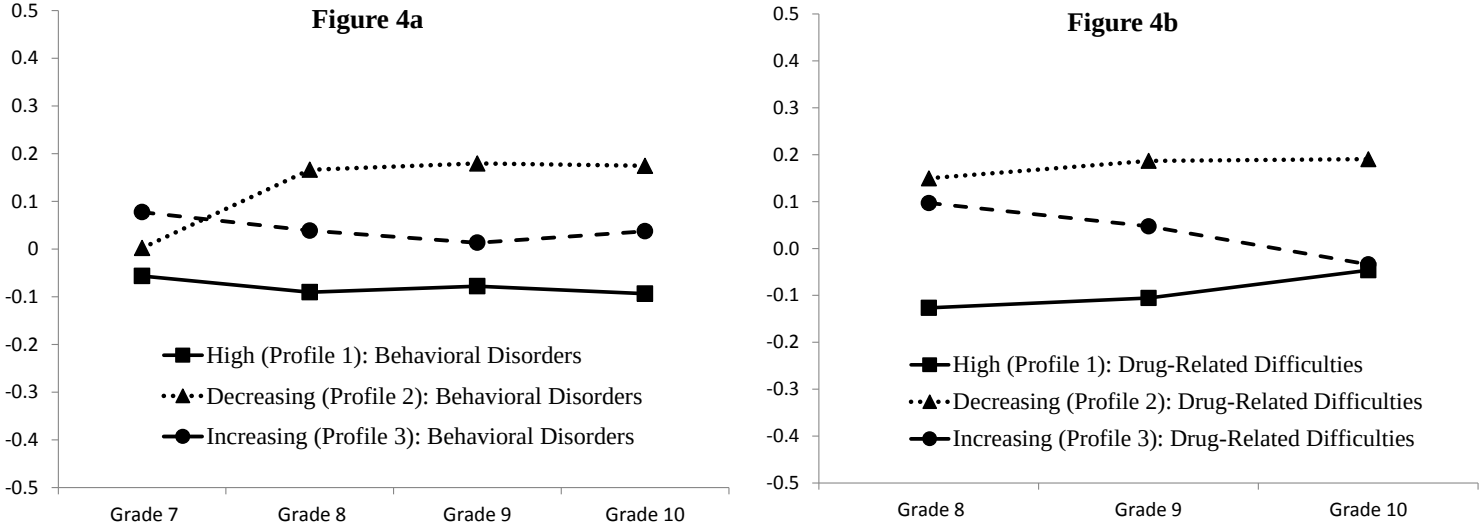
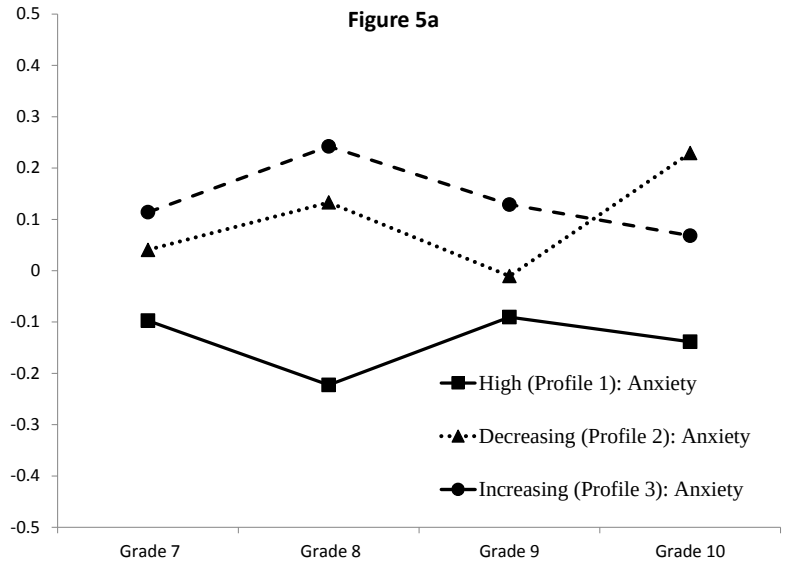
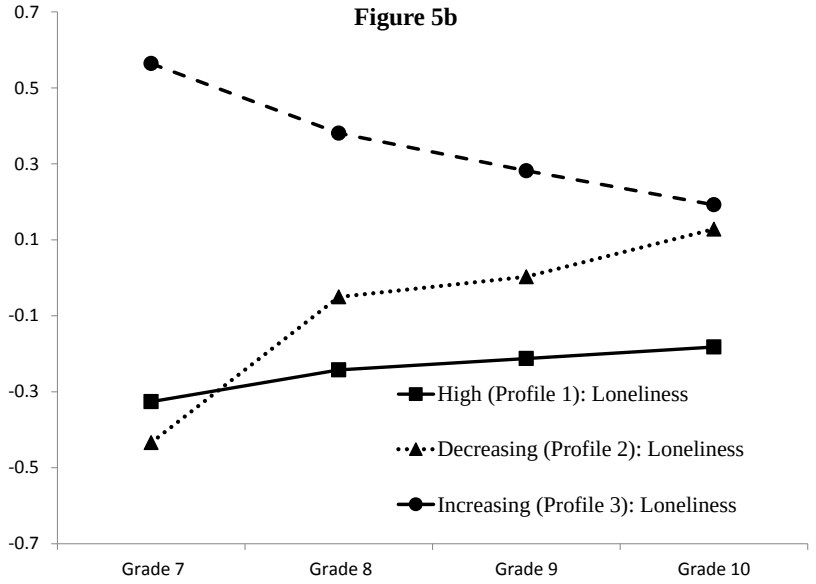


Figure 4. Time-Specific Standardized Levels of Externalizing Outcomes: (a) Behavioral Disorders; (b) Drug-Related Difficulties.





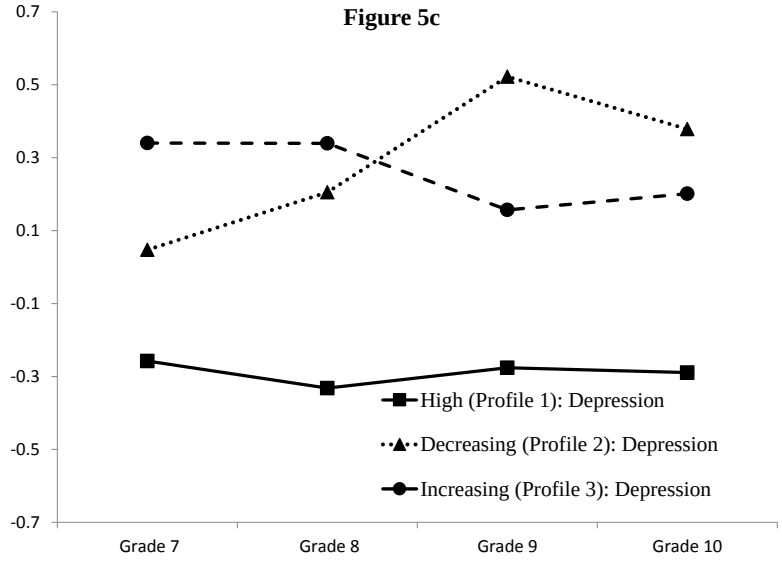


Figure 5. Time-Specific Standardized Levels of Internalizing Outcomes: (a) Anxiety; (b) Lonelinesss; (c) Depression.

Table 1

Correlations and Descriptive Statistics for all Variables.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1. BI Time 1 (Beginning Year 1)	1.00																
2. BI Time 2 (Middle Year 1)	.68**	1.00															
3. BI Time 3 (Middle Year 2)	.51**	.57**	1.00														
4. BI Time 4 (Middle Year 3)	.49**	.54**	.66**	1.00													
5. BI Time 5 (Middle Year 4)	.41**	.45**	.55**	.65**	1.00												
6. Sex	-.01	-.04	-.14**	-.12**	-.12**	1.00											
7. Parental Support (Time 1)	.16**	.15**	.06*	.06	.08*	.08*	1.00										
8. Parental Democratic Control (Time 1)	.09**	.09**	.07*	.04	.10**	.01	.22**	1.00									
9. Same Sex Peers (Time 1)	.43**	.35**	.22**	.22**	.20**	.15**	.18**	.07*	1.00								
10. Opposite Sex Peers (Time 1)	.54**	.44**	.29**	.27**	.21**	.03	-.01	.01	.48**	1.00							
11. GPA (End of Study)	.01	-.03	-.07	-.08	-.09*	.19**	.17**	.18**	.12**	-.01	1.00						
12. Dropout (End of Study)	-.02	-.02	.07*	.08*	.08*	-.05	-.22**	-.12**	-.12**	.07*	-.39**	1.00					
13. Anxiety (Time 5)	-.07*	-.07*	-.10**	-.12**	-.15**	.21**	.00	-.11**	.02	-.04	-.00	.00	1.00				
14. Loneliness (Time 5)	-.14**	-.18**	-.10**	-.15**	-.24**	.08*	-.03	-.03	-.12**	-.16**	.09*	-.00	.20**	1.00			
15. Depression (Time 5)	-.13**	-.14**	-.15**	-.24**	-.24**	.22**	-.07	-.19**	-.02	.02	-.09*	.02	.58**	.29**	1.00		
16. Behavioral Disorders (Time 5)	-.03	.04	.07*	.03	.08*	-.09*	-.26**	-.13**	-.06	.18**	-.22**	.22**	.16**	-.01	.29**	1.00	
17. Drug-Related Difficulties (Time 5)	.00	.07	.04	.03	.07	-.00	-.25**	-.07	-.00	.19**	-.18**	.19**	.13**	-.00	.22**	.66**	1.00
Mean	23.40	23.13	23.51	23.56	24.14	.46	6.82	7.14	3.37	2.80	73.25	.21	6.65	1.11	5.90	6.81	4.86
Standard Deviation	5.74	5.58	5.29	5.15	4.82	.50	1.43	1.46	.52	.68	9.86	.41	7.91	.30	7.30	6.30	5.36
Variance	32.99	31.11	28.02	26.57	23.25	.25	2.05	2.14	.27	.47	97.16	.16	62.48	.09	53.21	39.73	28.71
Minimum	8.00	8.00	8.00	8.00	8.00	.00	1.60	2.50	1.00	1.00	7.00	.00	.00	1.00	.00	.00	.00
Maximum	32.00	32.00	32.00	32.00	32.00	1.00	10.00	10.00	4.00	4.00	93.00	1.00	63.00	4.00	53.00	46.00	20.00

Note. BI = body image; GPA = grade point average; * $p \leq .05$.

Table 2

Results from the Prediction of Body Image Trajectories

Predictor	Intercept Coef. (*SE*)	β	Slope Coef. (*SE*)	β	Profile 1 Vs Profile 3 Coeff. (*SE*)	OR	Profile 2 Vs Profile 3 Coeff. (*SE*)	OR	Profile 1 Vs Profile 2 Coeff. (*SE*)	OR
Sex	-.89 (.25)**	-.17	-.70 (.24)**	-.22	-.42 (.35)	.66	-.12 (.28)	.89	-.30 (.31)	.74
Rel. Same Sex Peers	1.23 (.29)**	.25	-.73 (.29)*	-.24	.24 (.43)	1.27	.82 (.27)**	2.28	-.58 (.36)	.56
Rel. Opposite Sex Peers	2.11 (.30)**	.52	-1.12 (.27)**	-.44	1.19 (.34)**	3.30	.99 (.22)**	2.69	.20 (.28)	1.23
Parental Support	.25 (.09)**	.13	-.17 (.09)	-.15	.16 (.12)	1.18	.18 (.10)	1.19	-.01 (.13)	.99
Parental Democratic Control	-.00 (-.09)	.00	.07 (.09)	.07	.07 (.11)	1.07	.20 (.10)*	1.22	-.13 (.11)	.88

Note. Coef. = Unstandardized regression coefficient; β = Standardized regression coefficient; OR = odds ratio; * $p \leq .05$; ** $p \leq .01$.

Table 3

Outcomes of the Body Image Trajectories

Predictor (range of scores)	High (Profile 1) Mean (*SE*)	Decreasing (Profile 2) Mean (*SE*)	Increasing (Profile 3) Mean (*SE*)	Profile 1 Vs Profile 3 χ^2 (*df*)	Profile 2 Vs Profile 3 χ^2 (*df*)	Profile 1 Vs Profile 2 χ^2 (*df*)
School Dropout (0-1)	.21 (.02)	.14 (.03)	.24 (.02)	1.15 (1)	8.51 (1)**	4.82 (1)*
Grade Point Average (0-100)	73.60 (.55)	74.87 (.96)	71.95 (.74)	3.24 (1)	5.80 (1)*	1.30 (1)
Anxiety (0-63)	5.56 (.33)	8.46 (.80)	7.19 (.50)	7.40 (1)**	1.82 (1)	11.28 (1)**
Loneliness (1-4)	1.05 (.01)	1.15 (.03)	1.16 (.02)	20.21 (1)**	0.28 (1)	9.40 (1)**
Depression (0-63)	3.79 (.24)	8.61 (.75)	7.37 (.50)	41.76 (1)**	1.90 (1)	37.79 (1)**
Behavioral Disorders (0-57)	6.22 (.29)	7.91 (.59)	7.05 (.39)	2.86 (1)	1.51 (1)	6.66 (1)**
Drug-Related Difficulties (0-20)	4.61 (.27)	5.88 (.47)	4.68 (.32)	0.03 (1)	4.49 (1)*	5.51 (1)*

Note. *SE* = standard error; *df* = degrees of freedom; * $p \leq .05$; ** $p \leq .01$.

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Table S1

Fit Indices from the Preliminary Longitudinal Measurement Invariance Models of the Repeated Body Image Ratings

Description	χ^2 (*df*)	CFI	TLI	RMSEA	90% CI	$\Delta S\chi^2$(*df*)	ΔCFI	ΔTLI	ΔRMSEA
Configural invariance (unconstrained longitudinal model)	1491.07 (628)	.951	.939	.037	.035-.039	–	–	–	–
Weak invariance (λ invariant)	1532.82 (672)*	.951	.943	.036	.033-.038	47.11 (44)	.000	+.004	-.001
Strong invariance (λ and τ invariant)	1722.71 (700)*	.942	.935	.038	.036-.040	219.22 (28)*	-.009	-.008	+.002
Strict invariance (λ, τ, and δ invariant)	2132.45 (732)*	.920	.915	.044	.041-.046	286.16 (32)*	-.022	-.020	+.006
Partial strict invariance (λ, τ, and δ invariant, with invariance constraints relaxed on 4 out of 40 δ)	1900.37 (728)*	.933	.928	.040	.038-.042	136.76 (28)*	-.009	-.007	+.002

Note. χ^2 = robust chi-square test of exact fit; *df* = degrees of freedom; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; 90% CI = 90% confidence interval of the RMSEA; λ = factor loading; τ = item intercept; δ = item uniqueness; $\Delta S\chi^2$: Scaled (Robust) chi square difference test (calculated from models loglikelihoods for greater precision); ΔCFI = change in CFI; ΔTLI = change in TLI; ΔRMSEA = change in RMSEA; *p<.01.

Selection of the Final Solutions

Selection of the Final Unconditional Solution

A challenge in GMA lies in determining the number of latent profiles in the data. Typically, this decision is guided by the substantive meaning, theoretical conformity, and statistical adequacy of the solution, as well as by a variety of statistical indicators (Bauer & Curran, 2003; Morin & Wang, 2015; Muthén, 2003): The Akaike Information Criterion (AIC), the Consistent AIC (CAIC), the Bayesian information criterion (BIC), the sample-adjusted BIC (ABIC), the standard and adjusted Lo, Mendel and Rubin's (2001) LRTs (LMR/aLMR, typically yielding the same conclusions – here we only report the aLMR), and the Bootstrap LRT (BLRT). A lower value on the AIC, CAIC, BIC, and ABIC suggests a better-fitting model, whereas the aLMR and BLRT test whether the added-value of a *k*-profile model is statistically significant relative to a *k-1*-profile model. Finally, the entropy indicates the precision with which the cases are classified into the profiles, with larger values (closer to 1) indicating fewer classification errors. The entropy should not be used to determine the optimal model, but provides a useful summary of classification accuracy. Simulation studies (e.g., Nylund, Asparouhov, & Muthén, 2007; Tofighi & Enders, 2008; Tolvanen, 2007) suggest that when these indicators fail to retain the optimal model, the AIC, ABIC, and BLRT tend to overestimate the number of profiles, whereas the BIC and CAIC tend to underestimate it.

The results from the unconditional models are reported in Table S3. Both the CAIC and the BIC (two indices with a tendency for under extraction) reached their lowest points for the two-profile model, although the BIC values associated with the two- and three-profile models were very similar to one another. The AIC, ABIC and BLRT kept on suggesting the addition of latent profiles to the model, although decreases in values of the AIC and ABIC reached a relatively clear plateau around the two- and three-profile solutions. Finally, the aLMR suggested the selection of a three-profile solution. Examination of the 2- and 3- profile solutions showed that both were fully proper statistically and revealed that the third profile was also well-defined, qualitatively distinct, and theoretically meaningful. The 3-profile solution was thus retained.

Selection of the Final Conditional Solution

Predictors were then included in the retained 3-profile model (Diallo, Morin, & Lu, 2016b). In a

first model, predictors were only allowed to predict membership into the various profiles through a multinomial logistic regression. From this baseline model, additional models were estimated in which predictors were also allowed to predict the intercept of the latent trajectories, then the intercept and slope of these latent trajectories. Finally, we estimated a final model in which the relations between the predictors and the intercept and slopes of the latent trajectories were allowed to be freely estimated in each profiles (for additional details on this sequential strategy, see Diallo et al., 2016b). A similar sequence of models was then re-estimated including both the predictors and their interactions with sex. The relative fit of these models was then compared on the basis of information criteria (Lubke & Neale, 2006, 2008; Morin, Meyer, Creusier, & Biétry, 2016). These results are reported at the bottom of Table S3 and show that the information criteria decrease when the predictors are allowed to predict the intercept and slope of the latent trajectories, but increase when these relations are allowed to be freely estimated in all classes. Based on these results, we retained for interpretation the predictive model in which the predictors were allowed to influence profile membership, as well as the intercept and slope of BI trajectories in a similar manner across profiles. When we compare the fit of this model depending on whether interactions with sex are included or not, information criteria increase with the addition of interactions, arguing against their added value. This interpretation was further supported by the examination of the parameter estimates from the model including the interactions, which revealed very little significant interactions (these results are available upon request from the first author).

Table S2

Fit Indices from Alternative Unconditional and Conditional Growth Mixture Analyses

Model	LL	#fp	SF	AIC	CAIC	BIC	ABIC	Entropy	aLMR	BLRT
Unconditional Models										
1-Profile	-13288.82	13	1.46	26603.64	26680.52	26667.52	26626.23	NA	NA	NA
2-Profile	-13032.54	27	1.10	26119.08	26278.75	26251.75	26165.99	0.57	< 0.01	< 0.01
3-Profile	-12986.04	41	1.11	26054.07	26296.54	26255.54	26125.32	0.55	0.05	< 0.01
4-Profile	-12949.28	55	0.96	26008.57	26333.83	26278.83	26104.14	0.64	0.24	< 0.01
5-Profile	-12919.18	69	1.14	25976.36	26384.41	26315.41	26096.26	0.59	0.12	< 0.01
6-Profile	-12887.00	83	1.17	25940.00	26430.84	26347.84	26084.23	0.60	0.36	0.02
Conditional Models (No Interactions with Sex)										
P -> C	-12843.28	51	1.45	25788.57	26090.17	26039.17	25877.19	.69	NA	NA
P -> C and I (INV)	-12769.63	56	1.17	25651.26	25982.43	25926.43	25748.57	.63	NA	NA
P -> C and I-S (INV)	-12740.81	61	1.17	25603.62	25964.36	25903.36	25709.62	.54	NA	NA
P -> C and I-S (VAR)	-12729.35	81	1.24	25620.69	26099.70	26018.70	25761.44	.57	NA	NA
Conditional Models (Including Interactions with Sex)										
P -> C	-12833.71	59	1.44	25785.43	26134.34	26075.34	25887.95	.71	NA	NA
P -> C and I (INV)	-12761.15	68	1.14	25658.29	26060.43	25992.43	25776.46	.64	NA	NA
P -> C and I-S (INV)	-12722.96	77	1.11	25599.93	26055.28	25978.28	25733.73	.57	NA	NA
P -> C and I-S (VAR)	-12700.88	113	1.31	25627.75	26296.01	26183.01	25824.11	.58	NA	NA

Note. LL = model loglikelihood; #fp = number of free parameters; SF = scaling factor of the robust maximum likelihood estimator; AIC = Akaïke information criterion; CAIC = consistent AIC; BIC = Bayesian information criterion; ABIC = sample-size adjusted BIC; aLMR = Lo-Mendel and Rubin's likelihood ratio test; BLRT = bootstrap likelihood ratio test; NA = not applicable; P -> = The predictors were allowed to influence; C = membership in the latent profiles; I = intercept of the latent trajectories; S = slope of the latent trajectories; INV = prediction invariant across latent profiles; VAR = prediction allowed to vary across latent profiles.

Table S3

Results from the Final Unconditional Three-Class Growth Mixture Analysis

Parameter	Profile 1 (High) Estimate (*t*)	Profile 2 (Decreasing) Estimate (*t*)	Profile 3 (Increasing) Estimate (*t*)
Intercept mean	25.86 (75.70)**	25.17 (33.81)**	18.33 (36.29)
Slope mean	.25 (.72)	-1.85 (-2.28)*	3.91 (7.36)**
Intercept variability ($SD = \sqrt{\sigma}$)	2.85 (6.16)**	2.76 (3.75)**	4.11 (6.86)**
Slope variability ($SD = \sqrt{\sigma}$)	2.53 (3.71)**	2.59 (2.47)*	4.44 (3.63)**
Intercept-slope correlation	-.35 (-3.54)**	-.64 (-4.03)**	-.35 (-2.92)**
Loading Time 1 (λ_{1k})	-.07 (-.38)	-.14 (-.60)	.11 (1.08)
Loading Time 2 (λ_{2})	0 (NA)	0 (NA)	0 (NA)
Loading Time 3 (λ_{3k})	.60 (5.27)**	1.23 (2.62)**	.47 (6.10)**
Loading Time 4 (λ_{4k})	.78 (6.51)**	1.33 (2.75)**	.64 (8.74)**
Loading Time 5 (λ_{5})	1 (NA)	1 (NA)	1 (NA)
$SD(\varepsilon_{yi1k})$	2.32 (4.15)**	2.27 (1.14)	4.91 (8.71)**
$SD(\varepsilon_{yi2k})$	1.90 (4.98)**	1.83 (1.88)	4.10 (5.83)**
$SD(\varepsilon_{yi3k})$	1.95 (7.09)**	4.25 (4.14)**	4.24 (9.76)**
$SD(\varepsilon_{yi4k})$	1.92 (7.25)**	4.32 (3.46)**	3.31 (5.72)**
$SD(\varepsilon_{yi5k})$	1.43 (2.35)*	4.75 (4.74)**	2.40 (1.80)

Note. C1-C4 = latent trajectory profiles 1 to 4; *t* = estimate / standard error of the estimate (*t* value are computed from original variance estimate and not from their square roots); NA = not applicable; $SD(\varepsilon_{yit})$ = standard deviations of the time-specific residuals; We present the square roots of the estimates of the variability of the trajectory factors and of time-specific residuals so that these results can be interpreted units of BI as measured in the present study; * $p \leq .05$; ** $p \leq .01$.

Table S4

Time-Specific Associations between the Outcomes and the Body Image Trajectories

Predictor (range of scores)	High (Profile 1) Mean (*SE*)	Decreasing (Profile 2) Mean (*SE*)	Increasing (Profile 3) Mean (*SE*)	Profile 1 Vs Profile 3 χ^2 (*df*)	Profile 2 Vs Profile 3 χ^2 (*df*)	Profile 1 Vs Profile 2 χ^2 (*df*)
School Dropout (0-1)	.21 (.02)	.14 (.03)	.24 (.02)	1.15 (1)	8.51 (1)**	4.82 (1)*
Grade Point Average (0-100)						
Grade 7	76.37 (.41)	71.57 (.79)	74.20 (.55)	10.03 (1)**	7.54 (1)**	28.99 (1)**
Grade 8	74.18 (.44)	70.52 (.83)	72.51 (.57)	5.48 (1)*	3.94 (1)*	15.30 (1)**
Grade 9	74.78 (.42)	71.41 (.73)	73.54 (.52)	3.45 (1)	5.67 (1)*	16.09 (1)**
Grade 10	72.87 (.43)	70.24 (.75)	71.96 (.52)	1.83 (1)	3.54 (1)	9.24 (1)**
Grade 11	73.60 (.55)	74.87 (.96)	71.95 (.74)	3.24 (1)	5.80 (1)*	1.30 (1)
Anxiety (0-63)						
Grade 7	6.66 (.38)	7.90 (.69)	8.56 (.54)	8.26 (1) **	0.56 (1)	2.46 (1)
Grade 8	5.51 (.28)	8.38 (.66)	9.27 (.53)	39.78 (1) **	1.09 (1)	16.27 (1) **
Grade 9	6.36 (.34)	6.96 (.56)	8.00 (.47)	8.09 (1) **	2.03 (1)	0.83 (1)
Grade 10	5.56 (.33)	8.46 (.80)	7.19 (.50)	7.40 (1)**	1.82 (1)	11.28 (1)**
Loneliness (1-4)						
Grade 7	1.09 (.01)	1.03 (.01)	1.533 (.04)	148.92 (1)**	185.75 (1)**	21.96 (1)**
Grade 8	1.04 (.01)	1.10 (.02)	1.240 (.03)	53.74 (1)**	18.93 (1)**	11.90 (1)**
Grade 9	1.06 (.01)	1.14 (.02)	1.243 (.03)	38.58 (1)**	7.47 (1)**	9.24 (1)**
Grade 10	1.05 (.01)	1.15 (.03)	1.164 (.02)	20.21 (1)**	0.28 (1)	9.40 (1)**
Depression (0-63)						
Grade 7	3.94 (.25)	6.30 (.58)	8.56 (.51)	65.47 (1)**	8.63 (1)**	14.05 (1)**
Grade 8	4.26 (.24)	8.84 (.68)	9.98 (.56)	88.45 (1)**	1.69 (1)	40.65 (1)**
Grade 9	4.24 (.21)	10.11 (.82)	7.42 (.42)	45.24 (1)**	8.46 (1)**	47.85 (1)**
Grade 10	3.79 (.24)	8.61 (.75)	7.37 (.50)	41.76 (1)**	1.90 (1)	37.79 (1)**
Behavioral Disorders (0-57)						
Grade 7	4.85 (.28)	5.23 (.49)	5.72 (.38)	3.41 (1)	0.62 (1)	0.46 (1)
Grade 8	5.70 (.30)	7.55 (.62)	6.63 (.40)	3.46 (1)	1.55 (1)	7.24 (1)**
Grade 9	6.20 (.29)	7.94 (.57)	6.81 (.37)	1.74 (1)	2.75 (1)	7.47 (1)**
Grade 10	6.22 (.29)	7.91 (.59)	7.05 (.39)	2.86 (1)	1.51 (1)	6.66 (1)**
Drug-Related Difficulties (0-20)						
Grade 8	2.99 (.22)	4.40 (.40)	4.13 (.29)	10.02 (1)**	0.30 (1)	9.48 (1)**
Grade 9	3.86 (.24)	5.44 (.43)	4.68 (.30)	4.74 (1)*	2.12 (1)	10.55 (1)**
Grade 10	4.61 (.27)	5.88 (.47)	4.68 (.32)	0.03 (1)	4.49 (1)*	5.51 (1)*

Note. *SE* = standard error; *df* = degrees of freedom; * $p \leq .05$; ** $p \leq .01$.