Social Risk and Protective Factors of Psychosocial Adjustment Difficulties among Youth with Intellectual Disabilities

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A Thesis
In the Department
of
Psychology

Presented in Partial Fulfillment of the Requirements
For the Degree of
Doctor of Philosophy (Psychology) at
Concordia University
Montréal, Québec, Canada

July 2023

CONCORDIA UNIVERSITY
School of Graduate Studies

This is to certify that the thesis prepared

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Entitled: Social Risk and Protective Factors of Psychosocial Adjustment Difficulties among Youth with Intellectual Disabilities

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Doctor of Philosophy (Psychology)
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ABSTRACT

Social Risk and Protective Factors of Psychosocial Adjustment Difficulties among Youth with Intellectual Disabilities

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Concordia University, 2023

The overarching aim of this thesis was to examine how the characteristics of the social environment of youth with intellectual disabilities (ID) could contribute to their risk of psychopathology. The first study investigated the nature of the social interaction profiles observed among youth with ID, defined while considering their relationships with their parents, peers, and teachers, as well as the implication of these profiles for their self-esteem, aggressive behaviors, and prosocial behaviors. A sample of 393 youth with mild (48.2%) to moderate (51.8%) levels of ID, aged between 11 and 22 (M=15.70), was recruited in Canada (n=141) and Australia (n=253). Our results revealed four profiles, corresponding to *Socially Isolated* (23.24%), *Socially Integrated* (39.83%), *Socially Rejected* (28.37%) and *Socially Connected* (8.57%) youth with ID. The socially integrated and connected profiles both presented higher self-esteem, more prosocial behaviors, and less aggressive behaviors than the socially isolated and rejected profiles. The second study investigated associations between initial levels and changes in the quality of the relationships youth with ID share with their parents and teachers and changes in their levels of depression over time. A sample of 395 youth with mild (48.3%) and moderate (51.7%) ID, aged between 11 and 22 (M=15.69), were recruited in Canada (n=142) and Australia (n=253). Youth completed self-report measures of relationship quality and depression twice over a one-year period. Initial levels of warmth (β=-.109) and conflict (β=-.302) predicted decreases in depression. Increases in warmth predicted decreases in depression (β=-.179), while increases in conflict predicted increases in depression (β=.268). Discrepancies between youth relationships with their parents and teachers predicted decreases in depression (β_{warmth}=-.732; $\beta_{conflict}$=-.608). The third and final study investigated how school experiences and personal characteristics of youth with ID contributed to their longitudinal trajectories of anxiety. To this end, we relied on a sample of 390 youth with mild (48.2%) to moderate (51.8%) levels of ID, aged from 11 to 22 (M=15.70), and recruited in Canada (n=140) and Australia (n=250). Across three yearly time points, all participants completed self-report measures of anxiety, school climate, and victimization. Our results revealed a slight normative decrease in anxiety over time and showed that experiences of school victimization were associated with higher levels of anxiety (initially and momentarily) and increases in victimization were accompanied by increases in anxiety over time. Perceptions of attending a school that fosters security and promotes learning also tended to be accompanied by lower levels of anxiety (initially and momentarily). Momentary increases in perceptions of attending a school that fosters positive peer interactions were associated with momentary decreases in anxiety, whereas momentary increases in perceptions of attending a school characterized by positive teacher-student relationships and an equitable treatment of all students both led to small momentary increases in anxiety once all other components of student school experiences were considered. All together, our results highlight important targets for intervention in ensuring better psychological adjustment and future avenues for research on youth with ID.

ACKNOWLEDGMENTS

First and foremost, I owe my supervisor, Dr. Alexandre J. S. Morin my sincerest gratitude and appreciation for his unwavering support, guidance and investment in the development of my research skills. Not only did I benefit greatly from his knowledge in an area of psychology that greatly interests me, but by mentoring me in complex statistical analyses he also provided me with the tools to explore in innovative ways in multiple research areas. Working under Dr. Morin supervision for both my master's and PhD has been a great privilege and an incredible opportunity.

I would also like to thank the other members of my thesis committee, Dr. Mark Ellenbogen and Dr. Jean-Philippe Gouin for their continued support, feedback, and encouragement throughout my graduate studies.

I am also grateful for the help and support of all members of the Substantive Methodological Synergy Lab. Among these lab members, I am indebted to Dr. Elisabeth Olivier especially, for her extremely helpful feedback and advice when it came to academic writing. I am also grateful for Dr. István Tóth-Király for his statistical support. I would finally also like to thank Dr. Christophe Maïano, Dr. Danielle Tracey and Dr. Rhonda G. Craven for allowing me to work with their incredibly rich data set.

Finally, to my family, whose constant support and understanding as I dedicate years to my education cannot go unchecked. With your love, my persistence and motivation in the PhD program never faltered. Thank you!

CONTRIBUTIONS OF AUTHORS

This thesis was written and prepared by Céleste Dubé, under the supervision of her supervisor (Dr. Alexandre J.S. Morin) whose support during rounds of feedback and mentoring greatly improved the quality of this work. Three other members of the Substantive Methodological Synergy Lab also provided invaluable support through rounds of feedback on all of my manuscripts (Dr. Elisabeth Olivier), as well as for the analyses realized in my first and second papers (Dr. István Tóth-Király) as well as in my third paper (Dr. William Gilbert). This dissertation is composed of three separate studies, which used a large longitudinal data set collected by Dr. Christophe Maïano (Université du Québec en Outaouais), Dr. Danielle Tracey (Western Sydney University), Dr. Rhonda G. Craven (Australian Catholic University), and my supervisor who ensured the International coordination between the two research teams. One last member of the Substantive Methodological Synergy Lab also provided a limited contribution to the formatting, referencing, and copy-editing of my second paper (Victoria Smodis McCune). Although this dissertation is considered the sole work of Céleste Dubé, these additional individuals were also consulted and acknowledged during the journal submissions of the three separate studies.

My doctoral research was supported by a SSHRC Joseph-Armand Bombardier Doctoral Scholarship and the Concordia University Accelerator Award. I am the sole author of the entire dissertation document below. The three papers that are part of this thesis are published as:

Study 1:

Dubé, C., Morin, A.J.S., Tóth-Király, I., Olivier, E., Tracey, D., Smodis McCune, V., Craven, R.G., & Maïano, C. (In Press, Accepted, 28 September 2022). Social interaction profiles among youth with intellectual disabilities: Associations with indicators of psychosocial adjustment. *Journal of Autism and Developmental Disorders*. doi: 10.1007/s10803-022-05783-w

Study 2:

Dubé, C., Morin, A.J.S., Olivier, E., Tóth-Király, I., Tracey, D., Craven, R.G., & Maïano, C. (In Press, Accepted, 22 October 2022). Longitudinal associations between relationship quality and depression among youth with intellectual disabilities: A latent change perspective. *Journal of Autism and Developmental Disorders*. doi: 10.1007/s10803-022-05805-7

Study 3:

Dubé, C., Morin, A.J.S., Olivier, E., Gilbert, W., Tracey, D., Craven, R.G., & Maïano, C. (Resubmitted after Revision, 29 June 2023). School experiences and anxiety trajectories among youth with intellectual disabilities. *Journal of Autism and Developmental Disorders*.

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CHAPTER 1:
General Introduction

Up to 20% of youth experience mental health problems, with depression, anxiety and disruptive/aggressive behaviors being the most common (Polanczyk et al., 2015). The rates of these psychological difficulties are notably higher among youth with an intellectual disability (ID; Einfeld et al., 2011; Maïano et al., 2018; Tipton-Fisler et al., 2018). An ID is defined as an impairment in general mental abilities of varying severity that impacts adaptive functioning in one or more out of three domains: conceptual, social and practical (American Psychiatric Association [APA], 2013). As a result of these limited functional abilities, youth with ID tend to display lower levels of autonomy, greater levels of dependence on adult caregivers (i.e., parents and teachers), and fewer opportunities to engage in fruitful social exchanges with same age peers relative to their typically developing (TD) peers (Craven et al., 2015; Hudson, 2003; Schmückle et al., 2017; Solish, et al., 2010). For these reasons, youth with ID present a higher risk of experiencing difficulties when navigating the core developmental tasks of adolescence (Hughes-McCormack et al., 2018; Young-Southward et al., 2017), which include the emergence of greater autonomy from their caregivers and of stronger connections with their peers (e.g., Craven et al., 2015).

Unfortunately, there is a scarcity of research addressing the key drivers of adaptive and maladaptive psychological functioning for youth with ID. This shortage has led researchers to rely heavily on research conducted on TD youth, in hopes that results would translate to youth with ID. Nonetheless, due to their limited cognitive abilities and social skills, some risk mechanisms may be unique to youth with ID (Craven et al., 2015; Schmückle et al., 2017). For example, although school-related factors have been shown to play a crucial role for TD youth (Morin et al., 2009, 2013; Gutman & Eccles, 2007), their role has all but been neglected among youth with ID. This limitation is worrisome given that school-related factors may be even more important for youth with ID for whom, because of their lower levels of functional autonomy, schools tend to represent an even more important area of socialization than for their TD peers (Craven et al., 2015; Schmückle et al., 2017).

Unfortunately, past research conducted among youth with ID has long embraced deficit models to describe their psychological functioning, primarily focusing on limitations while ignoring strengths (O'Byrne & Muldoon, 2018). Beyond increasing the potential stigma placed

upon this vulnerable population, this approach also ignores a substantial part of the reality of these youth, as well as multiple areas of strengths potentially present in their families and schools. Moving away from deficit models, researchers are increasingly acknowledging that youth with ID cannot be reduced to their limitations but can experience success in a variety of ways when able to capitalize on their own unique profile of strengths.

Possibly because of the widespread dominance of deficit models, researchers have also tended to dismiss the relevance of self-reports from youth with ID, based on the erroneous belief that these youth were unable to properly report on their internal states. Whereas obtaining psychometrically sound self-reports from youth with ID may indeed be complicated by their more limited cognitive skills, accumulating research evidence has revealed that, with proper methodologies, it was indeed possible to obtain reliable and valid self-reports from youth with ID (e.g., Bear et al., 2002; Dubé et al., 2022; Turk et al., 2012; Scott & Havercamp, 2018). The ability to rely on psychometrically sound instruments to allow these youth to express their own unique voices in relation to their own psychosocial reality is critically important for research (Maïano et al., 2022; Mindham & Espie, 2003). Indeed, current evidence indicates that these self-reports capture a qualitatively different and complementary perspective relative to informant reports, suggesting that previous research may better reflect informants' perspectives about the reality of youth with ID rather than their own subjective reality (Dubé et al., 2022; Olivier et al., 2021). In research seeking to understand that subjective reality (e.g., depression, anxiety, loneliness, perception of support, relationship quality), this does seem to represent a critical limitation.

Building upon my master's thesis (published in Dubé et al., 2022), focused on the validation of a comprehensive multi-informant (youth, parents, and teachers) measure of relationship quality with parents and teachers specifically developed for youth with ID, the present thesis considers the role of a variety of social factors in the development of psychosocial adaptation difficulties among youth with ID, while capitalizing on their own unique perspective. We first address the theoretical underpinning of this thesis, before presenting the three studies conducted to address these objectives.

Attachment Theory and Social Interactions

Attachment theory (Ainsworth, 1989; Bowlby, 1973) positions early interactions between developing children and their primary caregivers (typically their parents) as a key mechanism underpinning youth's social development and is therefore likely to have a widespread impact on

all facets of their social interactions across the whole lifespan. Attachment theory notes that youth may come to develop secure or insecure early attachments to their parents during infancy (Ainsworth, 1989; Bowlby, 1973). Secure attachments are the result of warm and responsive interactions with parents, whereas insecure attachments emerge from unreliable, insensitive, or harsh forms of parenting (Ainsworth, 1989; Bowlby, 1973; Planalp & Braugart-Rieker, 2013). However, it is important to note that infants' behaviors and reactions are also expected to contribute to the creation of this attachment style, so that those with easier temperaments would be more likely to develop secure attachments (Planalp & Braugart-Rieker, 2013). These early attachments are expected to form internal working models which youth will then transpose to all future relationships (Ainsworth, 1989; Bowlby, 1973).

When early attachments are secure, youth's cognitive representation of themselves tend to be more positive, allowing them to experience increased confidence in themselves and in others and to act in a similarly caring and supportive way toward others (e.g., Birch & Ladd, 1997). In contrast, insecure attachments are expected to result in distorted working models of themselves and others among exposed children (Ainsworth, 1989; Bowlby, 1973). Through selective attention, insecurely attached youth come to interpret their experiences in ways that are consistent with these distorted mental representations. These distortions could include the perception of hostility or rejection from others where none was intended, making these youth more likely to display anger, resentment, or feelings of disconnection, and making it harder for them to trust others (Beck, 1987; Bowlby, 1973; Steele & Steele, 2014). This negative view of others also makes them less likely to engage in supportive, caring, or helping behaviors (Shaver et al., 2019), in addition to interfering with the development of moral restraints, thus favoring the emergence of aggressive behaviors (Steele & Steele, 2014). These behaviors may also be present at school, as children carry over their mental representations of self and others into that context (Rohner, 2004; Weaver et al., 2015). However, as these secure or insecure internal working models are applied to new relationships, they may be maintained or reconstructed depending on the quality of these new relationships (Bowlby, 1973), which highlights the importance of future social interactions as ways to compensate for early negative experiences or to help perpetuate early positive experiences.

As children mature, parent-child relationships (PCR) are consolidated upon the foundations of these early attachments, while also being shaped by the behaviors of the parent and of the child. From a theoretical perspective, an optimal parenting style is seen as encompassing a combination

of responsiveness, warmth, support, and acceptance with behaviors seeking to establish control, rules, consistency, and order (Baumrind, 1991; Smokowski et al., 2015). In contrast, a parenting style dominated by control tends to be accompanied by undesirable developmental outcomes (Baumrind, 1991; Smokowski et al., 2015), although disruptive children may also exacerbate their parents' controlling behaviors (Besemer et al., 2016). This observation led Lewis (1981) to suggest that conflict, rather than pure control, may be the active ingredient behind the undesirable consequences of parental control. This perspective has since been incorporated in research focusing on PCR, which is typically operationalized as a function of the degree of warmth (or responsiveness) and conflict (Birch & Ladd, 1997; Boele, et al., 2019; Pianta, 1999; Searle et al., 2013). While the former entails positive social interactions characterized by feelings of warmth, relatedness, connectedness, and support, the latter refers to negative social interactions characterized by negative emotions and hostile interactions between children and their parents (Birch & Ladd, 1997; Davies & Sturge-Apple, 2014; Pianta, 1999).

When youth enter schools, they face new social interaction opportunities involving peers and teachers. According to attachment theory, children's internal working models, stemming from their early attachments with their parents and consolidated as part of their PCR, become the template upon which these new social interactions are constructed (Ainsworth, 1989; Bowlby, 1973). Supporting this assertion, research has shown that student-teacher relationships (STR) and peer relationships often match the nature of PCR (Ciarrochi, et al., 2017; Raaska et al., 2012; Sabol & Pianta, 2012; Tipton et al., 2013; Verschueren & Koomen, 2012). For this reason, it is not surprising to note that STR are typically operationalized along the same two dimensions of warmth and conflict (Pianta, 2001; Verschueren & Koomen, 2012). However, whereas PCR are relatively enduring (Laursen & Collins, 2004), STR fluctuate as a result of youth's exposure to different teachers every year (Verschueren & Koomen, 2012). However, both types of relationships have been reported to be only moderately stable over a one-year period among youth with ID (Dubé et al., 2022), suggesting that both STR and PCR are likely to represent a potentially important lever of intervention for this population.

Contrasting with STR and PCR, peer interactions are less hierarchical and more reciprocal in nature. Although peers can act in a supportive manner, the type and level of support that they provide is qualitatively distinct from that provided by parents and teachers and is more commonly operationalized as a sense of closeness and shared activities (e.g., Bukowski et al., 1987; Pianta,

2001; Shulman et al., 1994; Verschueren & Koomen, 2012). Similarly, although peer relationships can also be tainted by conflict, this conflict rarely emerges from failed attempts to assert authority, as it does with adult caregivers (e.g., Lewis, 1981), but is more often expressed in the form of verbal, hidden or physical violence (i.e., peer victimization; Hunter et al., 2007; Maïano et al., 2016; Olivier et al., 2020, 2021; Morin et al., 2011, 2013). Finally, although youth cannot avoid their parents and teachers, some unfortunately find themselves without positive peer relationships, leading them to experience feelings of loneliness (e.g., Asher et al., 1984; Morin et al., 2009).

Overall, research has shown that youth sharing positive relationships with parents, teachers and peers tend to be better equipped to cope during stressful events, buffering them against the experience of psychosocial difficulties (e.g., McElwain & Booth-LaForce, 2006). Conversely, youth with insecure attachments or sharing more difficult relationships with their parents, teachers and peers tend to be more self-critical, display greater dependency on others (Bowlby, 1980), demonstrate heightened emotional sensitivity (Kerstis et al., 2018), and more aggressive or hostile behaviors (Steele & Steele, 2014). The lack of adaptive skills to buffer stress combined with negative representations of themselves and others may contribute to the increased vulnerability for depression and anxiety often reported in youth with poor social relationships, and increase their tendency to rely on aggression rather than on prosocial behaviors to handle stressful situations (Rohner, 2004; Davies & Sturge-Apple, 2014). Finally, experiencing conflict with their adult caregivers or peer victimization may be enough to trigger psychosocial difficulties among youth already predisposed to them (e.g., Adrian & Hammen, 1993; Pinquart, 2017).

Although limited research has been conducted among youth with ID, this research suggest that they present a higher risk, relative to TD youth, of sharing poorer interpersonal relationships with their adult caregivers and their peers (e.g., Blacher et al., 2009; Hamadi & Fletcher, 2021; Maïano et al., 2016; Teague et al., 2018; Tipton et al., 2013; Tipton-Fisler et al., 2018; Zeedyk et al., 2014). Likewise, research has also tended to show that, just like TD youth, youth with ID exposed to poor social interactions with their adult caregivers and peers tend to present a higher risk of experiencing a variety of psychosocial adaptation problems, including lower self-esteem and prosocial behaviors, and higher levels of aggressive behaviors and internalizing symptoms (e.g., Caplan et al., 2016; Chiu et al., 2017; Doyle & Sullivan, 2017; Klein et al., 2018; Maïano et al., 2016, 2019; Olivier et al., 2020; Reiter & Lapidot-Lefler, 2007; Te Brinke, et al., 2021; Ung et al., 2016; Whitney et al., 2019; Wright, 2017). Unfortunately, this research remains limited by

a combination of: (a) small samples sizes limiting generalizability; (b) the failure to consider youth's own perspective; (c) cross-sectional research designs making it difficult to understand the directionality of these associations; (d) variable-centered research designs making it difficult to understand the unique social interaction profiles of youth with ID (Morin et al., 2018). Each in their own way, the papers included in the current thesis address some of these limitations.

Before turning our attention to these specific papers, it is important to acknowledge that, beyond being the area in which many interactions between youth, their peers, and their teachers occur, schools are also uniquely complex social systems (Bronfenbrenner, & Morris, 1998) where multiple factors, including personal experiences and school climate perceptions (Morin et al., 2009, 2013) come together to further foster, or impede, healthy development. All youth spend a significant part of their life at school where they may encounter stress-generating (e.g., conflict, failure, rejection) and self-enhancing (e.g., support, success, security) experiences likely to influence their psychosocial development (e.g., Morin et al., 2009, 2013).

Stage-Environment Fit Theory and School Life Components

In adolescence, schools are a main area of socialization for developing youth (Craven et al., 2015). Stage-environment fit theory (Eccles & Roeser, 2009; Eccles et al., 1993) and Self-Determination Theory (SDT; Deci & Ryan, 2000; Ryan & Deci, 2017) both highlight the key role of the fit between youth's developmental needs for relatedness (i.e., belongingness), for autonomy (i.e., volition), for competence (i.e., mastery), and for safety (i.e., physical and psychological security) and school environment characteristics as critical drivers of functioning.

To operationalize this perspective, Morin et al. (2013, also see Aldridge & McChesney, 2018) proposed a three-component classification of youth's school experiences. The first *interpersonal component* focuses on the role played by school experiences for the fulfillment of youth's needs for relatedness and belongingness. Following from Morin et al. (2013), this component is operationalized by youth's perceptions of their school relational (the quality of the relations occurring between students and between teachers and students) and bonding (youth's feelings of school belongingness) climate. The *organizational component* focuses on the role played by schools in supporting youth's needs for autonomy and safety in a balanced manner, which also entails youth's perceptions of justice, equity, and fairness. An optimal school organization thus needs to balance autonomy with safety and order. Youth's perceptions of being treated fairly at school (i.e., fairness climate) form a key indicator that this balance has been

attained (e.g., Morin et al., 2009, 2013). However, no examination of the role played by the organizational component of youth's school experiences would be complete without the consideration of youth's direct exposure to peer victimization, as a core mechanism likely to interfere with their need for safety. Finally, the *instructional component* focuses on the role played by schools in nurturing youth's needs for competence and achievement. This component thus specifically focuses on schools' educational climate (i.e., youth's perceptions of whether learning, mastery, and competence are valued in the school) and students' achievement as key determinants of youth's need for competence (Morin et al., 2013). Given their more limited cognitive skills, youth with ID more commonly have lower levels of academic achievement, which in turn contribute to a fear of failing (Datta et al., 2013), making this component of their school experience particularly important to consider in relation to psychosocial adjustment (Sainio et al., 2019; Swanson & Howell, 1996).

Unfortunately, beyond research documenting the risks posed by exposure to peer victimization for the psychological adaptation of youth with ID (e.g., Chiu et al., 2017; Doyle & Sullivan, 2017; Olivier et al., 2020; Reiter & Lapidot-Lefler, 2007; Ung et al., 2016; Whitney et al., 2019; Wright, 2017), very limited research has considered the role played by any other elements of their school lives, alone or in combination (for exceptions, see Klein et al., 2018; Olivier et al., 2020; Wright, 2017). The present thesis will thus include a first effort to document the relevance of this operationalization of school life components among youth with ID.

The Present Thesis

Whereas past research has revealed the important role of the home and school contexts in the development of TD youth, there is a lack of research on the role of the various components of these two critically important life contexts among youth with ID. The few studies that investigated the role played by these social factors among youth with ID have typically relied on third-party informants, which are unreliable when it comes to assessing youth's perspective (Turk et al., 2012). For instance, youth with ID have a distinct perspective on their relationships with parents and with teachers (Dubé et al., 2022). For TD youth, we know that anxiety, depression and aggressive behaviors tend to increase (while prosocial behaviors tend to decrease) in the context of poor social relationships involving parents, teachers, and peers (Drugli, 2013, Averdijk et al., 2013), as well as when youth experience loneliness and low levels of school belonging (Morin et al., 2009). Acknowledging that youth with ID are at increased risk of experiencing these types of psychosocial

adaptation difficulties, in addition to being especially likely to benefit from positive social interactions (Schmückle et al., 2017), reinforces the importance of investigating the links between these social factors and the emergence of psychosocial adaptation difficulties in this population.

This thesis first seeks to achieve a broader understanding of the role of STR and peer relationships, beyond that of PCR, in the development of internalizing symptoms and prosocial/aggressive behaviors among youth with ID. To this end, we first present the results of a cross-sectional person-centered study (Morin & Litalien, 2019; Morin et al., 2018) focused on the social interaction profiles observed among a large sample of youth with ID and on the implications of these profiles for psychosocial adaptation (i.e., self-esteem, aggressive behaviors, and prosocial behaviors) (Paper 1). We then present the results of a longitudinal variable-centered study focused on the dual role of PCR and STR in the development of symptoms of depression among youth with ID, using a latent change approach (McArdle, 2009) (Paper 2). Then, to further our understanding of the relevance of the various components of school life for youth with ID, we present the results from another longitudinal variable-centered study looking at how these components influence youth's trajectories of anxiety, using a latent curve modeling approach (Bollen & Curran, 2006) (Paper 3). By relying on a combination of statistical methodologies, our hope is to achieve a broader view of the combined role of various components of social interactions and school life for the development of psychosocial adaptation difficulties among youth with ID.

CHAPTER 2:

Study 1. Social Integration Profiles Among Youth with Intellectual Disabilities: Associations with Indicators of Psychosocial Adjustment

Neurodevelopmental disorders are a set of conditions, which first emerge early in development and entail impairments in personal, social, academic or occupational functioning (American Psychiatric Association, 2013). These disorders include intellectual disabilities, communication disorders, autism spectrum disorders, attention-deficit/hyperactivity disorder, specific learning disorders, and motor disorders. In this study, we focus specifically on intellectual disability. Given the common co-occurrence of neurodevelopmental disorders, the findings from this study are thus likely to extend to a large number of individuals with various forms of neurodevelopmental disorders. For instance, individuals with autism spectrum disorder often have an intellectual disability (American Psychiatric Association, 2013), which plays a key role in defining specific subgroups of youth with an autism spectrum disorder (Nordhal et al., 2022).

An intellectual disability (ID) is defined by the presence of significant limitations, varying in severity, in general mental abilities and adaptive functioning in one or more out of three domains (i.e., conceptual, social, and practical; American Psychological Association [APA], 2013). Despite its utility, this definition hides the full complexity of living with an ID. For instance, because of their more limited cognitive abilities, youth with ID often present lower levels of functional autonomy, making them more dependent on their adult caregivers than their typically developing peers (e.g., Craven et al., 2015). Moreover, youth with ID have been found to present a high risk of experiencing poorer interpersonal relationships with their caregivers and peers, of being victimized at school, and of feeling socially isolated and lonely (e.g., Blacher et al., 2009; Hamadi & Fletcher, 2021; Maïano et al., 2016; Tipton et al., 2013; Tipton-Fisler et al., 2018). In turn, these social interaction difficulties place them at risk for a variety of psychosocial adaptation problems, including lower self-esteem, difficulties in displaying proper prosocial behaviors, and a greater propensity to rely on aggressive behaviors (e.g., Caplan et al., 2016; Maïano et al., 2016, 2019; Te Brinke, et al., 2021).

However, by implicitly suggesting that all youth with ID are likely to display a problematic pattern of social interactions placing them at risk of poor psychosocial adaptation, these observations are misleading. Just like their typically developing peers, and despite their possibly

higher level of risk of experiencing some psychosocial difficulties, many individuals with ID display an entirely adequate social interaction profile characterized by positive social relationships with their parents, teachers, and peers. Thus, despite their value in allowing us to better capture the risks associated with ID, these observations also contribute to reinforcing the deficit model that has long prevailed in ID research, focusing on problems, costs, and risks (e.g., Maulik et al., 2011), while ignoring strengths, benefits, and resilience (e.g., d'Amato et al., 2005; Dinishak, 2016). Endorsing the need to move away from a sole focus on deficits (e.g., Halfon et al., 2012; Soresi et al., 2011), we propose person-centered analyses (Morin et al., 2018) as a way to achieve a more comprehensive picture of richer and poorer social interaction profiles, and the relative prevalence of both, among populations of youth with ID.

Traditional variable-centered approaches (e.g., regression, analysis of variance, structural equation modeling) focus on average relations observed in a sample, while implicitly assuming that these relations generalize to every individual in the sample. However, by uncovering that ID places some youth at risk for various difficulties, variable-centered results generally ignore the presence of the substantial inter-individual heterogeneity that characterizes youth with ID (e.g., Hodapp & Dykens, 2012). In contrast, person-centered analyses are explicitly designed to uncover discrete subpopulations, referred to as profiles, of youth presenting qualitatively distinct social interaction configurations (e.g., Morin et al., 2018). Although some of those subpopulations will undoubtedly characterize youth exposed to various combinations of poor social interactions with parents, teachers, and peers, other profiles should depict youth characterized by unique patterns of rich social interactions. As a result, person-centered analyses make it possible to focus on both risk and protective factors (i.e., poor and rich social interaction profiles), to holistically understand the various combinations taken by a variety of risk factors among the sample under study, and to document the implications of these various configurations in terms of psychosocial adaptation.

The present study was designed to expand upon research recently conducted among typically developing populations to understand the social interaction profiles of youth and their impact for psychosocial adaptation outcomes (e.g., Ciarrochi et al., 2017), while specifically focusing on youth with ID. Moreover, whereas most research conducted among youth with ID has ignored their unique perspective based on the erroneous assumption that their more limited cognitive abilities make it impossible for them to reliably report their internal states (Bear et al., 2002; Turk et al., 2012), the present study focuses on the unique perspective of youth with ID by relying on a

suite of instruments specifically validated to allow them to express their own voices. More precisely, the present study first seeks to identify various subpopulations of youth presenting distinct patterns of social interactions, while accounting for the quality of their social relationships with their parents (warmth and conflict), teachers (warmth and conflict), peers (peer relationships and loneliness), and social life at school more generally (belonginess and victimization). To document the relevance of these profiles, the present study then considers their implications for youth psychosocial adaptation (i.e., self-esteem, prosocial behaviors, and aggressive behaviors).

Social Interactions

Over the course of development, different kinds of social relationships come to play a central role in youth's adaptation. In the beginning, early attachment relationships between youth and their parents form the foundation of all future relationships (e.g., Bowlby, 1973). Secure attachments emerge from warm and responsive interactions with parents and pave the way for positive future relationships with adult caregivers and peers, whereas insecure attachment patterns emerge from unresponsive, unreliable, or insensitive interactions with parents and increase the risk for future relational difficulties (e.g., Ainsworth, 1989; Planalp & Braugart-Rieker, 2013). As children mature, further interactions with their parents build on these early attachments to form the basis of parent-child relationships (PCR). Research suggests that youth exposed to warm, responsive, and supportive PCR tend to fair better developmentally that those subjected to controlling behaviors and conflictual PCR (Baumrind, 1991; Lewis, 1981; Smokowski et al., 2015).

When children enter school, teachers and peers become increasingly important to their social lives and will eventually come to play a role comparable to that of parents when reaching adolescence (e.g., Eccles & Roeser, 2009). However, although school life provides a unique opportunity for youth to develop relationships that differ in kind from those they share with their parents, attachment theory proposes that youth still tend to transpose the internal working models formed as part of their early interactions with their parents to these future interactions (Bowlby, 1973). Research has generally supported this expectation by showing that youth's social relationships with their peers (e.g., Blacher et al., 2009; McIntyre et al., 2006; Naber et al., 2007; Raaska et al., 2012; Tipton et al., 2013) and teachers (e.g., Ciarrochi, et al., 2017; Sabol & Pianta, 2012; Shulman et al., 1994; Verschueren & Koomen, 2012) tend to be of a similar quality to those they share with their parents. Because of this similarity, youth relationships with their parents (i.e., PCR) and teachers (i.e., student-teacher relationships, STR) are often operationalized along the

same two dimensions of warmth and conflict (Birch & Ladd, 1997; Boele et al., 2019; Pianta, 1999; Searle et al., 2013). Warmth refers to positive, responsive, and caring relationships with adult caregivers, whereas conflict refers to unpleasant, unresponsive, unsupportive, and even hostile interactions (Davies & Sturge-Apple, 2014; Dubé et al., 2022; Pianta, 1999).

Contrasting with interactions involving adult caregivers, peer interactions tend to be more reciprocal and less hierarchical. Although peers can act in a supportive manner, the type and level of support that they provide is qualitatively distinct from that provided by parents. Likewise, although peer relationships can certainly be conflictual, this conflict seldom emerges from failed attempts to assert authority as is typically the case with adult caregivers (e.g., Lewis, 1981). As a result, peer relationships are more commonly operationalized by a "sense of closeness" and "shared activities", which typically encompass the presence of warmth and the absence of conflict (e.g., Bukowski et al., 1987; Pianta, 2001; Shulman et al., 1994; Verschueren & Koomen, 2012). Moreover, although youth cannot avoid relationships with their parents and teachers, some may unfortunately find themselves without positive peer relationships, leading them to experience feelings of loneliness (e.g., Asher et al., 1984; Morin et al., 2009). Furthermore, many interactions between youth and their peers occur within schools. Schools are unique social systems (Bronfenbrenner, & Morris, 1998) able to nurture a sense of belonging among youth, and thus to further support their need for relatedness (e.g., Morin et al., 2009, 2013). In contrast, schools can also, unfortunately, expose youth to negative experiences of hidden (e.g., theft, vandalism), verbal (e.g., insults, threats), and physical (e.g., injury) victimization, thus adding a potentially conflictual nature to youth's peer interactions. Thus, in addition to considering the quality (warmth and conflict) of youth social relationships with their parents and teachers, we also consider two aspects of their peer relationships (positive relationships and loneliness) and two aspects of their social life at school (belonginess and victimization).

Social Interaction Profiles among Youth with ID

The ability to achieve a comprehensive understanding of youth social interaction requires the simultaneous consideration of all of these facets of social functioning, which has rarely been done in research. Fortunately, some person-centered studies have started to document the most commonly occurring configurations of social support to which typically developing youth were exposed (Ciarrochi et al., 2017; Jager, 2011; Laursen, 2006; Scholte et al., 2001). Consistent with the strong role ascribed to early attachment schemas in guiding the development of future

relationships (e.g., Bowlby, 1973), these studies found evidence that relationships with parents, teachers, and peers tended to be similar in quality for most profiles of youth. However, consistent with the idea that positive experiences occurring outside of the home setting can help youth to develop more desirable social interactions patterns, youth profiles characterized by diverging levels of support across sources were also identified. More worrisome, however, was Ciarrochi et al. (2017, p. 1164) conclusion that:

> *A small percentage of the socially "rich" students (Integrated: ~2.5%) reported receiving substantial support from teachers, parents, and peers. A slightly higher percentage of students felt enriched with social support from their peers (~8%), or from their parents and peers (~5%). As with wealth distribution, the "middle classes" were more numerous, with a third of students reported moderately low and moderately high levels of social support from all sources. In contrast, a considerably large "poor" group (Isolated: ~25%) reported little support from parents, teachers or peers.*

What is most worrisome is that this conclusion applies to typically developing youth. Indeed, although only a limited number of studies have been conducted to investigate similar questions among samples of youth with ID, research evidence has generally indicated that these youth tend to present a higher risk of victimization and social isolation (Carter & Spencer, 2006; Sheard et al., 2001; Tipton et al., 2013; Tipton-Fisler et al., 2018; Zeedyk et al., 2014) and of sharing poorer relationships with their adult caregivers (Hamadi & Fletcher, 2021; Teague et al., 2018) relative to their typically developing peers. To our knowledge, only two similar studies have been conducted among samples of youth with autism spectrum disorder (ASD). First, in a study of 178 children with ASD and relying on teacher and parental reports of academic and social functioning, Zaidman-Zait et al. (2021) identified four profiles of youth characterized by: (1) high academic and social functioning (30.5%); (2) low academic but average social functioning (24%); (3) average academic functioning but low social functioning (21%); and (4) low academic and social school functioning (12%). Second, in a study of 164 children with ASD and relying on parental reports of social competencies (e.g., social communication, affiliation, motivation, recognition, and unusual approach), Uljarević et al., (2020) identified five profiles characterized by: (1) moderate with impaired social communication and affiliation; (2) socially severe; (3) moderate with impaired social recognition; (4) mild; and (5) socially adaptive (unfortunately, these authors did not report the size of these profiles).

Despite their interest, these studies present multiple limitations. First, by focusing solely on youth with ASD, none of them has considered the more prevalent population of youth with ID, making it impossible to assess whether or not these results are specific to ASD. Second, both studies focused on populations of children, whereas it is generally well-established that out-of-home social relationships, particularly those involving peers, become increasingly important in adolescence (Ciarrochi et al., 2017; Eccles & Roeser, 2009). Third, both studies relied on informant reports, which might have been unavoidable in research focusing on young children with ASD, but which still makes it impossible to fully grasp the nature of these social interaction profiles as they are experienced by the youth with ID themselves. Lastly, by focusing on a mixture of indicators of social and academic functioning (Zaidman-Zait et al. (2021) or of generic indicators of social competencies (rather than specific to each type of social interaction), these studies fail to address the key question of how well do adolescents with ID fare in terms of social interactions. This study addresses these limitations, in addition to documenting the role played by these social interaction profiles for youth adaptation.

Social Interaction Profiles: Implications for Psychosocial Adaptation among Youth with ID

When considering the implications of youth's social interaction profiles, we specifically focus on three components of their psychosocial adaptation: their self-esteem, their prosocial behaviors, and their aggressive behaviors. Thus, whereas the profile indicators relate to relationship indicators (i.e., characterizing interactions between youth and their surroundings), the psychosocial adaptation outcomes are individual characteristics and behaviors likely to be influenced by youth's social interactions. Self-esteem captures youth's subjective evaluation of their worth as a person across all domains of functioning (e.g., Donnellan et al., 2011; Rosenberg et al., 1995), and represents a core component of social adaptation, psychological wellbeing, and happiness throughout the lifespan (Craven & Marsh, 2008; Neff, 2011; Neff & Vonk, 2009). Prosocial behaviors refer to types of social behaviors designed to benefit or support others (e.g., sharing, being considerate, helping; APA, 2020). In contrast, aggressive behaviors, which encompass verbal and physical aggression, seek to hurt others either in reaction to frustration (reactive aggression) or without prior provocation (proactive aggression; APA, 2020; Salmivalli & Nieminen, 2002). Just like self-esteem, the ability to display prosocial behaviors and to refrain from aggressive behaviors are also core components of youth life adaptation and psychological wellbeing (e.g., Balboni et al., 2020; Dell'Armo & Tassé, 2019).

Unfortunately, youth with ID have been shown to display lower levels of self-esteem, fewer prosocial behaviors, and more aggressive behaviors than their typically developing peers (Bailey et al., 2019; Caplan et al., 2016; Maïano et al., 2016, 2019; Te Brinke, et al., 2021). Some of these difficulties might be related to the lower levels of cognitive ability of youth with ID, leading them to misread social information (Visser et al., 2015) or to incorporate their "special" status into their core self-perceptions (Maïano et al., 2019). However, research has also shown that these components of youth psychosocial adaptation were intimately related to their ability to share positive social interactions with proactive adults and peers and could even improve as a result of such interactions (e.g., Bailey et al., 2019; Craven & Marsh, 2008; Kurtek, 2018).

Attachment theory (Bowlby, 1973) can help us to better understand these positive associations between the quality of social interactions and psychosocial adaption. Attachment theory proposes that children exposed to secure attachment bonds early in life and to more positive social relationships as they grow are likely to develop more positive and secure cognitive representations of themselves and others (Birch & Ladd, 1997; Mikulincer, 1995). With emotional security also comes the ability to be more caring and supportive toward others, as well as a reduced tendency to rely on aggressive behaviors in their interactions with others (Obsuth et al., 2017; Pianta, 1999). In contrast, youth exposed to more insecure attachments and poor social interactions are more likely to develop distorted working models of themselves as unworthy of love and attention, and of others as more hostile or dismissive (Bowlby, 1973). As a result, they are more likely to display anger and aggression, feelings of worthlessness and disconnection, and less likely to want to help others and to positively interact with them (Mikulincer, 1995; Rohner, 2004; Shaver et al., 2019; Steele & Steele, 2014).

Although very few studies have attempted to examine the role played by social interaction components and psychosocial adaptation among youth with ID, those few studies generally support the idea that these components help support self-esteem and prosocial behaviors, and reduce the tendency to rely on aggressive behaviors. For instance, research has generally supported the benefits of PCR warmth, and the harm associated with PCR conflict, for various components of psychosocial adaptation among youth with ID (e.g., Baker et al., 2019; Chadwick et al., 2008; Jones, 2012; Muris & Maas, 1004; Schuiringa et al., 2015). Similar findings have been observed in regards to STR (e.g., Al-Yagon, 2016; Blacher et al., 2009; Dubé et al., 2022), peer relationships (e.g., Caplan et al., 2016; Schuiringa et al., 2015; Tipton et al., 2013) and school belonging (Crouch

et al., 2014). Lastly, exposure to victimization has been shown to result in increased risks of aggression (Clark et al., 2016), lower self-esteem (Nambiar et al., 2020), and lower prosocial behaviors (Reiter & Lapidot-Lefler, 2007) among youth with ID.

Unfortunately, none of the previous person-centered studies conducted among samples of youth with disabilities considered the psychosocial adaptation outcomes associated with these profiles (Uljarević, 2020; Zaidman-Zait et al., 2021). However, person-centered studies conducted among typically developing youth confirmed the presence of higher levels of psychosocial adaptation among youth corresponding to profiles characterized by a more positive social interaction configuration (Ciarrochi et al., 2017; Jager, 2011; Laursen, 2006; Olivier et al., 2022b; Scholte et al., 2001). Moreover, Ciarrochi et al. (2017) found that the most benefits came from moving from a profile characterized by support from zero to one source, with diminishing returns associated with additional sources of support.

The Present Study

The primary goal of this study is to identify the most common configurations, or profiles, of social interactions among a sample of youth with ID recruited in Australia and Canada while considering PCR (warmth and conflict), STR (warmth and conflict), peer relationships, loneliness, victimization, and school belongingness. In light of the limited information provided by previous person-centered research conducted among typically developing populations (Ciarrochi et al., 2017; Jager, 2011; Laursen, 2006; Scholte et al., 2001) as well as youth with ASD (Uljarević et al., 2020; Zaidman-Zait et al., 2021), we expect the identification of four to five profiles (Hypothesis 1). We further expect most of these profiles to display a matching (i.e., all positive, all negative, etc.) configuration of social interactions across dimensions (Hypothesis 2), although we also expect a minority of these profiles to present a configuration dominated by specific types of social interactions (Hypothesis 3; e.g., positive social interactions with adult caregivers and poor social interactions with peers and at school). Lastly, following from Ciarrocchi et al. (2017) and Zaidman-Zait et al. (2021), we expect that most (50% or more) youth would present a profile characterized by a generally average ("middle class") social interaction configuration, with fewer corresponding to "socially rich" (25% or less) or "socially poor" (25% or less) configurations (Hypothesis 4).

To better understand the nature of these profiles, as well as the extent to which they differ across meaningful characteristics of the participants, we consider the extent to which youth's

likelihood of profile membership will be influenced by their main characteristics [mild or moderate levels of ID, country of residence (i.e., Australia and Canada), biological sex, comorbidity, and age]. Although this second objective remains mainly descriptive (i.e., inductive) in nature, it is important to note that Uljarević et al. (2020) reported a positive association between youth's IQ and membership into their "socially severe" profile, while Zaidman-Zait et al. (2021) reported associations between nonverbal IQ and youth likelihood of profile membership. Both studies also reported associations between other types of adaptation difficulties and youth likelihood of membership into less desirable profiles. Based on these results, we thus expect youth's levels of ID and the presence of a comorbid disorder to increase their likelihood of membership into profiles characterized by less desirable social interaction configurations (Hypothesis 5). While some studies have reported sex and age differences in social skills and relationship quality among samples of typically developing youth (Birch & Ladd, 1997; Brown & Gilligan, 1993; Ciarrochi et al., 2017; Hajovsky et al., 2017; Matson, 2017), similar differences have never been observed among samples of youth with ID (Dubé et al., 2022; Olivier et al., 2021; Uljarević et al., 2020). For this reason, we do not expect these variables to influence youth's likelihood of profile membership (Hypothesis 6). Lastly, as the study was conducted in two countries (Australia and Canada), we consider the role played by youth's country of residence mainly to verify possible differences related to the characteristics of the present sample, and thus do not expect this variable to play a role in the prediction of profile membership (Hypothesis 7). This expectation is consistent with the cultural, educational, and standard-of life similarities across Australia and Canada.

Lastly, we document the implications of these profiles for youth psychosocial adaptation outcomes (self-esteem, prosocial behaviors, and aggressive behaviors). In this regard and based on the bulk of prior research reviewed thus far, we expect profiles characterized by more positive social interaction configurations (higher levels of PCR warmth, STR warmth, peer relationships, and school belonging, and lower levels of PCR conflict, STR conflict, loneliness and victimization) to be associated with more desirable outcome levels, and those characterized by poorer social interaction configurations to be associated with less desirable outcomes (Hypothesis 8). However, following Ciarrochi et al. (2017), we expect diminishing returns, so that the greatest outcome differences should be observed between the poorer social interaction profile and the next most desirable profile, with smaller differences in social functioning occurring between the most positive profiles (Hypothesis 9).

Method

Participants

The present study relies on a sample of 393 youth with mild (48.2%) to moderate (51.8%) levels of ID. These students were recruited from secondary schools located in Canada (French-speaking, n=141, 49.60% males) and Australia (English-speaking, n=252, 67.30% males). Participants' age ranged from 11–22 years old (M=15.70, SD=2.16). Using the text revised version of the revised fourth version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; 2000), the official ID classification system at the time of data collection, those with a global IQ between 35 and 49 were classified as having a moderate ID, while those with a global IQ between 50 and 70 were classified as having a mild ID. In Canada, most youth attended regular schools but were enrolled in special classrooms (69.01%), while some attended special schools (30.99%). In Australia, all youth were recruited from regular schools and of those, 92.6% were enrolled in special classrooms. The parents (79.33% were mothers) from 179 youth (95 in Canada and 84 in Australia) also completed a questionnaire related to the prosocial and aggressive behaviors of the target youth (55.30% males; 42.60% mild ID; 57.40% Moderate ID). Likewise, the homeroom teachers (81.9% of whom were females) also completed a questionnaire related to the prosocial and aggressive behaviors of 282 youth (119 in Canada and 163 in Australia 59.93% males; 45.53% mild ID; 54.47% Moderate ID).

Procedure

Recruitment was facilitated by schools or community organizations. In Australia, no compensation was offered for participation, whereas Canadian participants were offered (each year) a chance to win one out of 40 gift certificates ($30 CAD) as an incentive for their participation. Parents actively provided signed informed consent for the participation of all children, for their own participation, and to allow us to request teacher participation and to access school records. For youth recruited at school (N = 130 in Canada and all 253 participants in Australia), this consent form (as well as an information letter and the parental questionnaire) was directly sent to the parents (or legal representatives) by the school. For the few youth recruited outside of school (N = 11 in Canada and none in Australia), these materials were directly given to parents by the research team and returned using a reply-paid envelope (the same procedure was used for all parental questionnaires). All youth were also asked to actively and voluntarily consent to their own participation. As part of these consent procedures, all participants were informed

about the goals and procedures of the study, about their right not to participate or to withdraw from the study at any time without any consequences and ensured that their responses would be kept entirely confidential.

The parental consent procedures granted the researchers access to school records for youth recruited inside as well as outside of schools. These records included information about youth's most recent assessment of intellectual functioning (only youth with an official school-based ID classification were recruited). The Wechsler (2008) Intelligence Scale for Children – Fourth Edition (WISC-IV) was the IQ test most frequently used by the schools in both countries. However, when the most current IQ score was obtained more than 4 years prior to the study, new IQ assessments were conducted by registered psychologists using the WISC-IV, the Wechsler Adult Intelligence Scale-IV, or the Leiter international performance scale-revised (Roid & Miller, 1997), depending on age and verbal ability. In Australia, 34 participants were thus assessed by our research team, all of them using the Wechsler version corresponding to their chronological age (31 WISC-IV and 3 WAIS-IV). In Canada, 77 participants were thus assessed, 63 of them using the Wechsler version (29 WISC-IV and 34 WAIS-IV) corresponding to their chronological age, and 14 (with lower verbal expression skills) using the Leiter. This breakdown (in terms of IQ tests) is not available for most participants for whom we obtained IQ scores from the school records.

Participants were met at their school (or at a time and location most convenient for the parents for those recruited outside of schools) by trained research assistants who explained the goals and procedures of the study. Using sample questions for each section of the questionnaire (involving graphical displays and pictograms), the assistants explained the response scales. For participants with mild levels of ID, testing was conducted in small groups of up to 8 participants (or individually for youth recruited outside of schools). For participants with moderate levels of ID, testing was done with 1 or 2 participants at a time. The physical separation between participants was maximised, and a read-aloud procedure was used to increase understanding. Participants were encouraged to ask questions and circled their responses on a paper questionnaire. When answering questions, the research assistants only focused on youth's understanding of the items and response scales rather than on the content of their individual responses. Despite this help, participants occasionally remained unable to understand a question and were instructed to select the "do not understand" option. Those responses (4.05% to 7.09 %; M=5.05 %) were treated as missing values. During data collection, research assistants always had access (via phone or in person) to one

member of the research team. Teachers were encouraged to complete their own questionnaires during data collection, allowing members of the research team to directly recover their questionnaires. They could also complete the questionnaires at a time more convenient for them and return their responses using a reply-paid envelope.

Measures

To facilitate understanding, all instruments relied on a graphically-anchored response scale, and incorporated pictograms to describe the words used in all items. All self-report questionnaires were first trialed in two pilot studies involving, respectively, 18 (13-21 years old; n=8 in Canada and n=10 in Australia) and 16 (n=6 in Canada and n=10 in Australia) youth with ID to ensure their suitability.

Relationship Quality (Profile Indicator). Youth were asked to describe the quality of their relationship with their teachers and parents using an instrument specifically developed for self-report by youth with ID by Dubé et al. (2022) from the Student-Teacher Relationship Scale (Pianta, 2001). This 26-item scale includes six items measuring teacher warmth (e.g., "My teacher is nice and friendly with me"; α=.803[1]), six items measuring parental warmth (e.g., "I trust my parents"; α=.849), seven items measuring teacher conflict (e.g., "I don't really like my teacher"; α=.826) and seven items measuring parental conflict (e.g., "I often argue with my parents"; α=.860). All items were rated using a five-point scale ranging from "*totally disagree*" to "*totally agree*." Since students attending special schools and special classrooms in both countries spend most of their time with the same teacher, these students were asked to complete the teacher questionnaires in reference to that teacher. Australian youth enrolled in a regular classroom (7.4%) were instructed to complete the teacher questionnaire in reference to the teacher they perceived as the most significant to them.

Peer Relationships (Profile Indicator). Youth were asked to report on their peer relationships using the relevant subscale from the Self-Description Questionnaire I – Individual Administration for people with ID (Marsh et al., 2006). The eight items from this subscale (e.g., "I am popular with kids or my own age"; α=.913) were rated on a six-point scale (i.e., "No, I totally disagree" associated with a very unhappy face to "Yes, I totally agree" associated with a very happy face).

[1] The omega coefficients of composite reliability (McDonald, 1970) were calculated as part of preliminary measurement models described later (see Tables S1 and S2 in the online supplements).

Loneliness (Profile Indicator). Youth feelings of loneliness at school were measured using Morin et al.'s (2009) short version of Asher et al.'s (1984) questionnaire (five-item, e.g., "Nobody plays with me at school"; α=.746). These items were maximally simplified and the original response scale (i.e., "Not true" to "Always true") was replaced by a five-point answer scale including graphical faces (i.e., "No, I totally disagree" associated with a very unhappy face to "Yes, I totally agree" associated with a very happy face). This version was previously found to be suitable for self-report among youth with ID by Maïano et al. (2022) and Olivier et al. (2022a), who reported evidence for the factor validity and reliability of this measure among youth with ID.

School Belonging (Profile Indicator). Youth's sense of school belonging was measured using a four-item subscale (e.g., "I am proud of my school"; α=.832) taken from the elementary school version of the Socio-Educative Questionnaire (Janosz & Bouthillier, 2007). This instrument was simplified using the same procedure used for the adaptation of the loneliness measure (Maïano et al., 2022; Olivier et al., 2022a), and items were rated using the same five-point scale (i.e., "No, I totally disagree" with a very unhappy face to "Yes, I totally agree" with a very happy face).

Victimization (Profile Indicator). Youth were asked to report the frequency of their exposition to victimization using the relevant items taken from the Socio-Educative Questionnaire (Janosz & Bouthillier, 2007) and adapted for self-report among youth with ID by Olivier et al. (2020, 2021), who reported evidence supporting the factor validity, reliability, and convergent validity of this measure in relation to teacher and parental reports on the same measure. These 17 items (α=.946) referred to acts of verbal (e.g., "Another student said mean thing about me to other students"), physical (e.g., "Another student pushed, hit or kicked me"), and relational victimization (e.g., "Another student didn't want me to play with their friends"), and were rated on a frequency scale ranging from 0 (never) to 5 (5 times or more).

Self-Esteem (Outcome). Youth were asked to report their global self-esteem using the relevant subscale from the Self-Description Questionnaire I – Individual Administration for people with ID (Marsh et al., 2006). The eight items from this subscale (e.g., "I am good at a lot of things"; α=.900) were rated using a six-point scale (i.e., "No, I totally disagree" associated with a very unhappy face to "Yes, I totally agree" associated with a very happy face).

Social Behaviors (Outcomes). We relied on a 10-item questionnaire specifically validated by Olivier et al. (2021) for the assessment of prosocial and aggressive behaviors among youth with ID, their parents and their teachers. Youth were asked to rate their prosocial (five items, e.g., "I

helped others"; α=.802) and aggressive (five items, e.g., "I became physically aggressive or angry when someone hurt me"; α=.875) behaviors using a frequency scale ranging from 0 (*never*) to 5 (*5 times or more*). Parents and teachers were asked to complete similar items to rate the target youth prosocial (seven items, e.g., "This student/My child shares with others"; $\alpha_{Teacher}$=.882; α_{Parent}=.881) and aggressive (eight items, e.g., "This student/My child hit, bit or kicked another student/child"; $\alpha_{Teacher}$=.897; α_{Parent}=.887) behaviors using a five-point scale ranging from 1 (*never*) to 5 (*very often*).

Covariates (Predictors). Youth's sex (0=female; 1=male), country of residence (0=Canada; 1=Australia), ID level (0=mild; 1=moderate), comorbidity (0=no comorbidity, 1=comorbidity) and age were obtained via official school records.

Analysis

Preliminary Analyses

All analyses were conducted using Mplus 8.3 (Muthén & Muthén, 2019). Preliminary measurement models were estimated to derive factor scores (estimated in standardized units with *M*=0 and *SD*=1) for the main analyses. These models were estimated using the robust weighted least squares estimator with mean and variance adjusted statistics (WLSMV), which provides a closer representation of participants' response process than maximum likelihood-based estimators for ordinal items including five or fewer response categories and/or following asymmetric response thresholds, such as the items used in this study (Finney & DiStefano, 2013; Li, 2016). The low level of missing data at the item level (self-reports: 7.38 % to 18.07%, *M*=11.27%; teacher reports 0% to 2.48%, *M*=0.76%; parental reports: 0% to 1.68%, *M*=0.82%) were handled by the default algorithms implemented in Mplus for WLSMV estimation, allowing us to estimate our models using all available information from all participants (Asparouhov & Muthén, 2010; Enders, 2010).

The measurement model underpinning the profile indicators was estimating via a confirmatory factor analytic (CFA) model including eight correlated factors representing youth's self-reports of parental and teacher warmth and conflict, peer relationships, loneliness, school belongingness and victimization. In this model, a priori correlated uniquenesses (CUs) were added to control for the methodological artefact associated with the parallel wording of items related to youth's relationships with their teachers and parents (Morin et al., 2020). The measurement model underpinning the outcomes was estimated using a similar approach incorporating seven CFA

factors representing youth's self-reports of their own self-esteem as well as youth, parental and teacher reports of youth's prosocial and aggressive behaviors. This model also incorporated a priori CUs between parallel items answered by teachers, parents, and youth (Morin et al., 2020).

The goodness-of fit of these models was assessed using common fit indices (Hu & Bentler, 1999; Marsh et al., 2005): the chi-square (χ^2), the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). CFI and TLI values are typically considered to be adequate or excellent when they are respectively above .90 and .95. RMSEA values are considered to be adequate or excellent when they are respectively below .08 and .06. As the chi-square test is known to be oversensitive to minor model misspecifications and sample size (Marsh et al., 2005), it is simply reported to ensure full disclosure, but not used in model evaluation. Finally, we also report the model-based composite reliability of all factors (McDonald, 1970).

Latent Profile Analyses (LPA)

Our main LPA were estimated using the robust maximum-likelihood estimator (MLR). Models including one to eight profiles were estimated using 5000 sets of random start values allowed 2000 iterations and 200 final optimizations (Hipp & Bauer, 2006). When selecting the model with the optimal number of profiles, we considered the meaningfulness, theoretical conformity, and statistical adequacy of the solutions, in addition to various statistical indicators (e.g., Morin, 2016; Morin & Litalien, 2019): the Akaike information criterion (AIC), the Bayesian information criterion (BIC), the consistent AIC (CAIC), the sample-size adjusted BIC (ABIC), the adjusted Lo-Mendell-Rubin (aLMR) likelihood ratio test, and the bootstrap likelihood ratio test (BLRT). A better fitting solution has lower values on AIC, BIC, CAIC, and ABIC, while a non-significant p-value for the aLMR and BLRT suggests that a model with one less profile is superior. Simulation studies have demonstrated the utility of the CAIC, BIC, ABIC, and BLRT, while showing the inadequacy of the AIC and aLMR (e.g., Diallo et al., 2016, 2017; Peugh & Fan, 2013). Diallo et al. (2016) further showed that the BIC and CAIC were particularly useful when the classification accuracy of the model was high (i.e., entropy $\geq .800$), whereas the ABIC and BLRT were more useful when the classification accuracy was low (i.e., $\leq .600$). To ensure full disclosure, we report all indicators and put more emphasis on CAIC/BIC or ABIC/BLRT depending on the classification accuracy. Given that these indicators retain a strong sample-size dependency, they often fail to converge on a specific solution (Marsh et al., 2009). In this situation, "elbow plots"

should be examined to locate the point after which the slope representing the decrease in the value of the BIC, CAIC, and ABIC flattens to suggest the optimal number of profiles (Morin & Litalien, 2019).

Predictors and Outcomes

Sex, ID level, country of residence, age and the presence of comorbid conditions were directly added as predictors to the retained solution using a multinomial logistic regression link function to assess the associations between these variables and the likelihood of profile membership. In contrast, profile-specific outcome levels were directly integrated into the final LPA solution (allowing their means and variances to differ across profiles) to test whether they generalized across profiles. The statistical significance of the mean differences between each pair of profiles was tested using Mplus' MODEL CONSTRAINT function (i.e., the multivariate delta method; Raykov & Marcoulides, 2004).

Results

Preliminary Measurement Models

The results from the preliminary measurement models revealed an acceptable fit for the profile indicators solution (χ^2 = 2780.765, df = 1669, p < .001; CFI = .945, TLI = .942, RMSEA = .043 [90% CI .040, .045]), and an excellent level of fit for the outcomes solution (χ^2 = 1453.015, df = 1024, p < .001; CFI = .964, TLI = .961, RMSEA = .033 [90% CI .029, .037]). The standardized parameter estimates from the profile indicators solution are reported in Table S1 of the online supplements, and reveal well-defined (λ = -.711 to .949, *M* = .780) and reliable (ω =.835 to .971) factors. The standardized parameter estimates from the outcomes solution are reported in Table S2 of the online supplements and also reveal well-defined (λ = .437 to .958, *M* = .797) and reliable (ω =.837 to .959) factors. Factor scores were saved from these models for the main analyses. Correlations among all variables used in the main analyses are reported in Table S3 of the online supplements[2].

[2] We conducted one last set of analyses to verify whether the measurement models underlying our constructs were comparable (i.e., equivalent, or unbiased) across countries/linguistic versions via tests of configural (model), weak (loadings), strong (loadings and thresholds), and strict (loadings, thresholds, and uniquenesses) measurement invariance (Millsap, 2011). We also tested the equivalence of the *a priori* CUs incorporated to account for wording effects. These tests, reported in Table S4 of the online supplements, support the complete comparability (i.e., lack of measurement bias) of these models, as none of the tests resulted in a decrease in CFI or TLI ≥ .010 or in an increased in RMSEA ≥ .015 (Chen, 2007; Cheung & Rensvold, 2002).

Optimal Number of Profiles

The results from the alternative LPA solution are reported in Table 1 (the graphical elbow plot is presented in Figure S1 of the online supplements). For all of these models, the entropy values remained high (varying between .840 and .888), suggesting that more attention should be paid to the BIC and CAIC, which respectively reached their lowest points at 5 and 7 profiles. However, the elbow plot indicates that the decrease in the value of these indicators became negligible around 4 profiles. Considering these results, solutions including 3 to 7 profiles were carefully inspected. This inspection revealed statistically proper solutions, and indicated that additional profiles were theoretically meaningful, distinct, and interpretable up to the 4-profile solution. In contrast, adding a fifth (or sixth or seventh) profile to the solution led to the arbitrary division of one existing profile into two smaller ones with a similar shape. The 4-profile solution was therefore retained for interpretation, and is illustrated in Figure 1 (parameter estimates are reported in Table S5 of the online supplements).

Profiles 1 (23.24% of youth with ID) and 3 (28.37% of youth with ID) were both characterized by poor relationship quality (higher than average levels of conflict with parents and teachers, loneliness and victimization, as well as lower than average levels of warmth with parents and teachers, school belonging and peer relationships). However, Profile 3 was characterized by a more extreme configuration than Profile 1, and was thus labelled *Socially Rejected*, whereas Profile 1 was labelled *Socially Isolated*. In contrast, Profiles 2 (39.83%) and 4 (8.57%) were characterized by higher relationship quality (higher than average levels of warmth with parents and teachers, school belonging and peer relationships, and lower than average levels of conflict with parents and teachers, loneliness and victimization). However, Profile 4 presented a more extreme configuration than Profile 2 and was labelled *Socially Connected*, whereas Profile 2 was labelled *Socially Integrated*. However, it is important to note that the level of victimization was higher in the *Socially Connected* profile (4; close to the sample average) than in the *Socially Integrated* profile (2; below average).

Predictors of Profile Membership

The predictive results are reported in Table 2. Out of five predictors, only country of residence and ID level demonstrated statistically significant associations with youth's likelihood of profile membership. Youth living in Australia were more likely to belong to Profiles 1 (*Socially Isolated*) and 3 (*Socially Rejected*) relative to Profiles 2 (*Socially Integrated*) and 4 (*Socially*

Connected). Youth with moderate levels of ID were more likely to belong to Profiles 2 (*Socially Integrated*) and 4 (*Socially Connected*) relative to Profile 3 (*Socially Rejected*).

Outcomes of Profile Membership

The associations between the profiles and the outcomes are reported in Table 3. These results were generally consistent, showing that the most desirable outcomes (higher self-esteem and prosocial behaviors, and lower aggressive behaviors) tended to be associated with Profiles 2 (*Socially Integrated*) and 4 (*Socially Connected*), whereas the least desirable outcomes tended to be associated with Profiles 1 (*Socially Isolated*) and 3 (*Socially Rejected*). More specifically, youth's self-reported levels of self-esteem were highest in Profile 4 (*Socially Connected*), followed by Profile 2 (*Socially Integrated*), then by Profile 3 (*Socially Rejected*), and finally by Profile 1 (*Socially Isolated*). Similarly, youth's self-reported prosocial behaviors were highest in Profile 4 (*Socially Connected*), followed by Profile 2 (*Socially Integrated*) and 3 (*Socially Rejected*) which did not differ from one another, and then by Profile 1 (*Socially Isolated*). Teacher and parental reports of prosocial behaviors followed a similar, but less specific, pattern of associations, being lowest in Profile 3 (*Socially Rejected*), but comparable in Profiles 1 (*Socially Isolated*), 2 (*Socially Integrated*) and 4 (*Socially Connected)*. Youth's self-reports and teacher reports of aggressive behaviors showed similar associations with the profiles, being higher in Profile 3 (*Socially Rejected*) relative to all other profiles, which did not differ from one another. However, parental reports of aggressive behaviors resulted in slightly more precise differences, being highest in Profile 4 (*Socially Connected*) and Profile 3 (*Socially Rejected)*, which did not differ from one another, followed by Profile 2 (*Socially Integrated*) (which did not differ from Profile 4), and then by Profile 1 (*Socially Isolated*).

Discussion

The primary goal of this study was to identify the social interaction profiles present in a sample of youth with ID, and to determine how these profiles related to youth's psychosocial adaptation. In doing so, we also examine how youth likelihood of membership into these profiles was influenced by their own personal characteristics, focusing on their level of ID, their country of residence, their age, their biological sex, and the presence of comorbid disorders.

Social Interaction Profiles

Supporting Hypothesis 1, we identified four social interaction profiles among the current sample of youth with ID. This result is consistent with the number of profiles typically reported in

research conducted among samples of typically developing youth (Ciarrochi et al., 2017; Jager, 2011; Laursen, 2006; Scholte et al., 2001) and of youth with ASD (Uljarević, 2020; Zaidman-Zait et al., 2021). Supporting Hypothesis 2 and the results from prior research, most of these profiles displayed a matching configuration across indicators, with a single exception. Indeed, and partially supporting Hypothesis 3, levels of victimization were found to be slightly higher than average in the *Socially Connected* profile, which otherwise presented the most desirable configuration. This result suggest that this profile might represent "popular" students. Popular youth tend to be exposed to more numerous social interactions, both positive and negative, than their less popular peers (e.g., Zimmer-Gembeck & Webb, 2017). Our results suggest that this difference may extend to less popular youth characterized by profiles reflecting an otherwise satisfactory level of social interactions (i.e., the *Socially Integrated* profile). Studies suggest that externalizing behaviors such as aggression might also be used to increase or maintain one's popularity (e.g., Snyder, 2002; Snyder & Patterson, 1995), and are themselves known to result in more frequent rates of victimization (Marsh et al., 2011; Olivier et al., 2022b). However, our results suggest that youth, teachers, and parents did not report differences in the aggressive behaviors of Socially Integrated and Socially Connected youth. However, Socially Connected youth reported being more prosocial than all other youth, which suggests that they seek more frequent social interactions. In doing so, they expose themselves to both positive and negative interactions, potentially explaining their slightly higher than average levels of victimization. In sum, our results suggest that popularity or frequency of social interactions might explain the differences between the *Socially Integrated* profile, characterized by a positive social interaction configuration, and the *Socially Connected* profile, characterized by an even more positive configuration, but also by higher levels of victimization.

Similar mechanisms may explain the differences between the *Socially Isolated* and *Socially Rejected* profiles. Indeed, when we look at the positive indicators of social interactions considered in this study (i.e., teacher and parental warmth, peer relationships, and school belonginess), these two profiles appear to be quite similar to one another, although the levels observed in the latter profile remain slightly lower than those observed in the former. However, when we consider the negative indicators (i.e., teacher and parental conflict, loneliness, and victimization), the latter profile seem to be much more affected than the former. These comparisons led us to choose the label *Socially Rejected* to describe the latter profile, suggesting that these students might display a

problematic social interaction profile partly as a result of being actively rejected by their social environment (as supported by their high levels of victimization). In contrast the *Socially Isolated* profile simply appear to lack a positive connection to others, without suffering so much from negative forms of social contacts. As a result, we surmise that this *Socially Isolated* profile might represent the "shy" students, who manage to stay under the social radar (i.e., ignored), both positively and negatively. This conclusion is further reinforced by finding that *Socially Isolated* youth displayed comparable prosocial behaviors than *Socially Integrated* and *Socially Connected* youth according to their parents and teacher, while also self-reporting the lowest self-esteem. In contrast, *Socially Rejected* youth displayed less prosocial behaviors and more aggressive behaviors than all other youth. Importantly, the idea that popularity and shyness may play a key role in differentiating the two socially integrated and the two socially isolated profiles would require empirical validation in future research.

Hypothesis 4 was only partially supported. Based on research conducted among typically developing youth (Ciarrocchi et al., 2017) and students with ASD (Zaidman-Zait et al., 2021) we anticipated that a majority of our sample (e.g., 50%) would display an "average" configuration (a "middle class" social interaction profile), whereas the remaining students would be divided into "socially rich" (e.g., 25%) and "socially poor" (e.g., 25%) profiles. On the one hand, our results showed that the sample was evenly split between socially *richer* (48.40%: *Socially Integrated* and *Socially Connected*) and socially *poorer* (51.61%: *Socially Isolated* or *Socially Rejected*) profiles, with no "average" profile. This observation contrasts with Ciarrocchi et al.'s (2017) *Weakly Supported* profile, corresponding to a third of their sample of typically developing youth and characterized by social interactions scores very close to the sample mean (roughly -.15 SD). Our results thus suggest that social interactions might be more an "either-or" phenomenon among youth with ID than among their typically developing peers, a conclusion that is consistent with the nature of the profiles identified by Zaidman-Zait et al. (2021) among youth with ASD[3].

On the other hand, our results still indicated that most participants (63.07%) corresponded to profiles characterized by a configuration of social interaction indicators falling within .5 SD of the average, thus matching the frequency of the profiles described by Ciarrocchi et al. (2017) as

[3] Although Uljarević (2020) also identified a profile that they qualified as "mild" among youth with ASD, it is impossible to clearly verify whether and how this result corresponds to those from other studies as these authors failed to provide clear interpretation guidelines for their scores.

"middle class" as well as that of the two less extreme profiles identified by Zaidman-Zait et al. (2021). Also consistent with Hypothesis 4, roughly a fourth of our sample (28.37%: *Socially Rejected*) presented a "socially poor" social interaction configuration. However, the number of "socially rich" youth was clearly lower than anticipated (8.57%: *Socially Connected*), albeit consistent with variable-centered results highlighting the poorer social interactions of youth with ID relative to their typically developing peers (e.g., Carter & Spencer, 2006; Sheard et al., 2001; Tipton et al., 2013; Tipton-Fisler et al., 2018; Zeedyk et al., 2014; Hamadi & Fletcher, 2021; Teague et al., 2018). This last observation reinforces the need for intervention. In this regard, particularly worrisome is the observation that victimization remains a concern, even among "socially rich" youth with ID.

Youth' Personal Characteristics and Profile Membership

As a purely descriptive objective, we tested whether youth's personal characteristics (i.e., ID level, comorbidity, country of residence, age, and sex) were associated with their likelihood of profile membership. Failing to support Hypothesis 5, our results revealed a lack of association between comorbid conditions and youth's likelihood of profile membership and showed that youth with moderate levels of ID were more likely than their peers with mild levels of ID to correspond to the more desirable profiles (i.e., *Socially Connected* and *Socially Integrated* relative to *Socially Rejected*). However, it is important to note that whereas Uljarević et al. (2020) reported a positive association between youth's IQ and their likelihood of membership into their less desirable profile, these authors failed to control for comorbid conditions. Likewise, although Zaidman-Zait et al. (2021) reported associations between nonverbal IQ and youth likelihood of profile membership, they also found a lack of association between profile membership and the severity of youth's ASD symptoms.

However, although both of these studies focused on youth with ASD, most of their participants presented mild levels of ID. In contrast, the present study includes a substantial number of students with moderate levels of ID, as well as youth with and without comorbid conditions (including ASD), thus adding variability and increasing our ability to detect meaningful associations. Moreover, and although our results contrast with those from these previous person-centered studies of youth with ASD, they are consistent with previous variable-centered reports showing that youth with moderate levels of ID tended to share warmer and less conflictual relationships with their parents and teachers than their peers with mild levels of ID, whereas the

presence of comorbid conditions did not seem related to relationship quality (Dubé et al., 2022). Overall, our results thus suggest that youth with moderate levels of ID, relative to their peers with mild levels of ID, may be more likely to benefit from more desirable social interaction profiles. Whether this effect can be attributed to the typically more supportive school environment to which youth with moderate (versus mild) levels of ID tend to be exposed, or to their typically higher levels of dependency on their primary caregivers remain to be examined in future studies (e.g., Craven et al., 2015; Wells et al., 2003). Furthermore, when considering our results, it is important to consider that our sample did not include youth presenting severe or profound levels of ID. Whether and how the current results would generalize to these populations also remains to be verified in future studies.

Although research conducted among samples of typically developing youth generally reveal that social skills and relationship quality differ as a function of age and sex (Birch & Ladd, 1997; Brown & Gilligan, 1993; Ciarrochi et al., 2017; Hajovsky et al., 2017; Matson, 2017), research conducted among samples of youth with ID have typically failed to replicate these findings (Dubé et al., 2022; Olivier et al., 2021; Uljarević et al., 2020). Supporting these previous results as well as Hypothesis 6, our results failed to identify any association between youth's age or sex and their likelihood of profile membership. In relation to age, this result thus suggests that youth with ID may be somehow immune to the normative changes that typically characterize the social interactions of typically developing youth over the course of adolescence (i.e., greater autonomy from parents, closer relationship with peers) (e.g., Ciarrochi et al., 2017; Eccles, 1999). Alternatively, these changes may also take longer to emerge among youth with ID, possibly requiring the emergence of adulthood.

Lastly, and failing to support Hypothesis 7, we found that relative to their Canadian peers, youth living in Australia were more likely to belong to the least desirable profiles (*Socially Isolated* and *Socially Rejected*). Given the high level of similarity between the culture, educational systems (including practices specific to youth with ID), and standard-of living conditions of these two countries, this result was unexpected. Moreover, although we relied on similar recruitment procedures in both countries, our reliance on convenience sampling makes it impossible to discard the possibility that these associations may simply reflect random sampling differences. As a result, it would seem important for future research to first verify whether this result can be replicated among new and independent samples of youth from different countries. Assuming replication, a

more in-depth mixed-methods examination of the cultural and educational mechanisms likely to explain these differences may prove helpful, and potentially useful from an intervention perspective.

Social Interaction Profiles and Psychosocial Adaptation

To document the implications of these profiles for the psychosocial adaptation of youth with ID, we investigated their associations with youth's self-esteem, prosocial behaviors, and aggressive behaviors. Supporting Hypothesis 8 and replicating previous results obtained among samples of typically developing youth (e.g., Ciarrochi et al., 2017; Jager, 2011; Laursen, 2006; Scholte et al., 2001) and of youth with ID (e.g., Al-Yagon, 2016; Baker et al., 2019; Caplan et al., 2016; Clark et al., 2016; Crouch et al., 2014; Nambiar et al., 2020; Schuiringa et al., 2015), our results clearly indicated that more desirable outcome levels were associated with the more socially integrated profiles (*Socially Integrated* and *Socially Connected*) than with the less socially integrated ones (*Socially Isolated* and *Socially Rejected*). Moreover, with few exceptions, when differences were found between these pairs of profiles, more desirable outcome levels were generally observed in profiles characterized by more positive social interactions. Thus, higher self-esteem and self-reported prosocial behaviors as well as lower self-reports and parental reports of aggressive behaviors were observed in the *Socially Connected* profile than in the *Socially Integrated* one. Similarly, teachers and parental reports of prosocial behaviors, youth self-reports, as well as teacher and parental reports of aggressive behaviors all indicated that youth corresponding to the *Socially Rejected* profile did not fare as well as their *Socially Isolated* peers. From the perspective of attachment theory, these results support the idea that social interaction profiles are consistent, and possibly strongly connected, with youth's internal working models and cognitive representation of themselves as worthy, or unworthy, of sharing positive relationships with meaningful others (Ainsworth, 1989; Bowlby, 1973; Birch & Ladd, 1997; Mikulincer, 1995). Furthermore, they are also consistent with the idea that these internal working models, in turn, help drive youth representations of themselves (i.e., self-esteem) and preferred mode of interactions with others (i.e., prosocial or aggressive behaviors) (e.g., Obsuth et al., 2017; Pianta, 1999; Rohner, 2004; Shaver et al., 2019; Steele & Steele, 2014).

Unfortunately, the nature of the social interaction profiles identified in the present study (characterized by matching levels of social interaction across sources) made it impossible to properly test Hypothesis 9, anchored in the diminishing return perspective highlighted by

Ciarrocchi et al. (2017). However, some additional results are still worthy of attention. For instance, and contrary to the bulk of associations observed in this study, youth's self-reported self-esteem and prosocial behaviors were lower in the *Socially Isolated* profile than in the *Socially Rejected* profile. These results are consistent with our suggestion that the first of those profile might be driven by shyness, a known predictor of low self-esteem among youth with ID (Wadman et al., 2008), as well as one of the mechanisms involved in youth's reluctance to engage in prosocial behaviors (Hassan et al., 2021; MacGowan, & Schmidt, 2021). More precisely, these results suggest that *Socially Isolated* youth may come to attribute their social isolation to their own inability to connect with others (i.e., due to a lack of social skills), leading them to develop a more negative image of themselves (i.e., low self-esteem). The fact that this deficit in terms of prosocial behaviors is circumscribed to youth self-reports of these behaviors (i.e., it does not generalize to parental and teacher reports of prosocial behaviors, which are the lowest in the *Socially Rejected* profile), further supports this interpretation. Likewise, observing that *Socially Connected* youth are also those reporting the highest levels of self-esteem and prosocial behaviors also supports our interpretation that this profile might be partly driven by popularity (Mahadevan et al., 2019; Zhou & McLellan, 2021). Moreover, the unique pattern of associations between the profiles and parental reports of aggressive behaviors suggests that *Socially Connected* youth rely on aggressive behaviors as often as their *Socially Rejected* peers, which further supports the idea that aggression could be used by these youth as a way to increase or maintain popularity, in turn explaining their higher levels of victimization (Marsh et al., 2011; Olivier et al., 2022b).

Limitations

Despite its strengths, this study also presents limitations worth considering. First, our reliance on a cross-sectional design made it impossible to document the directionality of the observed associations between youth's social interaction profiles and their level of psychosocial adaptation, which are likely to be reciprocally related. In this regard, research would truly benefit from longitudinal investigations designed to assess the directionality of these associations, but also the extent to which the observed profiles would be replicated over time (within-sample stability), as well as stability and change in youth's membership into these various profiles (within-person stability). Second, our reliance on a convenience sample of youth with mild to moderate levels of ID recruited in Australia and Canada limits the generalizability of our results. Of particular note was the effect of the country of residence (despite a very similar culture) on youth's likelihood of

profile membership. Future investigations should address possible mechanisms for similar cultural effects. Third, it would also be important to assess whether similar results generalize to youth with more severe levels of ID, to children with ID, as well as to youth recruited from a more diversified set of countries and cultures. Fourth, comparative research designed to explicitly test whether and how the nature of these profiles and of their implications would differ across samples of youth with ID and typically developing youth would be important. Fifth, to clarify the mechanisms underpinning the associations found in the current research, it would be important for future studies to consider peer popularity and shyness when investigating similar associations among youth with ID. Lastly, our study focused on a very specific sample of youth with developmental disorders, that is youth with mild to moderate levels of ID. As such, the extent to which the current results generalize to youth with ASD, other forms of developmental disorders, or various types of comorbidities remains to be verified in future research. However, it is important to acknowledge that the approach taken in the present study is consistent with emerging network approaches focusing on connecting types of behavioral difficulties rather than developmental disorders, with their biopsychosocial and neurological correlates (Bathelt et al., 2022). Thus, despite our specific focus on youth with ID, we surmise that the social integration profiles identified in this study, as well as their consequences for psychosocial adaptation, are likely to generalize to other youth with developmental disorders, particularly if we consider the role played by ID in these other conditions (Nordahl et al., 2022).

Conclusions

Rather than relying on deficit models focused on the social interaction problems experienced by a subset of youth with ID, the present study sought to achieve a more holistic representation of the social interaction profiles of all youth with ID, allowing us to focus on both strengths and weaknesses among different subpopulations. Our results first suggested that, among youth with ID, social interactions follow an either-or categorization, although they also revealed finer-grained distinctions among subpopulations of *Socially Connected* versus *Socially Integrated* youth, as well as between *Socially Isolated* versus *Socially Rejected* youth. Moreover, our results tentatively suggested that the former differentiation might be driven by popularity, which might itself be partially fueled by aggression, resulting in higher-than-average levels of victimization in the *Socially Connected* profile. Based on this consideration, the relatively low prevalence (8.57%) of this *Socially Connected* profile may be less concerning than expected. In contrast, they also suggest

that the latter distinction might be driven by the shyness of *Socially Isolated* youth, relative to more externally driven social rejection. From a strength perspective, it was particularly encouraging to note that youth with moderate levels of ID, perhaps because of their exposure to more supportive school environments or of their greater dependency on their primary caregivers, were more likely to present a positive social interaction profile than their peers with mild levels of ID. From an intervention perspective, these results suggest that, whereas *Socially Isolated* youth might benefit from interventions focused on shyness, prosocial behaviors, and self-esteem, their *Socially Rejected* peers would benefit more from interventions seeking to improve their social environment. Furthermore, they also suggest that particular attention should be allocated to *Socially Connected* popular youth with ID to reduce their risk of victimization and to ensure that aggression does not become their favored mode of interaction.

Tables and Figures

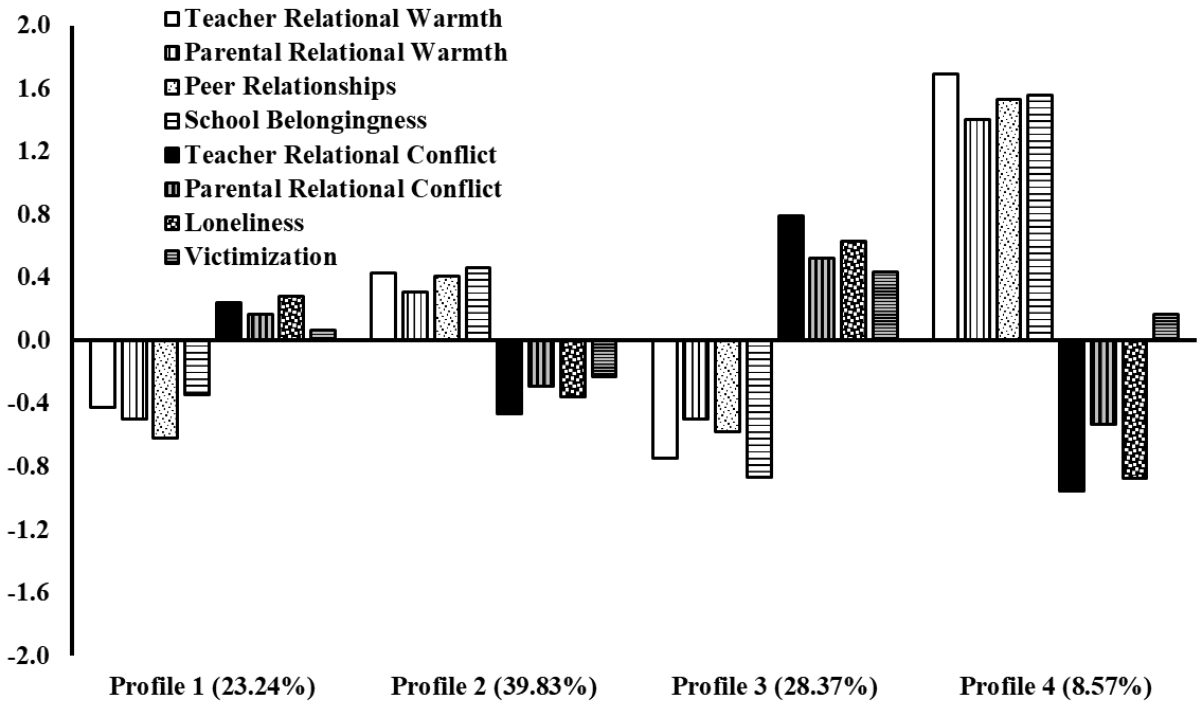


Figure 1. Four-profile solution.

Note. Profile 1: Socially Isolated; Profile 2: Socially Integrated; Profile 3: Socially Rejected; Profile 4: Socially Connected. Profile indicators are factor scores estimated with $M = 0$ and $SD = 1$.

Table 1

Model Fit Results from the Latent Profile Analyses

Model	LL	#fp	Scaling	AIC	CAIC	BIC	ABIC	Entropy	aLMR	BLRT
1 profile	-3886.109	16	0.949	7804.218	7882.747	7866.747	7815.985	Na	Na	Na
2 profiles	-3498.840	33	1.255	7063.679	7225.646	7192.646	7087.949	.847	<.001	<.001
3 profiles	-3355.866	50	1.281	6811.732	7057.136	7007.136	6848.504	.840	.035	<.001
4 profiles	-3266.017	67	1.875	6666.033	6994.875	6927.875	6715.308	.862	.748	<.001
5 profiles	-3192.866	84	1.266	6553.731	6966.010	6882.010	6615.509	.856	.240	<.001
6 profiles	-3134.179	101	1.250	6470.357	6966.073	6865.073	6544.637	.857	.431	<.001
7 profiles	-3081.171	118	1.434	6398.341	6977.495	6859.495	6485.124	.879	.761	<.001
8 profiles	-3034.672	135	1.314	6339.343	7001.934	6866.934	6438.629	.888	.570	<.001

Note. LL: loglikelihood; fp: number of free parameters; AIC: Akaike information criterion; CAIC: consistent AIC; BIC: Bayesian information criterion; ABIC: sample-size adjusted BIC; aLMR: p-value associated with the adjusted Lo-Mendel-Rubin likelihood ratio test; BLRT: bootstrap likelihood ratio test; Na: not applicable.

Table 2

Results from the Multinomial Logistic Regressions Evaluating the Associations between Predictors and Profile Membership

Predictors	Profile 1 vs Profile 2		Profile 1 vs Profile 3		Profile 1 vs Profile 4	
	Coeff. (SE)	OR	Coeff. (SE)	OR	Coeff. (SE)	OR
Sex	-.234 (.356)	.791	.131 (.366)	1.140	.202 (.475)	1.224
ID level	-.197 (.338)	.821	.650 (.367)	1.916	-1.005 (.536)	.366
Country	2.311 (.488)**	10.085	.452 (.581)	1.571	2.623 (.614)**	13.777
Age	-.077 (.207)	.926	.180 (.239)	1.197	.040 (.265)	1.041
Comorbidity	-.283 (.482)	.754	.102 (.523)	1.107	-.655 (.650)	.519
	Profile 2 vs Profile 3		Profile 2 vs Profile 4		Profile 3 vs Profile 4	
	Coeff. (SE)	OR	Coeff. (SE)	OR	Coeff. (SE)	OR
Sex	.365 (.331)	1.441	.436 (.411)	1.547	.071 (.460)	1.074
ID level	.847* (.337)	2.333	-.808 (.489)	.446	-1.655 (.532)**	.191
Country	-1.859 (.396)**	.156	.312 (.457)	1.366	2.170 (.547)**	8.758
Age	.257 (.195)	1.293	.117 (.205)	1.124	-.140 (.257)	.869
Comorbidity	.386 (.447)	1.471	-.372 (.519)	.689	-.758 (.625)	.469

Note. * $p < .05$; ** $p < .01$; SE: standard error of the coefficient; OR: odds ratio. The coefficients and OR reflects the effects of the predictors on the likelihood of membership into the first listed profile relative to the second listed profile; Profile 1: Socially Isolated; Profile 2: Socially Integrated; Profile 3: Socially Rejected; Profile 4: Socially Connected; Sex was coded as 0 = female and 1 = male; ID Level was coded as 0 = mild and 1 = moderate; Country was coded as 0 = Canada and 1 = Australia; Comorbidity was coded as 0 = no comorbidity and 1 = any comorbidity.

Table 3

Outcome Means and Pairwise Comparisons between the Four Profiles

	Profile 1 M [CI]	Profile 2 M [CI]	Profile 3 M [CI]	Profile 4 M [CI]	Significant Differences
Self-reports					
Self-esteem	-.687 [-.779; -.594]	.427 [.311; .543]	-.440 [-.630; -.250]	1.359 [1.212; 1.507]	1 < 3 < 2 < 4
Prosocial behaviors	-.315 [-.471; -.160]	.018 [-.137; .174]	.139 [-.055; .332]	.568 [.246; .891]	1 < 2 = 3 < 4
Aggressive behaviors	-.030 [-.174; .114]	-.207 [-.353; -.062]	.678 [.517; .838]	-.168 [-.514; .177]	1 = 2 = 4 < 3
Teacher Reports					
Prosocial behaviors	.159 [-.032; .351]	.126 [-.025; .277]	-.338 [-.484; -.192]	.167 [-.180; .514]	3 < 1 = 2 = 4
Aggressive behaviors	-.180 [-.384; .023]	-.040 [-.170; .091]	.523 [.353; .694]	.037 [-.306; .380]	1 = 2 = 4 < 3
Parental Reports					
Prosocial behaviors	.189 [.039; .339]	.047 [-.071; .166]	-.315 [-.449; -.181]	.121 [-.154; .396]	3 < 1 = 2 = 4
Aggressive behaviors	-.256 [-.423; -.090]	.103 [-.009; .215]	.333 [.172; .494]	.424 [.121; .726]	1 < 2 < 3; 1 < 3 = 4; 2 = 4

Note. M: Mean; CI: 95% Confidence Interval; Profile 1: Socially Isolated; Profile 2: Socially Integrated; Profile 3: Socially Rejected; Profile 4: Socially Connected; Indicators of self-esteem, prosocial and aggressive behaviors are factor scores estimated with $M = 0$ and $SD = 1$.

CHAPTER 3:

Study 2. Longitudinal Associations Between Relationship Quality and Depression Among Youth with ID: A Latent Change Perspective

Entry into adolescence marks an important life transition that often coincides with increases in the occurrence of several psychological disorders (Polanczyk et al., 2015). For instance, rates of clinical depression have been reported to increase from 2.8% in childhood (Costello et al., 2006) to 9% in adolescence (Merikangas & Knight, 2009). More concerning is the observation that depression tends to be even more frequent among young people with intellectual disabilities (Einfeld et al., 2011; Maïano et al., 2018; Tipton-Fisler et al., 2018).

An intellectual disability (ID) is defined as an impairment in general mental abilities of varying severity that impacts adaptive functioning in one or more out of three domains: conceptual, social, and practical (American Psychiatric Association [APA], 2013). Contrary to their typically developing (TD) peers, youth with ID tend to display lower levels of autonomy and rely more heavily on adult caregivers as a result of their more limited cognitive abilities (Craven et al., 2015). Thus, the quality of the relationships that youth with ID share with their parents and teachers seems to be particularly important to consider when trying to understand the factors involved in their psychosocial development. Higher relationship quality entails greater feelings of warmth, relatedness, connectedness, and support, as well as lower amounts of conflict and disagreement (Pianta, 2001).

Whereas research indicates negative associations between relationship quality and depression among TD youth (Inguglia et al., 2015; Brière et al., 2013; Smokowski et al., 2015), this association has all but been ignored among youth with ID. Importantly, youth with ID tend to share poorer relationship quality with their adult caregivers (Hamadi & Fletcher, 2021; Teague et al., 2018). Thus, if the association between relationship quality and depression observed among TD youth is found to generalize to their peers with ID, this association may be able to partially explain their higher risk of experiencing depression.

The scarcity of research conducted among youth with ID stems in part from the difficulty in measuring internal states, like depression and youth perceptions of relationship quality. As a result, most current research on this topic relies on parent or teacher reports of relationship quality, and depression, which cannot entirely capture youth's own perspective on these issues (Bear et al.,

2002; Turk et al., 2012). Importantly, given the greater complexity and costs associated with studies conducted among multiple informants, the bulk of research on youth with ID has remained cross-sectional in nature, making it impossible to clearly determine the directionality of the observed associations (e.g., to make sure that the link between relationship quality and depression is not an artifact of youth's previous levels of depression). The present study was designed to specifically address these two limitations by relying on a longitudinal research design to investigate the role of youth's relationships with their parents and teachers, and changes occurring over time in their levels of depression, while relying on self-report measures specifically validated for this population.

Relationships with Parents and Teachers

Attachment theory (Bowlby, 1973) postulates that an attachment bond between a parent and a child develops from their earliest interactions occurring in infancy. Some of the earliest studies anchored in this theoretical perspective have highlighted the importance of differentiating between secure and insecure attachment styles (Ainsworth, 1989). A secure attachment occurs when parents are consistently warm, sensitive, and respond to the infant's needs, whereas an insecure attachment occurs when parents are unresponsive, insensitive, or unreliable (Ainsworth, 1989). Due to the dyadic nature of the parent-child relationships, infants' behaviors and reactions are also expected to contribute to the creation of this attachment style, so that those with an easier temperament would be more likely to develop more secure attachments (Planalp & Braugart-Rieker, 2013).

Once this initial attachment is formed, parental behaviors come to play an additional role in shaping the parent-child relationship (PCR). In this regard, the most optimal parenting style seems to entail a combination of responsiveness, warmth, support, and acceptance with behaviors seeking to establish control, rules, consistency, and order (Baumrind, 1991; Smokowski et al., 2015). A parenting style characterized by only the second of those elements (i.e., control) seems to be accompanied by the worst developmental outcomes (Baumrind, 1991; Smokowski et al., 2015). Once again, children are not passive recipients of their parents' behaviors, as research has demonstrated that disruptive children may exacerbate their parents' reliance on controlling behaviors (Besemer et al., 2016). On this basis, Lewis (1981) suggested that conflict, rather than solely the reliance on controlling behaviors not accompanied by matching levels of responsiveness, may represent the active ingredient responsible for the undesirable consequence of purely controlling parenting behaviors.

This perspective has since been incorporated in research focusing on PCR, which is typically operationalized as a function of their degree of warmth (or responsiveness) and conflict (Birch & Ladd, 1997; Boele, et al., 2019; Pianta, 1999; Searle et al., 2013). While warmth refers to positive social interactions (i.e., responsive, supportive, and characterized by positive affectivity and emotional availability) between parents and their children, conflict refers to more negative forms of social interactions (i.e., unsupportive, unresponsive, hostile, and unpleasant) between children and their parents (Davies & Sturge-Apple, 2014).

Attachment theory (Bowlby, 1973) also proposes that, as they get older, youth should come to progressively internalize their early attachment styles and PCR into internal working models that serve as templates for other social interactions. For instance, research has shown that student-teacher relationships (STR) often match the nature of PCR (Ciarrochi, et al., 2017; Sabol & Pianta, 2012; Verschueren & Koomen, 2012). Interestingly, STR are also expected to form as a result of reciprocal interactions between youth and their teachers, and are typically operationalized along the same two dimensions (warmth and conflict) as PCR (Pianta, 2001; Verschueren & Koomen, 2012). While PCR tend to be relatively stable and enduring over time (Laursen & Collins, 2004), STR tend to fluctuate over time as youth come to be exposed to new teachers every year (Verschueren & Koomen, 2012). However, when youth with ID are considered, both types of relationships have been reported to be only moderately stable over a one-year period (Dubé et al., 2021). As a result of this lower stability, STR and PCR are likely to represent a potentially important lever of intervention in this population. In this regard, it is also important to note that both PCR and STR have been found to play complementary roles in the prediction of psychological wellbeing among TD youth (Brière et al., 2013; Chu et al., 2010; Smokowski et al., 2015).

PCR-STR and Depression: Theoretical Perspectives

Depressive symptoms encompass negative affect and sadness, hopelessness, feelings of loneliness, loss of interest, lack of concentration, and a variety of somatic symptoms (e.g., sleeping difficulties, weight/appetite loss or gain, loss of energy and fatigue) (APA, 2013; Smokowsky et al., 2015). With increasing age and with the presence of ID, youth tend to report higher levels of depressive symptoms (Maïano et al., 2018; Merikangas & Knight, 2009). While many factors are known to contribute to the development of depressive symptoms, PCR and STR might be of particular importance for youth with ID, due to their higher level of dependency on adult caregivers (Craven et al., 2015). Among TD youth, research has generally supported the idea that low quality

relationships with teachers and parents (i.e., low in warmth and high in conflict) tend to be associated with higher levels of depressive symptoms (Brière et al., 2013; Inguglia et al., 2015; Smokowski et al., 2015). Unfortunately, little evidence exists to support similar associations among youth with ID.

From the perspective of attachment theory (Bowlby, 1973, 1980), youth's internal working models reflecting their early attachment styles and the influence of early parental behaviors should play a critical role in determining youth's vulnerability to the emergence of various psychological difficulties, including depression, once they reach adolescence. Thus, on the one hand, securely attached youth who have been exposed to warm and supportive PCR in their childhood should come to develop more positive representations of themselves and greater confidence in others (Birch & Ladd, 1997). This internalized sense of emotional security then supports the development of their social, behavioral, and self-regulatory competencies (Pianta, 1999), in turn helping these youth to better cope with stressful events and protecting them against the emergence of psychological difficulties (e.g., McElwain & Booth-LaForce, 2006).

In contrast, insecurely attached youth who have been exposed to more conflictual PCR should be more likely to develop distorted working models of themselves and others, coupled with a tendency to selectively attend to negative stimuli in their environment that are consistent with their distorted mental representations (Bowlby, 1973). Some of those distortions may include perceiving hostility or rejection from others where none was intended (e.g., Beck, 1987). In adolescence, these youth have been reported to be more self-critical, to display greater dependency on others (Bowlby, 1980) and to demonstrate heightened emotional sensitivity (Kerstis et al., 2018). As a result, these youth have been reported to display a higher level of vulnerability to depressive symptoms (Lee & Hankin, 2009), particularly when exposed to social interactions matching the conflictual nature of these early interactions (e.g., Adrian & Hammen, 1993; Pinquart, 2017). This last observation is particularly problematic given that these youth will tend to apply the same distorted working models to all new social relationships, including those that they share with their teachers, thus making them more likely to find themselves in a self-fulfilling negative prophecy (Bowlby, 1973, 1980). Yet, at the same time, each new relationship creates opportunities for the emergence of new, or at least improved, internal working models (Bowlby, 1973). As a result, when teachers succeed in establishing high quality relationships with their students characterized by insecure attachment patterns, they act as alternative positive attachment figures and may thus help students

to activate more positive attachment systems (Obsuth et al., 2017).

PCR-STR and Depression among Youth with ID

Currently, very little research has looked at the associations between relationship quality (PCR and STR) and depression among youth with ID. To our knowledge, only six studies have empirically assessed the nexus between relationship quality (three focusing on PCR, and three focusing on STR) and depression (or more generic forms of internalizing disorders) among youth with ID. Moreover, these studies were all cross-sectional, and focused on very specific types of associations or populations, thus limiting their generalizability. Turning first our attention to PCR, one study reported that insecurely attached children with ID who had a problematic family background displayed more severe internalizing problems as reported by teachers and parents (Muris & Maas, 2004). Moreover, PCR warmth was found to protect children with autism spectrum disorder, who sometimes also have an ID, from experiencing increased levels of depressive symptoms as a result of PCR conflict (Baker et al., 2019). Finally, observational third-party reports of low PCR warmth were linked to increases in internalizing problems among children with ID whose fathers suffered from depression (Rodas et al., 2016). In relation to STR, two studies reported that STR quality moderated the association between exposure to victimization and depression (Olivier et al., 2020; Wright, 2017). Lastly, seventh graders with learning disabilities sharing lower quality relationships with their teachers were found to be at higher risk of experiencing depressive symptoms (Schwab & Rossmann, 2020). Importantly, none of these studies have jointly considered the complementary role of STR and PCR, raising a whole new set of considerations regarding the role played by their convergent or discrepant nature.

Global Relationship Quality and Discrepancies

To be able to properly examine the complementary role of PCR and STR, it is particularly important to consider the fact that both types of relationships tend to be highly correlated for most youth (Ciarrochi, et al., 2017; Sabol & Pianta, 2012; Verschueren & Koomen, 2012). The idea that most youth would tend to exhibit similar social relationships with their parents and teachers is consistent with the assumptions of attachment theory (e.g., Bowlby, 1973, 1980), which assumes that the same internal working models, anchored in youth's early attachment experience, would serve as the baseline for most social interactions occurring between youth and their adult caregivers. Although theoretically consistent, these high correlations suggest that attempts to extract the unique and complementary role played by each type of social relationship in relation to

the development of depressive symptoms requires a methodological approach able to control for the multicollinearity likely to taint youth ratings of PCR and STR. Correlated trait-correlated method (minus one) [CT-C(M-1)] models (Eid, 2000; Eid et al., 2008) provide a way to achieve this objective. More precisely, CT-C(M-1) models differentiate what is common to both sets of constructs being assessed (i.e., warmth and conflict) from what is unique to each specific source (i.e., teachers and parents), thus making it possible to assess the unique contribution of both components to the prediction of depressive symptoms in a way that is untainted by multicollinearity. In the present study, we relied on this approach to obtain an estimate of parental warmth and its shared variance with teacher's warmth (global warmth: a factor reflecting the role played by warmth received from both sources). A second orthogonal factor was then used to reflect the extent to which teachers' warmth deviated from parental warmth (a factor on which higher scores reflect the presence of a higher level of teacher warmth relative to parental warmth and low scores reflect the presence of a lower level of teacher warmth relative to parental warmth; reflecting discrepancies in warmth). The same approach was used to model relational conflict.

From a more conceptual standpoint, the effects of global levels and discrepancies in relational warmth and conflict can be understood from the perspectives of self-consistency and self-enhancement theories. Self-enhancement theory (Jones, 1964) first suggests that people tend to benefit most from sharing positive social interactions with others, suggesting that youth's exposure to globally warm relationships with their adult caregivers should lead to decreases in depressive symptoms, whereas exposure to globally conflictual relationships should lead to increases in depression. In a complementary manner, self-consistency theory (Swan, 1983) suggests that people tend to prefer being treated in a way that is consistent with their views of themselves, anchored in their early attachment schemas and internal working models. From both perspectives, convergent information (i.e., global levels of warmth and conflict across sources) should represent the most important predictors (positive for warmth and negative for conflict) of depressive symptoms among youth with ID. In contrast, self-consistency theory suggests that discrepancies should generally result in an increase in depressive symptoms, whereas self-enhancement theory (Jones, 1964) rather suggests that discrepant exposure to relational warmth and conflict should be beneficial for exposed youth as such discrepancies would be consistent with exposure to more positive social interactions with at least one adult caregiver (e.g., Ciarrochi, et al., 2017).

The Present Study

The primary goal of this study was to investigate how global and discrepant levels of relationship quality involving parents and teachers would predict changes in depression levels over a one-year period among a sample of youth with ID. In accordance with self-consistency and self-enhancement theories, we expected exposure to global levels of warmth and conflict to be respectively associated with a decrease and an increase in depressive symptoms over time. However, in relation to the role played by relational discrepancies, these theoretical frameworks support two competing hypotheses. First, self-consistency theory suggests that discrepancies between parent and teacher warmth or conflict should be associated with increases in depression. However, self-enhancement theory suggests that discrepancies should result in decreased levels of depression.

Finally, for descriptive purposes and to investigate the robustness and generalizability of our results, we also analyzed whether the observed associations would differ as a function of youth's sex or ID level. Indeed, research suggests that adolescent girls, due to their stronger social skills (Brown & Gilligan, 1993), may maintain closer and less conflictual relationships with their caregivers (Birch & Ladd, 1997; Hajovsky et al., 2017). However, these sex differences in social skills (Olivier et al., 2021b) and relationship quality (Dubé et al., 2021) are not systematically observed among youth with ID. In contrast, increased levels of ID seem to increase the risk of experiencing poorer relationships with adult caregivers (Blacher et al., 2009; Eisenhower et al., 2007; Totsika et al., 2014). In addition, from the age of 12, girls begin to report increased levels of depressive symptoms relative to boys (Twenge & Nolen-Hoeksema, 2002), an observation that also applies to youth with ID (Olivier et al., 2021a). In contrast, levels of depression do not seem to differ between youth presenting different levels of ID (Maïano et al., 2018; Olivier et al., 2021a). Despite these differences, no clear evidence has been previously reported to support the idea that the associations between relational quality and depressive symptoms could differ as a function of sex or ID (e.g., Schwab & Rossmann, 2020).

Method

Participants

This study relies on a sample of 395 youth with mild (48.3%) to moderate (51.7%) levels of ID. These participants, aged between 11 and 22 years (M=15.69, SD=2.17), were recruited from secondary schools located in Canada (French-speaking, n=142, 49.3% males) and Australia (English-speaking, n=253, 67.2% males). The text revised version of the the revised fourth version

of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; APA, 2000) was the official ID classification system used in schools at the time of data collection. On this basis, participants were classified with either a mild (global IQ of 50 to 70) or a moderate (global IQ of 35 to 49) ID using the IQ scores available in the school records. In Canada, some youth attended special schools (30.99%), while the majority were enrolled in special classrooms within regular schools (69.01%). In Australia, all youth attended regular schools and 92.6% were enrolled in special classrooms. One year later (Time 2), 259 (82 in Canada and 177 in Australia) participants (61.4% males; 45.7% mild ID; 54.3% moderate ID) from the original sample were retested following the same procedures.

Procedures

The study procedure is illustrated in the top section of Figure 1. Recruitment was facilitated by schools or community organizations. In Australia, no compensation was offered for participation, whereas Canadian participants were offered, each year, a chance to win one out of 40 gift certificates ($30 CAD) as an incentive. Parents actively provided signed informed consent for the participation of all children. For youth recruited in their school (N = 130 in Canada and all 253 participants in Australia), this consent form (as well as an information letter) was directly sent to the parents (or legal representatives) by the school. For the few youth recruited outside of schools (N = 12 in Canada and none in Australia), these materials were given directly to parents by the research team and returned using a reply-paid envelope. All youth were also asked to actively and voluntarily consent to their own participation. As part of these consent procedures, all participants were informed about the goals and procedures of the study, about their right not to participate or to withdraw from the study at any time without consequences and were ensured that their responses would be kept entirely confidential.

The parental consent procedures granted the researchers access to school records for youth recruited inside as well as outside of schools. These records included information about youth's most recent assessment of intellectual functioning (only youth with an official school-based ID classification were recruited). The Wechsler (2008) Intelligence Scale for Children – Fourth Edition (WISC-IV) was the IQ test most frequently used by the schools in both countries. When the most recent IQ score was obtained more than 4 years prior to the study, new IQ assessments were conducted by registered psychologists using the WISC-IV, the Wechsler Adult Intelligence Scale-IV, or the Leiter international performance scale-revised (Roid & Miller, 1997) depending

on age and verbal ability. In Australia, 34 participants were thus assessed by our research team, all of them using the Wechsler version corresponding to their chronological age (31 WISC-IV and 3 WAIS-IV). In Canada, 77 participants were thus assessed, 63 using the Wechsler version (29 WISC-IV and 34 WAIS-IV) corresponding to their chronological age, and 14 (with lower verbal expression skills) using the Leiter scale. This breakdown (in terms of IQ tests) is not available for most participants from whom IQ scores were obtained from school records.

Participants were met at their school (or at a time and location most convenient for the parents for those recruited outside of schools) by trained research assistants who explained the goals and procedures of the study. Using sample questions for each questionnaire section (involving graphical displays and pictograms), the assistants explained the use of the response scales. For participants with mild levels of ID, testing was conducted in small groups of up to 8 participants. For participants with moderate levels of ID and for all youth recruited outside of schools, testing was done with 1 or 2 participants at a time. The physical separation between participants was maximized, and a read-aloud testing procedure was used to increase understanding. Participants were encouraged to ask questions and circled their responses on a paper questionnaire. When answering questions, the research assistant focused on youth's understanding of the items and response scales rather than on the content of their responses. Some participants occasionally remained unable to understand a question. They were then instructed to select the "do not understand" option. Those responses (Time 1: 4.1% to 7.1%; M=4.9%, Time 2: 1.8% to 3.8%; M=2.3%) were treated as missing values. During data collection, research assistants always had direct access (via phone or in person) with one member of the research team.

Measures

Relationship Quality. At Time 1 and Time 2, youth's reports on the quality of their relationship with their teachers and parents were measured using scales specifically developed for self-report by youth with ID by Dubé et al. (2021) from the Student-Teacher Relationship Scale (Pianta, 2001). This 26-item self-reported measure includes six items measuring teacher warmth (e.g., "I sometimes think nice things about my teacher when I'm not at school"; Canada: α_{T1} =.724, α_{T2} =.770; Australia: α_{T1} =.843, α_{T2} =.791), six items measuring parent warmth (e.g., "I have a good relationship with my parents"; Canada: α_{T1} =.808, α_{T2} =.746; Australia: α_{T1} =.872, α_{T2} =.882), seven items measuring teacher conflict (e.g., "I don't really like my teacher"; Canada: α_{T1} =.796, α_{T2} =.805; Australia: α_{T1} =.862, α_{T2} =.831) and seven items measuring parental conflict (e.g., "I

often argue with my parents"; Canada: α_{T1} =.739, α_{T2} =.808; Australia: α_{T1} =.671, α_{T2} =.813). All items were rated using a five-point response scale ranging from "*totally disagree*" to "*totally agree*." To facilitate understanding, this instrument relies on a graphically-anchored response scale, and incorporates pictograms to describe the words used in all items. Dubé et al.'s (2022) results supported the reliability, factor validity, discriminant validity, measurement invariance (in relation to sex, ID level, country, and comorbidity), convergent validity (with parental and teacher reports as well as with measures of depression, anxiety, aggressiveness, and prosocial behaviors), and one-year longitudinal stability of this measure. In both countries, students attending special schools or special classrooms spent most of their time with the same teacher. Accordingly, they were asked to complete the teacher questionnaires in reference to that teacher. Australian youth enrolled in a regular classroom (7.4%) were instructed to complete the teacher questionnaire in reference to the teacher whom they perceived as the most significant to them. The verbal content of the items and response scales are presented in the Appendix (the full questionnaire is available upon request from the original authors).

Depressive symptoms. At Time 1 and Time 2, depressive symptoms were measured using the Glasgow Depression Scale for People with Intellectual Disabilities (GDSID; Cuthill et al., 2003). Using 21 items, youth were asked to report on the feelings they had been experiencing over the past week (e.g., "I feel sad or depressed"; α_{T1} =.875, α_{T2} =.752 in Canada and α_{T1} =.890, α_{T2} =.871 in Australia). These items were rated on a five-point response scale ranging from "*Never*" to "*Always*."

Covariates. Youth's sex (0=male; 1=female), country of residence (0=Canada; 1=Australia), and ID level (0=mild; 1=moderate) were obtained via official school records or tests conducted by our team as described above.

Analysis

Preliminary Analyses

Estimation. Preliminary analyses were conducted using Mplus 8.4's (Muthén & Muthén, 2019) robust weight least square estimator with mean and variance adjusted statistics (WLSMV). This estimator is designed to handle ordinal rating scales following asymmetric response thresholds (Finney & DiStefano, 2013; Li, 2016), such as those used in the present study, and provides a closer representation of participants' response process (Freund et al., 2013). All models were estimated using the full information available in the sample (Enders, 2010), using the missing

data algorithm implemented in Mplus for WLSMV estimation (Asparouhov & Muthén, 2010). Missing data was low at the item level. More precisely, at Time 1, missing responses ranged from 7.59 % to 17.47% (*M*=12.47%). At Time 2, missing responses ranged from 7.34% to 13.51% (*M*=10.10%).

Measurement Models. Preliminary longitudinal confirmatory factor analytic (CFA) models were first estimated to verify the psychometric properties of our measures and to obtain longitudinally invariant factor scores for the main analyses. Our decision to rely on factor scores was based on the complexity of the longitudinal analyses, coupled with the desire to preserve the measurement properties of the scales (i.e., invariance; Morin et al., 2016, 2017) and to maintain some level of control for unreliability (Skrondal & Laake, 2001). Factor scores were only saved at each time point for participants who completed that time point. More precisely the WLSMV estimator was only used to obtain factor scores at a specific time point for participants who completed the measures at that time point, irrespective of whether they had missing responses at that time.

PCR and STR were modeled using a CT-C(M-1) model (Eid, 2000; Eid et al., 2008). One factor was used to represent each relational dimension (warmth or conflict) and its shared variance across sources (global warmth or global conflict). A second orthogonal factor was used to reflect the extent to which teachers deviated from parents on this specific dimension (e.g., higher scores reflect the presence of a higher level of teacher warmth relative to parental warmth and vice versa). Depressive symptoms were modeled using one main factor, which also incorporated one method factor to account for the positive wording of five depression items (Morin et al., 2020). A priori correlated uniquenesses (CUs) were also added between matching indicators to control for the parallel wording between identical items for ratings of teachers and parents.

The preliminary measurement model thus incorporated, at each time point, five theoretically-relevant factors (leading to a total of 10 factors across both time points): A global warmth factor (estimated using the teacher and parent items), a global conflict factor (estimated using the teacher and parent items), an orthogonal warmth discrepancy factor (estimated using the teacher items), an orthogonal conflict discrepancy factor (estimated using the teacher items), and a depression factor (estimated using all depression items). This measurement model is illustrated in Figure 2. Using this model, we tested the measurement invariance of the constructs over time in sequence (Millsap, 2011): (1) configural invariance (i.e., the same factor structure); (2) weak invariance (i.e.,

invariance of factor loadings); (3) strong invariance (i.e., invariance of factor loadings and thresholds); (4) strict invariance (i.e., the invariance of factor loadings, thresholds, and uniquenesses); (5) correlated uniqueness invariance; (6) latent variance-covariance invariance; and (7) latent means invariance.

Model Fit Assessment. Due to the known oversensitivity of the chi-square test of exact fit to sample size, to minor (i.e., substantively unimportant) misspecifications, and even to unmeasured variables (e.g., Hu & Bentler, 1999; Marsh et al., 2005), we only report this indicator of model fit to ensure full disclosure, but rely on approximate fit indices to assess and compare model fit (Hu & Bentler, 1999; Marsh et al., 2005; Yu, 2002). Values higher than .90 and .95 on the comparative fit index (CFI) and Tucker-Lewis Index (TLI), as well as values lower than .08 and .06 on the RMSEA, respectively support an acceptable or excellent level of fit to the data. For tests of measurement invariance, the emphasis is placed on the change (Δ) in fit indices from one model to the next one in the sequence: ΔCFI of -.010 or less, a ΔTLI of -.010 or less, and a ΔRMSEA of +.015 or less support the invariance hypothesis (Chen, 2007; Cheung & Rensvold, 2002). Using the standardized parameter estimates from these measurement models, we also report model-based omega (ω; McDonald, 1970) coefficients of composite reliability.

Main Analyses: Longitudinal Latent Change Models

Longitudinal latent change analyses (McArdle, 2009) were realized to assess the associations between participants' ratings of relational warmth and conflict, and changes in their levels of depression over time. Given our reliance on continuous factor scores, these models were estimated using Mplus 8.4's maximum likelihood robust (MLR) estimator, which also allowed us to rely on Full Information Maximum Likelihood (Enders, 2010) procedures to handle missing time points (i.e., attrition). FIML is not an imputation method, but makes it possible to estimate the model using all information provided by all participants, without relying on the deletion of participants with missing responses. Latent change models disaggregated repeated measures (of youth's warmth, conflict, and depression) into their initial levels (the Time 1 scores) and a latent change factor representing change (growth or decline) occurring between Time 1 and Time 2. For each measure, these models are specified by (e.g., Tóth-Király et al., 2021): (1) Regressing the Time 2 scores on the Time 1 score and fixing this regression path to be exactly 1; (2) estimating latent change factors defined by the Time 2 score and fixing the factor loading of this score on the latent change factor to be exactly 1; (3) fixing the intercept and residual of the Time 2 score to be exactly

zero to freely estimate the mean and variance of the latent change factor; and (4) allowing the initial levels to freely correlate with the latent change factors. Once all scores were properly disaggregated into their initial and latent change components, initial levels and changes over time in global and discrepant levels of warmth and conflict were allowed to predict changes over time in depression. Our predictive model is illustrated in Figure 3. Given that this model is just identified (0 degrees of freedom, as in multivariate regression), model fit was perfect and is not reported.

Finally, additional tests were conducted to test whether the observed associations would differ according to youth's sex or ID level. This verification was conducted by investigating possible interactions effects (Marsh et al., 2013) between these two variables and levels of relational warmth and relational conflict in the prediction of depression.

Results

Preliminary Analyses

The goodness-of-fit results associated with the preliminary longitudinal measurement models are reported in Table 1. These results indicate that all measurement models resulted in an adequate level of fit to the data (all CFI/TLI ≥ .90 and all RMSEA ≤ .06) and were fully invariant over time (ΔCFI and ΔTLI ≤ .01; ΔRMSEA ≤ .015). Parameter estimates from the most invariant of these models are reported in Table 2, and reveal that all factors were reasonably well-defined and reliable over time: Global warmth (λ = 258. to .901, *M* = .600; ω = .916), global conflict (λ = .256 to .807, *M* = .572; ω = .911), warmth discrepancy (λ = .506 to .776, *M* = 622; ω = .841), conflict discrepancy (λ = .546 to .737, *M* = .624; ω = .870), and depressive symptoms (λ = -.017 to .861, *M* = .528; ω = .921). It should be noted that the teacher items had generally weaker loadings on the global factors than the parental items, which is consistent with the nature of the CT-C(M-1) models in which the teacher items are used to separately assess two sets of factors (the global factors from what they share with the parental items, and the discrepancy factor from what is unique to them). Furthermore, the loadings of the positively-worded (i.e., reflecting the opposite of the construct) depression items were weaker on the depression factor (λ = -.017 to .091) relative to the method factor (λ = .603 to .835). Given that the loadings of the negatively-worded (thus consistent with the presence of depressive symptoms) items (λ = .499 to .861) remained high and that this factor retained a high level of reliability (ω = .921), this observation is not concerning. Rather, it suggests that the GDSID might be better suited to the assessment of two distinct factors reflecting depressive symptoms and happiness (Olivier al., 2021a). However, given that this factor

structure is not consistent with the a priori structure of the GDSID (Cuthill et al., 2003), that several researchers argue that happiness and depressive symptoms are part of a same continuum (e.g., Siddaway et al., 2017; Wood et al., 2010), that our objectives are specifically focused on depressive symptoms, and that the depressive symptoms factor provides a clear assessment of these symptoms with null loadings from the happiness items, this structure was retained for present purposes, although the method factor was not retained for further analyses. Latent correlations from the most invariant model are reported in Table 3.

Latent Change Model

The results from the latent change model are reported in Table 4 and revealed several noteworthy findings. First, initial levels and increases over time in global levels of relational warmth were associated with a decrease in depressive symptoms over time. Second, increases over time in global levels of relational conflict were associated with an increase over time in depressive symptoms. Third, initial levels of relational conflict were unexpectedly associated with a decrease over time in depressive symptoms. Fourth, initial levels of discrepancies in perceptions of relational warmth and conflict were both associated with a decrease over time in depressive symptoms, while change over time in these discrepancy factors were not related to changes in depressive symptoms over time. In plain language, this result indicates that exposure to higher levels of warmth and conflict at school than at home was related to decreases in depressive symptoms over time, whereas exposure to higher levels of warmth and conflict at home than at school was related to increases in depressive symptoms over time. Finally, it is relevant to note that this model explained 59.2% of the variance of changes in depressive symptoms over time.

Supplementary Analyses of Interactions

Additional tests of interactions were finally conducted to verify the generalizability of our results as a function of youth's sex or ID level[4]. These supplementary analyses suggest that initial levels of relational warmth discrepancies tended to result in increases in depressive symptoms among girls (β =.161, p < .01) and youth with mild levels of ID (β = .165, p < .05), but in decreases in depressive symptoms among boys (β = -229, p < .01) and youth with moderate levels of ID (β = -.159, p < .05). More precisely, exposure to higher levels of warmth at home than at school seemed to benefit girls and youth with mild levels of ID, but to be harmful for boys and youth with

[4] We also investigated possible interactions between relational warmth and relational conflict in the prediction of depression and found no evidence for any interactions.

moderate levels of ID. The opposite was true for exposure to higher levels of warmth at school than at home.

Discussion

This study was designed to investigate the unique and complementary role played by PCR and STR in relation to the development of depressive symptoms among youth with ID, for whom relationships with adult caregivers seem to be particularly important (Craven et al., 2015). Despite this importance, research on the role played by these relationships on the psychological wellbeing of youth with ID remains very limited, cross-sectional in nature, and often neglects youth's critical perspective on these relationships (e.g., Bear et al., 2002; Turk et al., 2012). Our results first supported our hypotheses in relation to the role played by global levels of warmth, revealing that global levels of relational warmth, and increases over time in these levels, both predicted a decrease over time in levels of depression. However, our hypotheses were only partially supported in relation to global levels of relational conflict. As expected, increases over time in global levels of relational conflict predicted increases over time in levels of depression. In contrast, higher initial levels of global relational conflict unexpectedly predicted decreases over time in levels of depression. In relation to discrepancies in perceptions of relational warmth and conflict, our results supported our hypotheses derived from self-enhancement theory, rather than those derived from self-consistency theory. More specifically, higher levels of warmth and conflict at school relative to home both predicted decreases in levels of depression over time, whereas exposure to higher levels of warmth and conflict at home relative to school were related to increases in levels of depression over time.

Global Relationship Quality

In accordance with self-enhancement and self-consistency theories, youth exposed to initially warmer global relationships with their parents and teachers tended to report reduced levels of depressive symptoms one year later. Similarly, increases in global levels of relational warmth over time also predicted decreased levels of depressive symptoms over time. These results build on previous research, demonstrating that relational warmth not only serves to protect youth with ID from the negative effects of stressors (such as victimization; Olivier et al., 2020; Wright, 2017), but also directly helps to reduce depressive symptoms over time (a main effect). Furthermore, and also consistent with self-consistency and self-enhancement theories, youth with ID exposed to increases in global levels of relational conflict tended to experience matching increases in their

levels of depression over time. Taken together, these findings support our expectations and are aligned with previous results reported by Baker et al. (2019) and Schwab and Rossmann (2020) among TD youth.

However, and contrary to our expectations, exposure to higher initial global levels of relational conflict was found to be associated with decreased levels of depressive symptoms over time. While unexpected, this finding could possibly be explained by self-consistency theory. Indeed, this theory suggests that youth may benefit from being treated in ways that confirm their self-concept (Swan, 1983). Knowing that, relative to TD youth, youth with ID tend to share less positive and more conflictual relationships with their adult caregivers (Hamadi & Fletcher, 2021; Teague et al., 2018) may explain these unexpected benefits of initially higher global levels of conflict. In contrast, increases over time in relational conflict, as they explicitly deviate from initial levels, may rather reflect a lack of consistency, which would explain their undesirable effects on youth's depression.

A second alternative explanation for this result entails the strong positive association previously reported between exposure to relational conflict and youth's levels of externalizing symptoms (e.g., Hoeve et al., 2009; Withers et al., 2016). Recent reports also suggest that externalizing and internalizing (such as depression) symptoms tend to share a mutually suppressing association among youth with ID (Morin et al., 2017). When faced with a threat (such as relational conflict), one may resort to avoidance behaviors ("flight") consistent with internalizing symptoms, or rely on "fight" responses consistent with externalizing symptoms. As a result, the activation of one of these pathways may come to suppress the other pathway (Morin et al., 2017). Taken together, these observations suggest that initial levels of relational conflict may protect youth with ID against increases in depression via increasing their risk of externalizing symptoms.

A third possible explanation for this unexpected result could be that, despite the conflictual nature of these relationships, they still allow exposed youth to receive some form of attention from their adult caregivers. Youth who share neither conflictual nor warm interactions with their adult caregivers may come to feel neglected. Neglect has generally been found to be strongly related to the risk of experiencing depression among TD youth (Maguire et al., 2015). Furthermore, youth with ID are at a greater risk for neglect compared to their typically developing counterparts, due to their increased dependency on adult caregivers (Kendall-Tackett et al., 2005). As a result, when unable to create warm and positive relationships with their caregivers, youth with ID may come to

develop conflictual relationships as a mean of gaining attention, which they would perceive as preferable to having no attention at all. Nonetheless, observing that increases in conflictual relationships were associated with increases in levels of depression suggests that even though conflict might be a way to gain attention, increases in these levels relative to youth's baseline levels may still be damaging for youth's psychological wellbeing (Longobardi et al., 2019; Yap et al., 2014). Clearly, future research would be needed to more specifically assess the generalizability of these unexpected findings, and to document the plausibility of these three alternative explanations.

Discrepancies in Relationship Quality

Discrepancies in initial levels of relational warmth and conflict received from parents and teachers were both found to be associated with a decrease in depressive symptoms over time. Since these discrepancies imply that youth's relationship with at least one adult caregiver was positive in nature, these effects clearly support the idea that youth with ID exposed to poor relationships with one adult caregiver seem to truly benefit from sharing more positive relationships with the other caregiver (e.g., Ciarrochi et al., 2017). This interpretation is consistent with self-enhancement theory. Thus, supporting the idea that high quality relationships with parents and teachers are important for mental health (e.g., Longobardi et al., 2019; Smokowski et al., 2015), the present study took this finding one step further by demonstrating that the presence of at least one high quality relationship with a caregiver might be enough to reduce the risk of depressive symptoms among youth exposed to poorer relationships with the other caregiver (i.e., a compensatory effect). Importantly, this compensatory effect seemed to be slightly more pronounced for relational warmth than conflict, suggesting that supporting youth with ID to experience a warm relationship with at least one adult caregiver may be far more important than supporting them to experience at least one non-conflictual relationship. From an intervention perspective, these results seem to be particularly important, highlighting how STR may help to protect youth with ID coming from non-supportive or conflictual households against the development of depression. Importantly, our supplementary analyses indicated that while higher levels of relational warmth at home compared to school was beneficial for girls and youth with mild levels of ID, it was harmful for boys and youth with moderate levels of ID. In contrast, boys and youth with moderate levels of ID seemed to maximally benefit from being exposed to higher levels of warmth at school than at home.

Limitations

Despite attempting to be comprehensive, this study does have limitations. First, this study is the first to examine the longitudinal effects of relationship quality on depression among youth with ID while simultaneously considering PCR and STR. However, the results from this study still cannot be generalized to TD youth, to youth with other types of disabilities, or to youth with more severe types of ID, or with comorbid conditions. As a result, it would be important for future studies to systematically investigate the generalizability and replicability of the present results to more diversified groups of youth. Second, this study relied on two samples from different countries characterized by a similar cultural background. We thus cannot infer whether and how the direction or strength of our findings would generalize to other cultures. Given the universal nature of attachment theory, we would expect future studies using more culturally diverse samples to produce somewhat similar results. Third, while it focused on relationships with parents and teachers, this study ignored another critically important type of relationships in the lives of adolescents, such as that shared with peers. While youth with ID tend to share fewer relationships with peers relative to TD youth (Solish et al., 2010) due in part to their greater reliance on adult caregivers to be able to support peer interactions (Priestley, 2003), the quality of peer relationships may come to increasingly contribute to psychological wellbeing given their importance during adolescence (Buhrmester, 1996), a role that was previously supported among youth with ID (Olivier et al., 2020). As a result, future studies would benefit from the consideration of a more comprehensive set of social relationships. Fourth, the unexpected negative regression coefficients between relational conflict at Time 1 and changes in depression over time may reflect, in part, the stability of the depression ratings over time. Future studies should look into possible mechanisms, like those suggested in our discussion, to explain this unexpected result, while also considering longer time frames in order to obtain smaller estimates of stability for the ratings of depression. Fifth, despite our longitudinal design, our analytic approach does not allow us to clearly establish the directionality of the reported associations, nor their causal nature. Thus, whereas we examined how changes in relationship quality are associated with changes in depression, it is also likely that changes in depression could themselves be accompanied by changes in relationship. Future research, relying on a more intensive longitudinal design, will be required to investigate the directionality and causal ordering of these associations.

Conclusions

This study sought to document the effects of relationship quality with parents and teachers on

depression development among youth with intellectual disabilities (ID). As expected, our results demonstrated the benefits of relational warmth to help protect youth with ID against the development of depression. Likewise, they supported the benefits of reduction in global levels of relational conflict. Surprisingly, however, we also found that higher initial levels of relational conflict seemed to decrease the risk of experiencing increases in depression levels over time among youth with ID. Although various explanations were proposed to understand this effect (self-consistency, incompatibility between depression and externalizing disorders, or relational conflict as a form of attention), these explanations and their relative plausibility would require additional investigations. Perhaps more importantly, this study also found that youth with ID exposed to inadequate relationships in one area (e.g., home) could particularly benefit from exposure to more positive social relationships in another area (e.g., school). In plain language, these results indicate that sharing at least one positive relationship with an adult caregiver might be enough to buffer the negative effects of sharing a negative relationship with another adult caregiver. In light of these findings, it would be particularly important for future research to consider other types of social relationships (e.g., peers), as well as whether and how the present results would generalize to other types of psychological difficulties (e.g., anxiety, externalizing behaviors, etc.).

Tables and Figures

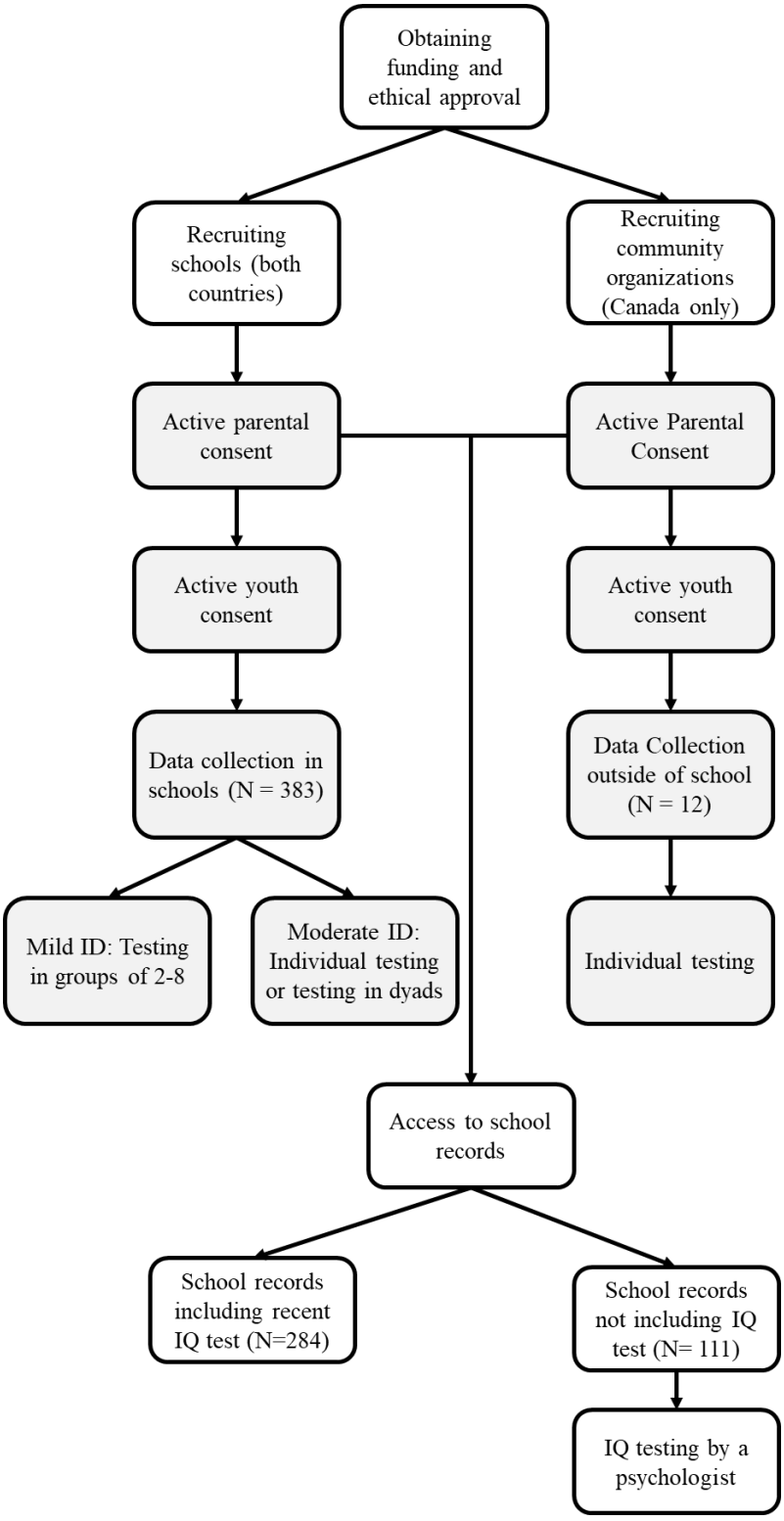


Figure 1
Summary of the Study Procedures
Note. Grayscale boxes refer to procedures that were repeated in the second year of the Study.

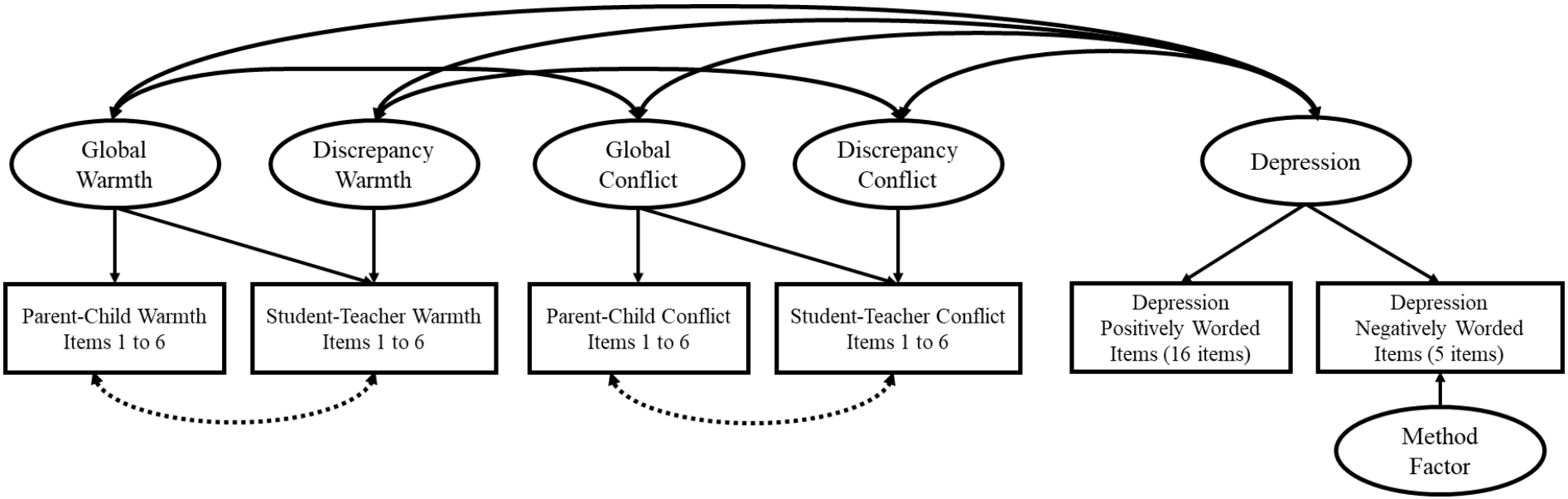


Figure 2

Graphical Illustration of the Preliminary Measurement Model

Note. Ovals are latent factors; rectangles are different set of questionnaires items sharing similar associations with the factors (for simplicity, we do not include one box for each item); full single-headed arrows are factor loadings; full double-headed arrows are factor correlations; Dotted double-headed arrows refer to the a priori correlated uniquenesses among matching patent and teacher items.

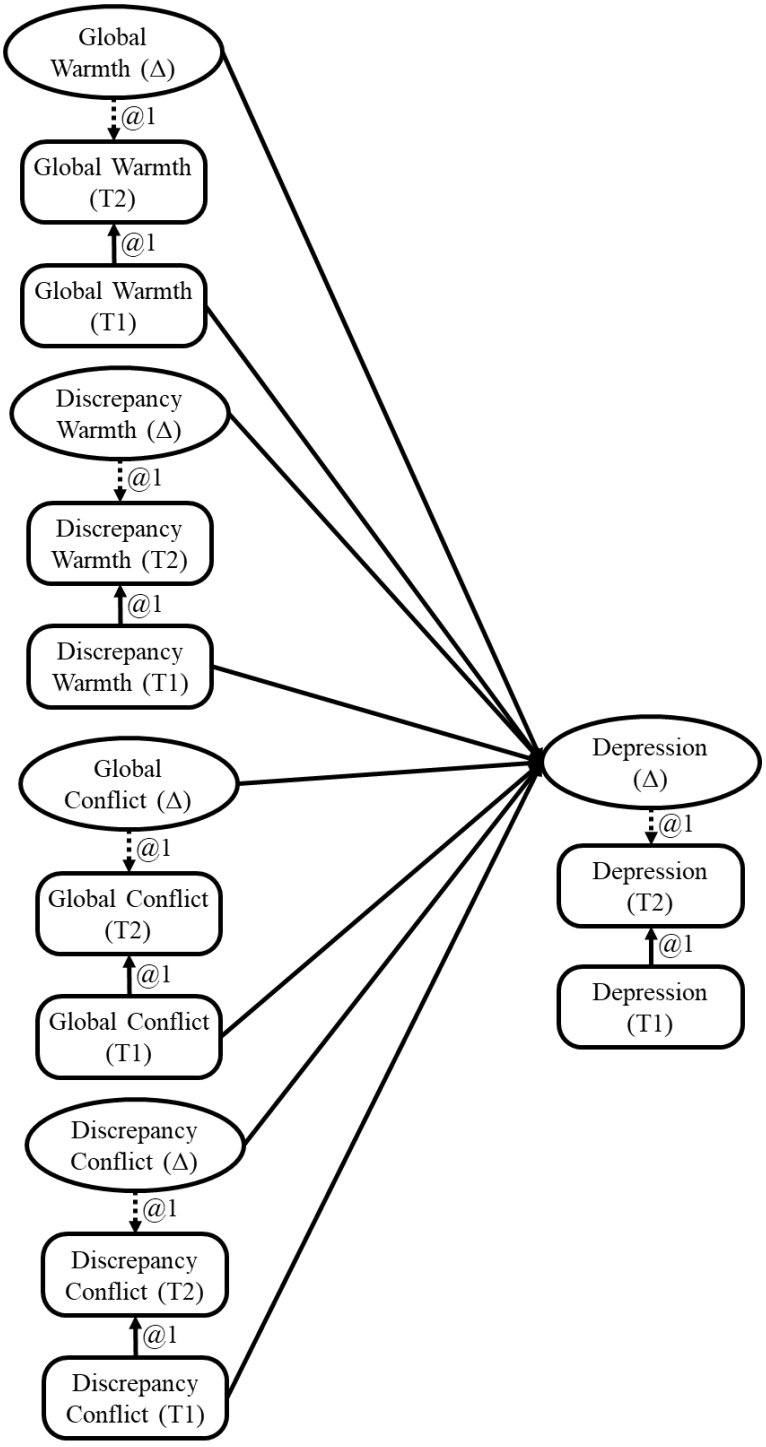


Figure 3

Graphical Illustration of the Main Predictive Model

Note. Rounded rectangles are invariant factor scores; Ovals are latent change factors; full single-headed arrows are regression paths; Dotted single-headed arrows are factor loadings; @1 are regression paths or factor loadings that are fixed to 1 for the estimation of the latent change factors; All T1 measures are allowed to be freely correlated; All latent change factors for the predictors are freely correlated; Time 1 measures on each specific construct are freely correlated with the latent change factor for the same construct.

Table 1

Goodness-of-Fit Results for the Longitudinal Tests of Measurement Invariance Across Time 1 and 2

Models	χ^2	df	CFI	TLI	RMSEA (90% CI)	CM	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA
1. Configural	5484.016*	4117	.916	.911	.030 (.028, .032)	—	—	—	—	—	—
2. Weak	5541.394*	4175	.916	.912	.030 (.028, .032)	1	100.686*	58	.000	+.001	.000
3. Strong	5650.171*	4310	.918	.917	.029 (.027, .031)	2	119.808	135	+.002	+.005	-.001
4. Strict	5670.643*	4357	.919	.919	.028 (.026, .031)	3	65.752	47	+.001	+.002	-.001
5. Correlated uniquenesses	5684.115*	4370	.919	.919	.028 (.026, .031)	4	23.652	13	.000	.000	.000
6. Variance-covariance	5690.617*	4384	.920	.920	.028 (.026, .030)	5	34.386*	14	+.001	+.001	.000
7. Latent means	5716.621*	4390	.919	.919	.029 (.026, .031)	6	24.484*	6	-.001	-.001	+.001

Note. *$p < .01$; χ^2: WLSMV chi-square; df: Degrees of freedom; CFI: Comparative fit index; TLI: Tucker-Lewis index; RMSEA: Root mean square error of approximation; 90% CI: RMSEA 90% confidence interval; CM: Comparison model; Δ: Change in model fit relative to the comparison model

Table 2

Results from Longitudinal Latent Means Invariant Model

	Warmth Global (λ)	Warmth Discrepancy (λ)	Conflict Global (λ)	Conflict Discrepancy (λ)	Depression(λ)	Depression MF (λ)	δ
Item 1p	.747**						.442
Item 2p	.699**						.511
Item 3p	.843**						.289
Item 4p	.804**						.353
Item 5p	.901**						.188
Item 6p	.806**						.351
Item 7t	.379**	.543**					.561
Item 8t	.397**	.550**					.541
Item 9t	.469**	.776**					.178
Item 10t	.258**	.506**					.677
Item 11t	.476**	.680**					.311
Item 12t	.415**	.675**					.372
Item 1p			.748**				.440
Item 2p			.807**				.348
Item 3p			.698**				.513
Item 4p			.591**				.651
Item 5p			.722**				.479
Item 6p			.703**				.506
Item 7p			.716**				.487
Item 8t			.256**	.737**			.391
Item 9t			.300**	.701**			.418
Item 10t			.532**	.555**			.409
Item 11t			.575**	.584**			.328
Item 12t			.419**	.649**			.404
Item 13t			.402**	.546**			.541
Item 14t			.535**	.598**			.356
Item 1					.792**		.373
Item 2					.773**		.402
Item 3					.043	.727**	.469
Item 4					.037	.765**	.413
Item 5					.091	.714**	.483
Item 6					.499**		.751
Item 7					.670**		.551
Item 8					.821**		.326
Item 9					-.017	.603**	.636
Item 10					.634**		.598
Item 11					.672**		.549
Item 12					.594**		.647
Item 13					.066		.996
Item 14					.582**		.662
Item 15					.742**		.450
Item 16					.799**		.361
Item 17					.808**		.347
Item 18					.779**		.393
Item 19					.781**		.390
Item 20					.861**		.258
Item 21					.030	.729**	.468
ω	.916	.841	.911	.870	.921	.835	

Note. *$p < .05$; **$p < .01$; λ: Factor loading; δ: Item uniqueness; ω = Omega coefficient of composite reliability; p: parent items; t: teacher items; MF: Method factor.

Table 3

Latent Correlations from the Longitudinal Model of Latent Means Invariance

	1	2	3	4	5	6	7	8	9	10
1. Relational Warmth Global (Time 1)	—									
2. Relational Conflict Global (Time 1)	-.347**	—								
3. Relational Warmth Discrepancy (Time 1)	0	0	—							
4. Relational Conflict Discrepancy (Time 1)	0	0	-.655**	—						
5. Depression (Time 1)	-.056	.477**	.001	.084	—					
6. Relational Warmth (Time 2)	.604**	-.239**	.130	-.156	.005	—				
7. Relational Conflict (Time 2)	-.270**	.596**	.003	-.030	.334**	-.347**	—			
8. Relational Warmth Discrepancy (Time 2)	.189**	-.176*	.319**	-.168*	-.105	0	0	—		
9. Relational Conflict Discrepancy (Time 2)	-.131	.090	-.362**	.585**	.152*	0	0	-.655**	—	
10. Depression (Time 2)	-.017	.277**	-.095	.016	.649**	-.056	.477**	.001	.084	—

Note. *$p < .05$, **$p < .01$.

Table 4

Results from the Predictive Latent Change Model

Δ Predictor	ΔOutcome	T1→ T2 *b* (S.E.)	T1 → T2 β (S.E.)
Δ Relational Warmth Global	ΔDepression	-.225(.078)**	-.179(.058)**
Δ Relational Conflict Global	ΔDepression	.301(.065)**	.268(.058)**
Δ Relational Warmth Discrepancy	ΔDepression	.029(.149)	.023(.117)
Δ Relational Conflict Discrepancy	ΔDepression	.149(.116)	.134(.105)
Predictor (T1)	**ΔOutcome**	**T1→ T2 *b* (S.E.)**	**T1 → T2 β (S.E.)**
Relational Warmth Global	ΔDepression	-.088(.037)*	-.109(.044)*
Relational Conflict Global	ΔDepression	-.231(.041)**	-.302(.051)**
Relational Warmth Discrepancy	ΔDepression	-.865 (.096)**	-.732(.090)**
Relational Conflict Discrepancy	ΔDepression	-.465 (.044)**	-.608(.061)**

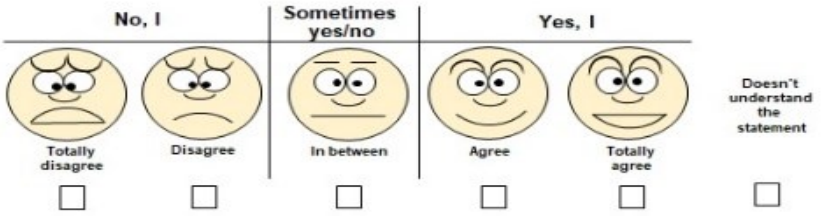
Note. *$p < .05$; **$p < .01$; T1: Time 1; T2: Time 2; b: unstandardized regression coefficient; S.E.: standard error of the coefficient; β: standardized regression coefficient; Δ: latent change between Time 1 and Time 2.

Appendix

Complete List of Items for the Measures of Student-Teacher and Parent-Child Relationship

Item	**Student-Teacher Relationship Scale**
Warmth	
W1	I sometimes think nice things about my teacher when I am not at school.
W2	I talk to my teacher about my feelings and what happens to me.
W3	I trust my teacher.
W4	I sometimes spend my free time with my teacher.
W5	My teacher is nice and friendly to me.
W6	I can easily talk about myself with my teacher.
Conflict	
C1	I don't really like my teacher.
C2	My teacher does not respect me.
C3	I often argue with my teacher.
C4	I often get angry at my teacher.
C5	Sometimes, my teacher is unfair with me.
C6	My teacher thinks that I am a difficult or disobedient student.
C7	My teacher often gets angry at me.
	Parent-Child Relationship Scale
Warmth	
W1	I sometimes think nice things about my parents when I am at school.
W2	I talk about my feelings and what happens to me with my parents.
W3	I trust my parents.
W4	I sometimes spend my free time with my parents.
W5	I have a good relationship with my parents.
W6	I can easily talk about myself with my parents.
Conflict	
C1	I do not like my parents very much.
C2	My parents do not respect me.
C3	I often argue with my parents.
C4	I often get angry at my parents.
C5	Sometimes, my parents are unfair with me.
C6	My parents think that I am difficult or disobedient.
C7	My parents often get angry at me.
Answer scales	See next page

Answer scales for youth self-reports:



CHAPTER 4:

Study 3. School Experiences and Anxiety Trajectories among Youth with Intellectual Disabilities

Anxiety is one of the most prevalent mental health problems among young populations, with worldwide pooled prevalence estimates of anxiety disorders reaching 6.5% among children and adolescents (Polanczyk et al., 2015; Lépine, 2002), although rates closer to 30% have been reported in a large nationally representative survey of US adolescents (Merikangas et al., 2010). This last estimate is consistent with the adult lifetime prevalence rates of anxiety disorders (Bandelow & Michaelis, 2015; Baxter et al., 2012; McCall-Hosenfeld et al., 2014), suggesting that adolescence is a key developmental period for the emergence of anxiety. Indeed, adolescence is associated with a series of major biopsychosocial transitions (i.e., cognitive maturation, increases in autonomy, puberty, school transitions, new peer group, etc.) likely to represent a significant source of stress and anxiety (Eccles et al., 1993; Roeser et al., 2000; Steinberg & Morris, 2001), particularly among those less prepared to deal with these transformations (Eccles & Roeser, 2009; Vasey et al., 2014).

Youth with intellectual disabilities (ID) display a particularly high risk of developing anxiety in adolescence (Buckles et al., 2013; Einfeld et al., 2011; Maïano et al., 2018; Vasa et al., 2013). An intellectual disability (ID) is defined by the presence of significant limitations, varying in severity, in general mental abilities and adaptive functioning in one or more of three domains (i.e., conceptual, social, and practical; American Psychological Association [APA], 2013). The increased vulnerability for anxiety reported among youth with ID may result in part from their more limited cognitive skills, which can interfere with their ability to successfully negotiate the challenges of adolescence, as well as from their higher dependency on adult caregivers, which can interfere with the normative development of their autonomy (Craven et al., 2015; Wehmeyer, 2005). Both explanations highlight how important the school context is likely to be in helping these youth successfully negotiate the developmental tasks of adolescence, but also in doing it while progressively gaining autonomy from their primary caregivers (Craven et al., 2015). For this reason, it is particularly worrisome to note that youth with ID are also more likely to be exposed to negative school experiences, ranging from peer victimization to difficulties in achieving a satisfactory level of social integration (Blacher et al., 2009; Hamadi & Fletcher, 2021; Maïano et

al., 2016; Tipton et al., 2013; Tipton-Fisler et al., 2018).

The present study was designed to identify which components of their school experiences are the most likely to contribute to changes in the longitudinal trajectories of anxiety of youth with ID over the course of their adolescence. In doing so, we also consider the well-established role of school victimization as a core driver of anxiety during adolescence. However, to avoid perpetuating deficit models (Halfon et al., 2012; Soresi et al., 2011), we also consider the role played by various positive – and modifiable – facets of youth's school experiences (i.e., positive school climate) as drivers of developmental trajectories characterized by lower levels of anxiety (e.g., Morin et al., 2009, 2013).

Anxiety Trajectories among Youth with ID

Research has shown that anxious adolescents often display early signs of anxiety in childhood (Beesdo-Baum & Knappe, 2010; Costello et al., 2003; Roza et al., 2003). However, results related to the evolution of anxiety during adolescence and into early adulthood remain scarce and highly inconsistent (e.g., Hale et al., 2008, 2009; Morin et al., 2011; van Oort et al., 2009). This dearth of research is even more obvious when we consider youth with ID. Among the few exceptions, Green et al. (2015) relied on parental reports of their child's anxiety between the ages of 5 and 9 and found that anxiety trajectories tended to increase among youth with mild and moderate levels of ID, as well as among typically developing (TD) youth. They also noted that, when specifically considering separation anxiety, the normative decrease typically observed among TD youth was delayed among their peers with ID, which is consistent with their higher level of dependency on adult caregivers. Similarly, considering parental reports of child's anxiety between the ages of 3 to 13, Rodas et al. (2020) also reported increasing trajectories.

All of these results come from samples of children with ID rated by their parents. Studies focusing on adolescence are far less consistent (Botting et al., 2016; Foley et al., 2016; Gotham et al., 2015; Tonge & Einfeld, 2003). In a study of youth with autism spectrum disorders and other types of developmental delays, Gotham et al. (2015) noted an increase in parental reports of anxiety among girls (n = 35), but not boys (n = 130), between the age of 13 and 23. They also noted that boys and youth with autism spectrum disorders tended to display higher levels of anxiety throughout the study. However, among a larger group of youth with ID with (n = 323), or without (n = 466), Down syndrome, Foley et al. (2016) found that parental ratings of anxiety decreased slightly between the age of 12 to 26 in a way that was similar for boys and girls. They also noted

that youth with Down syndrome tended to display higher levels of anxiety throughout the study. In contrast, Botting et al. (2016) reported that boys' and girls' trajectories of anxiety rated by their parents remained stable between the ages of 16 and 24 among a sample of 242 youth with a language impairment and 99 same age peers. However, they also noted that girls and youth with more severe language impairments tended to display higher levels of anxiety throughout the study. Lastly, in the only study specifically focused on youth with ID ($N = 578$), Einfeld et al. (2006; also see Tonge & Einfeld, 2003) reported decreasing trajectories of parental ratings of anxiety between the age of 12 and 24. They also noted that this decrease was less pronounced among girls, as well as among youth with a more severe ID, who also displayed lower levels of anxiety over time.

Beyond the rarity of studies focusing specifically on youth with ID and beyond the possible influence of comorbid conditions on these trajectories, the inconsistency of results among studies covering similar developmental periods clearly highlights the need for replication. Perhaps more importantly, none of these studies considered youth's self-reports of their own anxiety, thus ignoring youth with ID's unique perspective on their own internal states. This last limitation is consistent with the fact that most research conducted among youth with ID tends to ignore their unique viewpoint based on the erroneous assumption that their more limited cognitive abilities make it impossible for them to reliably report their internal states (Bear et al., 2002; Turk et al., 2012). However, reliable and valid instruments have been developed to allow these youth to express their own unique voices in this regard (Maïano et al., 2022; Mindham & Espie, 2003). Moreover, self-reports of internal states obtained from youth with ID have been shown to capture a qualitatively different and complementary perspective relative to informant reports (Dubé et al., 2022; Olivier et al., 2021). The present study thus seeks to add to our understanding of how anxiety evolves during adolescence from the unique perspective of youth with ID, while also considering whether and how this evolution is influenced by their sex, level of ID (mild or moderate), and the presence of comorbid conditions. We also uniquely consider how these trajectories are influenced by youth with ID's school experiences.

School Life and Anxiety in Youth with ID

School experiences are crucial to mental health development among TD youth (e.g., Eccles et al., 1993). This role is likely to be even greater for youth with ID given their higher dependency on adult caregivers (such as teachers) and the fact that schools often are a main area of socialization (Craven et al., 2015). Schools are complex social systems where multiple factors, including

personal experiences and school climate perceptions (Morin et al., 2009, 2013), come together to foster, or impede, healthy development. All youth spend a significant part of their life at school, where they may encounter stress-generating (e.g., conflict, failure, rejection) and self-enhancing (e.g., support, success, security) experiences likely to respectively increase or decrease their risk of anxiety.

Stage-environment fit theory (Eccles & Roeser, 2009; Eccles et al., 1993) and Self-Determination Theory (SDT; Deci & Ryan, 2000; Ryan & Deci, 2017) propose that psychosocial functioning depends on the fit between the characteristics of the school environment and youth's developmental needs for relatedness (i.e., the need to belong), autonomy (i.e., the need to feel a sense of volition), competence (i.e., the need to feel able to act upon one's environment), and safety (i.e., the need to feel safe)[5]. From these theoretical perspectives, Morin et al. (2013) proposed a three-component (i.e., interpersonal, organizational, and instructional) classification of youth's school experiences (for a similar empirically-driven classification, see Aldridge & McChesney, 2018). The *interpersonal component* focuses on the role played by school experiences for the fulfillment of youth's needs for relatedness and belongingness. The *organizational component* focuses on the role played by schools in supporting youth's needs for autonomy and safety in a balanced manner, which also entails youth's perceptions of justice, equity, and fairness. Finally, the *instructional component* focuses on the role played by schools in nurturing youth's needs for competence and achievement.

Interpersonal. Following from attachment theory (e.g., Bowlby, 1973), stage-environment fit theory proposes that development will be intimately influenced by youth's positive social interactions with significant others (e.g., Aldridge & McChesney, 2018; Roeser et al., 2000). By exposing youth to positive social regard, these positive interactions will in turn contribute to generate feelings of belongingness upon which they will be able to anchor their social functioning (Morin et al., 2013). Attachment theory (e.g., Bowlby, 1973) has long emphasized the importance of early social interactions for anxiety development. Poor early interactions between children and their caregivers are expected to translate into distorted working models or cognitive

[5] Although SDT assumes that the first three needs (autonomy, relatedness, and competence) are sufficient to understand growth and well-being, a long tradition of educational research anchored in stage-environment fit theory has highlighted the critical importance of the need for safety as an additional driver of development among school-age youth (Aldridge & McChesney, 2018), particularly for anxiety (e.g., Morin et al., 2011).

representations of themselves and others that generalize over time and across contexts (Ainsworth, 1989; Bowlby, 1973). Thus, as they grow older, youth come to interpret new social experiences, such as their school-based social interactions (Rohner, 2004; Weaver et al., 2015), in ways that are consistent with these distorted representations. These representations could include the perception of hostility or rejection from others where none was intended, but also positive perceptions of social interactions. However, youth's internal working models remain subject to reconstruction across contexts (Bowlby, 1973). Importantly, social interactions occurring in the school context and involving teachers and peers are likely to represent a main occasion for youth to develop relational working models distinct from those they developed with their parents (Eccles & Roeser, 2009). As noted above, this possible impact of school experiences is likely to be even greater among youth with ID, for whom schools are often the main location for the emergence of social relations outside of the family (Craven et al., 2015). In the present study, following from Morin et al. (2013), this component is operationalized by youth's perceptions of their school relational (the quality of the relations occurring between students and between teachers and students) and bonding (youth's feelings of school belongingness) climate.

Unfortunately, although the benefits of this interpersonal component for the development of TD youth are generally well-established (Aldridge & McChesney, 2018), very little research has sought to understand how perceptions of the school relational (between-student and teacher-student) and bonding climate were related to anxiety development among youth with ID. There is, however, some empirical support showing that positive teacher-student relations may help protect youth with ID exposed to victimization against the emergence of internalizing symptoms (Olivier et al., 2020; Wright, 2017). Likewise, there is evidence that exposure to a poor peer-related relational climate was related to higher levels of anxiety among youth with ID (Klein et al., 2018). Unfortunately, no study has yet looked at how perceptions of the school bonding climate, or feelings of school belongingness, were related to anxiety among samples of youth with ID, although a negative association has been established among TD youth (e.g., Goldstein et al., 2015; Shochet et al., 2006). Thus, despite a relative dearth of research, emerging evidence tentatively suggests that poorer perceptions of teacher-student relational climate, between-students relational climate, and school bonding should be associated with higher levels of anxiety among youth with ID.

Organizational. As for the interpersonal component, the organizational component also

emphasizes the importance of having a secure base (school *vs.* parents) from which to feel free to explore and learn (Bowlby, 1973; Ainsworth, 1989). In their focus on nurturing youth's needs for autonomy and safety, schools need to be careful in maintaining a balance between these two very distinct needs. Schools that encourage, value, and protect the expression of students' autonomy are likely to help them learn how to express themselves in a prosocial manner, which is a key driver of successful development (Hoge et al., 1990; Roeser et al., 2000; Way et al., 2007). However, for this to happen, youth need to feel free to express themselves without fearing for their safety and learn to do so in a manner that does not interfere with the ability of other students to express their own autonomy (Aldridge & McChesney, 2018; Eccles & Roeser, 2009; Wigfield et al., 2006). An optimal school organization thus needs to balance autonomy with safety and order. Youth's perceptions of being treated fairly at school (i.e., fairness climate) form a key indicator that this balance has been attained (e.g., Morin et al., 2009, 2013). Research conducted among TD populations has generally supported the idea that exposure to a school environment perceived as safe and fair helps reduce youth's risks of developing anxiety and other internalizing disorders (Aldridge & McChesney, 2018; Holfeld & Baitz, 2020; Morin et al., 2009; Way et al., 2007). The present study seeks to verify, longitudinally, the extent to which these results would generalize to youth with ID.

No examination of the associations between the organizational component of youth's school experiences and their risk of developing anxiety would be complete without the consideration of youth's direct exposure to peer victimization, which represents a direct threat to their sense of school safety and a core determinant of anxiety among young populations (e.g., Morin et al., 2011, 2013). The high rates of victimization reported among youth with ID further reinforce the importance of this consideration among this population (Maïano et al., 2016). Peer victimization refers to one's direct exposure to verbal (i.e., being insulted or threatened), physical (i.e., being hit, pushed, or kicked), and relational (i.e., being isolated, excluded, or the object of rumors) forms of aggression perpetrated by peers (e.g., Hunter et al., 2007; Olivier et al., 2020, 2021). Research conducted among youth with ID supports the key role played by victimization in the development of anxiety and other internalizing disorders (e.g., Chiu et al., 2017; Doyle & Sullivan, 2017; Olivier et al., 2020; Reiter & Lapidot-Lefler, 2007; Ung et al., 2016; Whitney et al., 2019; Wright, 2017), thus reinforcing the need to consider this variable as a core component of the organizational component of their school experiences. Indeed, no study has yet considered

the unique role of the other facets of youth's school experiences while also accounting for the role played by victimization.

Instructional. The instructional component specifically focuses on schools' educational climate (i.e., youth's perceptions of whether learning, mastery, and competence are valued in the school) and students' achievement as key determinants of youth's need for competence (Morin et al., 2013), which are also involved in the development of anxiety (e.g., Costello et al., 2005; Woodward & Fergusson, 2001). Essentially, youth who feel that their school supports learning rather than competition, values their education, and allows them to learn and achieve should feel better equipped to face the academic requirements of their schools without developing anxiety about their ability to succeed (Aldridge & McChesney, 2018; Morin et al., 2013). Not surprisingly, this instructional component of youth's school experiences has been found to protect TD youth against the development of anxiety and other internalizing disorders (e.g., Aldridge & McChesney, 2018; Morin et al., 2009). Given their more limited cognitive skills, lower levels of academic achievement, leading to a fear of failing, are more common among youth with ID than among their TD peers (Datta et al., 2013), making this component of their school experience particularly important to consider in relation to anxiety development (Sainio et al., 2019; Swanson & Howell, 1996).

The Need for a Comprehensive Investigation. While youth with and without ID should be more likely to experience anxiety when their school experiences are unable to properly support their developmental needs, the relative importance allocated to these three different components may differ between these two populations (e.g., Forte et al., 2011; Young et al., 2016; Young-Southward et al., 2017). For instance, whereas TD youth may be more concerned about becoming independent from their parents, making money, and embarking on a successful career trajectory as they transition into adulthood, youth with ID may be more concerned about maintaining positive relations with their primary caregivers and peers, avoiding peer victimization, and achieving a level of academic achievement sufficient to allow them to obtain paid employment (e.g., Forte et al., 2011; Young et al., 2016; Young-Southward et al., 2017). As a result, considering any of these possible characteristics of youth with ID's school experiences in isolation is not likely to allow us to achieve a complete understanding of the core drivers of anxiety among this unique population.

The Present Study

This study seeks to identify the shape of the anxiety trajectories observed among a sample of

youth with ID followed over time for three years, while also considering whether and how these trajectories differ as a function of their sex, ID level, and the presence of comorbid conditions. Given the conflicting results obtained from previous studies conducted among samples of youth with ID, we leave these objectives as open research questions. In addition, we also consider the dynamic role of a series of interpersonal (i.e., between-students relational climate, teacher-student relational climate, bonding climate), organizational (i.e., safety climate, fairness climate, and peer victimization), and instructional (i.e., educational climate and achievement) components of youth's school experiences in the prediction of the shape of their anxiety trajectories. Based on the bulk of previous research conducted among samples of youth with and without ID, and from the theoretical perspectives of SDT (e.g., Ryan & Deci, 2017) and stage-environment fit theory (e.g., Eccles et al., 1993), we expect all three components to play a role in the prediction of youth's trajectories of anxiety. More specifically, negative perceptions of the school climate (relational, bonding, safety, fairness, and educational), lower levels of academic achievement, and higher levels of peer victimization should be associated with higher initial levels of anxiety, with more pronounced increases over times in these levels, and with time-specific increases in youth's levels of anxiety. However, given the lack of previous studies providing a comprehensive picture of the complementary role played by these school experience components for the development of anxiety among youth with ID, we leave the relative contribution of these factors as an open research question, although we expect peer victimization to emerge as a core driver of anxiety among this population (Maïano et al., 2016; Olivier et al., 2020).

Method

Participants

This study relies on a sample of 390 youth with mild (48.2%) to moderate (51.8%) levels of ID. These students were recruited from secondary schools located in Canada (French-speaking, n=140, 49.30% males) and Australia (English-speaking, n=250, 67.10% males). Participants' age ranged from 11–22 years old (M=15.70, SD=2.17). Using the text revised version of the fourth version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; APA, 2000), the official ID classification system at the time of data collection, those with a global IQ between 35 and 49 were classified as having a moderate ID, while those with a global IQ between 50 and 70 were classified as having a mild ID. In Canada, most youth attended regular schools but were enrolled in special classrooms (69.30%), while some attended special schools (30.70%). In

Australia, all youth were recruited from regular schools and of those, 92.6% were enrolled in special classrooms. All participants who participated in the initial data collection point (Time 1; *N* = 390) were recontacted after one (Time 2) and two (Time 3) years to complete the same questionnaires following the same procedures: 270 of them (84 in Canada and 186 in Australia; 61.90% males; 45.30% mild ID; 54.70% moderate ID) participated at Time 2, and 229 of them (76 in Canada and 153 in Australia; 62% males; 43.30% mild ID; 56.70% moderate ID) participated at Time 3.

Procedure

Recruitment was facilitated by schools and community organizations. In Australia, no compensation was offered for participation, whereas Canadian participants were offered (each year) a chance to win one out of 40 gift certificates ($30 CAD) as an incentive for their participation. Parents actively provided signed informed consent for the participation of their child, allowing us to request teacher participation, and granting us access to school records. For youth recruited at school (*N* = 130 in Canada and all 250 participants in Australia), this consent form (with an accompanying information letter) was sent to the parents (or legal representatives) by the school. For the few youth recruited outside of school (*N* = 12 in Canada and none in Australia), these materials were directly given to the parents by the research team and returned using a reply-paid envelope. All youth were also asked to consent to their own participation actively and voluntarily. As part of these procedures, all youth were informed about the goals and procedures of the study, about their right not to participate or withdraw from the study at any time without consequence, and about the confidentiality of their responses.

Parental consent procedures granted the researchers access to school records for all participants. These records included information about youth's most recent assessment of intellectual functioning (only youth with an official school-based ID classification were recruited). The Wechsler (2003) Intelligence Scale for Children – Fourth Edition (WISC-IV) was the IQ test most frequently used by the schools in both countries. However, when the most current IQ score was obtained more than 4 years prior to the study, new IQ assessments were conducted by registered psychologists using the WISC-IV, the Wechsler Adult Intelligence Scale-IV (Wechsler et al., 2008), or the Leiter international performance scale-revised (Roid & Miller, 1997), depending on age and verbal ability. In Australia, 34 participants were thus re-assessed, all of them using the Wechsler version matching their chronological age (31 WISC-IV and 3 WAIS-IV). In

Canada, 77 participants were thus assessed, 63 of them using the Wechsler version corresponding to their chronological age (29 WISC-IV and 34 WAIS-IV), and 14 (with lower verbal expression skills) using the Leiter. This breakdown (in terms of IQ tests) is not available for participants for whom we obtained IQ scores from the school records.

Participants were met at their school (or at a time and location most convenient for them for those recruited outside of schools) by trained research assistants who explained the goals and procedures of the study. Using sample questions for each section of the questionnaire (involving graphical displays and pictograms), the assistants explained the response scales. For participants with mild levels of ID, testing was conducted in small groups of up to 8 participants (or individually for youth recruited outside of schools). For participants with moderate levels of ID, testing was done with 1 or 2 participants at a time. The physical separation between participants was maximised, and a read-aloud procedure was used to increase understanding. Participants were encouraged to ask questions and asked to circle their responses on a paper questionnaire. When answering questions, the research assistants only focused on youth's understanding of the items and response scales rather than on the content of their individual responses. Despite this help, some participants occasionally remained unable to understand a question and were instructed to select the "do not understand" option. Those responses (Time 1: 3.59% to 7.95%; *M*= 4.59%, Time 2: 1.84% to 5.88%; *M*= 2.54%, Time 3: 0.79% to 4.37%; *M*= 1.49%) were treated as missing values. During data collection, research assistants always had access (via phone or in person) to one member of the research team. Teachers were encouraged to complete their own questionnaires during data collection, allowing members of the research team to directly recover their questionnaires. They could also complete the questionnaires at a time more convenient for them and return their responses using a reply-paid envelope.

Measures

To facilitate understanding, all instruments relied on a graphically-anchored response scale, and incorporated pictograms to describe the words used in all items. All self-report questionnaires were first trialed in two pilot studies involving, respectively, 18 (13-21 years old; *n*=8 in Canada and *n*=10 in Australia) and 16 (*n*=6 in Canada and *n*=10 in Australia) youth with ID to ensure their suitability.

Global Anxiety. At each time point, students self-reported their symptoms of anxiety using the Glasgow Anxiety Scale for People with Intellectual Disabilities (GAS-ID; Mindham & Espie,

2003) adapted specifically for self-report among youth with ID (Maïano et al., 2022). This measure includes 27 items covering worries (10 items; α_{T1} =.855, α_{T2} =.852, α_{T3} =.877; e.g., "I worry a lot"), fears (9 items; α_{T1} =.837, α_{T2} =.780, α_{T3} =.833; e.g., "I am scared of the dark"), and physiological symptoms (8 items; α_{T1} =.867, α_{T2} =.864, α_{T3} =.849; e.g., "When I am nervous or uncomfortable, I have difficulty breathing), and can be used to obtain a global anxiety score (α_{T1} =.927, α_{T2} =.911, α_{T3} =.924). These items were rated on a 5-point response scale ranging from "*Never*" to "*Always*."

School Climate (Predictor). Youth's school climate perceptions were measured using six subscales from the Socio-Educative Environment Questionnaire (Janosz et al., 2007), adapted for this study for self-report among youth with ID following well-established procedures (e.g., Dubé et al., 2022; Maïano et al., 2022; Olivier et al. 2021, 2022). These subscales covered: (a) Between-students relational climate (5 items; e.g., "Students have fun together"; α_{T1} =.878, α_{T2} =.882, α_{T3} =.899), (b) teacher–student relational climate (6 items; e.g., "Students feel close to their teacher"; α_{T1} =.895, α_{T2} =.923, α_{T3} =.933), (c) safety climate (4 reversed scored items; e.g., "Many students are afraid of other students"; α_{T1} =.778, α_{T2} =.720, α_{T3} =.781), (d) fairness climate (6 items; e.g., "Students are treated fairly regardless of whether students are boys or girls"; α_{T1} =.814, α_{T2} =.815, α_{T3} =.831), (e) educational climate (7 items; e.g., "Students learn important things"; α_{T1} =.879, α_{T2} =.894, α_{T3} =.907), and (f) bonding climate (4 items; e.g., ''I like my school''; α_{T1} =.864, α_{T2} =.849, α_{T3} =.856). Youth rated each of these statements on a 5-point scale ranging from "*totally disagree*" to "*totally agree*".

Victimization (Predictor). Youth self-reported their experiences of victimization during the current school year (for each year of the study) using the relevant items from the Socio-Educative Environment Questionnaire (Janosz et al., 2007), as adapted for self-report among youth with ID by Olivier et al. (2020, 2021). These items encompass verbal (e.g., "Another student was rude or laughed at me"), physical (e.g., "Another student pushed, hit or kicked me") and relational (e.g., "Another student didn't want me to play with their friends") victimization, and are designed to obtain a single victimization score (α_{T1} =.945, α_{T2} =.912, α_{T3} =.945). All 17 items were rated on a 6-point response scale ranging from "*Never*" to "*5 times or more*".

Academic Achievement (Predictor). Homeroom teachers were asked to report their students' level of academic achievement in reading, writing, math, and science, as well as their overall level of academic achievement using a 5-point response scale ranging from "*Among the lowest in his/her*

class" to "*Near the top of his/her class*". These five indicators of achievement were used to obtain a single global achievement score for each student (α_{T1} =.907, α_{T2} =.871, α_{T3} =.903).

2.3.3. Covariates. Youth's sex (0=girl; 1=boy), age, and ID level (0=mild; 1=moderate) were obtained via official school records. Among participants, 109 (28.4%) had a reported comorbidity (coded 0=none; 1=yes; 55 had a comorbid autism spectrum disorder, 48 a comorbid genetic syndrome, and 6 had both).

Analysis

Preliminary Analyses

A variety of factor analytic models were first estimated to assess the measurement properties of our instruments and to extract factor scores for the main analyses. These analyses relied on the robust weighted least squares estimator with mean and variance adjusted statistics (WLSMV) available in Mplus 8.7 (Muthén & Muthén, 2021). Relative to maximum likelihood-based estimators, WLSMV provides a closer representation of participants' response process for ordinal items including five or fewer response categories and/or following asymmetric response thresholds, such as the items used in this study (Finney & DiStefano, 2013; Li, 2016). Missing data at the item level was low at each time point (self-reports: 1.36% to 12.95%, *M*=6.11%; teacher reports: 0% to 8.97%, *M*=3.04 %) and was handled using the default algorithms for missing data implemented with WLSMV, which allowed us to use all available information from all participants (Asparouhov & Muthen, 2010; Enders, 2010). Importantly, although we estimated these models using the whole sample, time-specific factors scores were only saved for participants who completed each specific measurement point, as missing data procedures implemented within our main analyses are more efficient than those implemented with WLSMV to handle attrition (Asparouhov & Muthen, 2010; Enders, 2010).

Given the complexity of the longitudinal measurement models estimated in this study, four sets of models were separately estimated. First, following Maïano et al. (2023) recommendations, students' ratings on the GAS-ID were modeled using a bifactor exploratory structural equation modeling (bifactor-ESEM) representation. This representation makes it possible to obtain a reliable and valid estimate of youth's global levels of anxiety while properly accounting for the multidimensionality (i.e., the conceptually-related subscales) of the GAS-ID. These models were estimated using a confirmatory bifactor-target rotation procedure (Asparouhov & Muthén, 2009; Browne, 2001), allowing us to estimate one global (global anxiety) and three orthogonal specific

factors (worries, fears, and physiological symptoms) explicitly defined by their *a priori* indicators while targeting all cross-loadings among the specific factors to be as close to zero as possible (Morin et al., 2016, 2020). Second, to account for their conceptually-related nature, youth's reports of between-students relational climate, teacher-student relational climate, fairness climate, educational climate, and bonding climate were modeled using an *a priori* ESEM representation, using target rotation to allow for the free estimation of cross-loadings targeted to be as close to zero as possible. Statistical research has recently shown that, when relying on conceptually-related measures, ESEM (and bifactor-ESEM) results in a more accurate representation of the latent factors, of their correlations, and of their relations with other variables (e.g., Asparouhov et al., 2015; Mai et al., 2018).

Due to the complexity of these analyses, it was not possible to include all six facets of the school climate in a single model (which would have resulted in a total of 18 factors when considering the three time points). We thus analysed youth's perceptions of the school safety climate in a separate measurement model, together with their self-reports of victimization, representing two inter-related components of their exposure to school violence. This decision was supported by preliminary analyses revealing that safety climate perceptions were mainly independent from other school climate perceptions (i.e., low correlations and no cross-loadings). These two variables (i.e., safety climate and victimization) thus form the third set of measurement models estimated in this study and were both captured by confirmatory factor analyses. In the model including all other climate dimensions, two *a priori* correlated uniquenesses were included to reflect the parallel wording of two items from the bonding climate subscale (i.e., *I am happy to …* (a) *go to my school*; (b) *return to my school after a holiday*), and two items from the educational climate scale (i.e., *The teacher helps the students to …* (a) *succeed*; (b) *understand*) (Morin et al., 2016; 2020). Lastly, teachers' reports of academic achievement were modeled using a one-factor CFA at each time point, including *a priori* correlated uniquenesses between writing and reading to acknowledge the fact that these are two components of verbal achievement. All longitudinal models included *a priori* correlated uniquenesses between matching indicators over time to avoid converging on inflated estimates of stability (Marsh, 2007).

To ensure that all measures performed equivalently and that factor scores were comparable over time, we tested the measurement invariance of each model over time in sequence (Millsap, 2011; Morin, et al., 2011): (a) configural (i.e., same factor structure); (b) weak (i.e., invariance of

factor loadings); (c) strong (i.e., invariance of factor loadings and response thresholds); (d) strict (i.e., the invariance of factor loadings, response thresholds, and item uniquenesses); (e) correlated uniquenesses (for the reading-writing correlated uniqueness included in the teachers model); (f) latent variance-covariance; and (g) latent means.

Given the known oversensitivity of the chi-square (χ^2) test of exact fit to sample size and minor misspecification, we relied on common goodness-of-fit indices to assess model fit (Hu & Bentler, 1999; Marsh et al., 2005). Values greater than .90 and .95 on the comparative fit index (CFI) and on the Tucker-Lewis index (TLI), as well as values lower than.08 and .06 on the root mean square error of approximation (RMSEA), were respectively taken to reflect adequate and excellent fit. We also report the model-based composite reliability of all factors (McDonald, 1970). For model comparisons (e.g., tests of measurement invariance) we considered decreases in CFI and TLI greater than .01, and increases in RMSEA greater than .015, relative to the previous model in the sequence to suggest a lack of invariance (Chen, 2007; Cheung & Rensvold, 2002; Marsh et al., 2005). Factors scores were saved from the most invariant model, up to the model of latent variance-covariance invariance (to avoid placing any constraints on the latent mean for the estimation of the main models), for the main analyses. These factor scores were saved in standardized units, using a *SD* of 1 at each time point, and a grand mean of 0 across all time points (so that each time-specific score can be interpreted in *SD* units as deviations from this grand mean).

Main Analyses

Our main analyses were conducted using the maximum likelihood robust (MLR) estimator, Mplus 8.7 (Muthén & Muthén, 2021), and Full Information Maximum Likelihood (FIML) procedures to handle attrition (Enders, 2010). The anxiety trajectories were estimated using latent curve models (LCM; Bollen & Curran, 2006) based on youth's time-specific global levels of anxiety. LCM relies on the estimation of intercepts (reflecting youth's initial levels of anxiety) and linear slopes (reflecting the rate of change in youth's levels of anxiety over time) to reflect growth trajectories (e.g., Bollen & Curran, 2006; Diallo et al., 2014). In these analyses, time was coded in unit increments (0–2) to reflect the one-year intervals between the three repeated measures[6]. In

[6] To ensure that there was no evidence of nonlinearity, we also estimated latent basis models (relying on freely estimated time codes to avoid imposing a linear function). These models revealed no evidence of nonlinearity. Following Metha and West's (2000) recommendations, we also tested whether relying on uniform time codes when participants differ in age could result in estimation biases. As we found no evidence (condition 1) that the regression of the intercept factor on age was equal to the slope factor, and (condition 2) that the regression of the slope factor

LCM, these intercept and linear slope factors are specified as random variables with a mean (reflecting the average trajectories observed in the whole sample) and a variance (reflecting the fact that these trajectories vary across participants). This random specification makes it possible to incorporate predictors of growth.

To assess the role of sex (0=girl; 1=boy), age (in standardized units), ID level (0=mild; 1=moderate), and comorbid conditions (0=no; 1=yes), we contrasted three alternative predictive models. Model 1 is a null model, in which associations between these variables and the intercept (i.e., initial level) and slope (rate of change over time) of the anxiety trajectories were fixed to be zero. Model 2 allowed these variables to predict the intercept, but not the slope, of the anxiety trajectories. Finally, Model 3 allowed these variables to predict the intercept and slope of the anxiety trajectories.

For our theoretical predictors, which were measured repeatedly over the course of the study, we followed a procedure first advocated by Morin et al. (2011) to test associations among longitudinal trajectories without unreasonably increasing the computational complexity of the models. More precisely, we relied on a series of preliminary LCM to estimate the shape of youth's trajectories on all these predictors. Factors scores, reflecting youth initial levels (intercepts), linear growth over time (slopes) and time-specific fluctuations around their model estimated trajectories were saved from these models and used in our main analyses as predictors of youth anxiety trajectories. These factor scores were then incorporated to the main LCM solution for anxiety, and the optimal predictive model was selected among four alternative solutions. Model 1 was a null model (all predictions were fixed to 0). Model 2 allowed the associations between the intercepts of the predictor trajectories and the intercepts of the anxiety trajectories to be freely estimated. Model 3 also allowed the associations between the intercepts of the predictor trajectories and the linear slopes of the anxiety trajectories to be freely estimated (i.e., added to Model 2). Model 4 also allowed the associations between the linear slopes of the predictor trajectories and the linear slopes of the anxiety trajectories to be freely estimated (i.e., added to Model 3). Finally, we tested whether time-specific deviations around the estimated predictors' trajectories could predict time-specific deviations around the anxiety trajectories, to verify the momentary effects of the predictors on momentary fluctuations in anxiety by contrasting three alternative models. Model 1 was again

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on age was equal to zero, we concluded that no bias occurred as a result of this decision. However, to fully account for possible age differences, we included it as an additional predictor in our analyses.

a null model (all predictions were fixed to 0). Model 2 freely estimated these predictions but constrained them to have the same magnitude over time. Model 3 freely estimated these predictions and allowed them to vary over time.

Results

Preliminary Measurement Models

The results from all preliminary measurement models are disclosed in the online supplements. All measurement models resulted in an excellent level of fit to the data at each separate time point (see Table S1 of the online supplements) and were entirely invariant over time (see Table S2 of the online supplements). The standardized parameter estimates from the model of latent variance-covariance invariance associated with the measure of anxiety (from which the factor scores were extracted) are reported in Table S3 of the online supplements and reveal a well-defined and reliable global anxiety factor (M_{λ}=.591; ω=.954)[7]. The standardized parameter estimates from the model of latent variance-covariance invariance associated with the measurement model underlying our predictors (from which the factor scores were extracted) are reported in Table S4 to S6 of the online supplements. These results reveal that all factors were well-defined (M_{λ}= .756) and reliable (ω =.823 to .970). Lastly, the parameter estimates from the preliminary LCM models used to represent the predictors' trajectories (and to save factors scores representing the intercepts, slopes, and time-specific fluctuations of the predictors' trajectories) are reported in Table S7 of the online supplements. These results reveal, on average, stable trajectories for achievement, youth's perceptions of the between-students and teacher-student relational climates, and stable youth's perceptions of the school fairness and educational climates. For these trajectories, significant inter-individual variability was observed for the intercept and slope factors (achievement and educational climates), or for the intercept factor (fairness, between-students relational, and teacher-student relational climates). These results also revealed decreasing trajectories of victimization (with significant intercept variability) and perceptions of the school bonding climate (with significant intercept and slope variability), and increasing trajectories for youth's perceptions of the school safety climate (with significant intercept variability).

[7] The specific factors (which are not included in our main analyses), were also reasonably well-defined, albeit weaker than the global factor: (a) Worries: M_{λ}= .373, ω = .747; (b) fears: M_{λ} = .255, ω = 0.568; and (c) physiological symptoms: M_{λ}=.340, ω=.680).

Correlations among all variables are reported in Table S8 of the online supplements[8].

Latent Curve Models

Unconditional LCM. The linear LCM model used to represent youth's trajectories of global anxiety resulted in a satisfactory fit to the data (χ^2 = 3.454, df = 1, p > .05; CFI = .987, TLI = .961, RMSEA = .082 [90% CI .000, .184]). This model revealed initial levels of anxiety .145 SD units above the grand mean of the sample across all time points, accompanied by a slight but significant decreasing trajectory corresponding to a small average decrease in anxiety levels of -.098 SD units per time point. This average trajectory of anxiety is illustrated in Figure 1. Although these initial levels presented significant inter-individual variability (variance = .541), the small rate of unconditional (i.e., when predictors are excluded from the models) decrease seemed to be normative (i.e., shared across participants as shown by a non-statistically significant slope variance of .045), and independent from their initial levels (i.e., non-statistically significant intercept-slope correlation of -.131). Fluctuations occurred around these average trajectories (time-specific residuals = .183 to .317 across time points).

Individual Characteristics and Anxiety Trajectories. The results from the predictive models involving youth's individual characteristics (sex, age, ID level and comorbidities) are reported in the top section of Table 1. Although all models resulted in a satisfactory level of fit to the data, Model 2 resulted in a substantial improvement in model fit relative to Model 1 (ΔCFI and ΔTLI >.01; ΔRMSEA>.015), whereas Model 3 resulted in a decrease in fit relative to Model 2. These results thus support the presence of effects limited to the intercept of the anxiety trajectories; a conclusion that was supported by an examination of the parameter estimates associated with all three models. Model 2 was thus retained for interpretation. These results revealed that boys reported lower initial levels of anxiety than girls (b = -.200; *s.e.* = .088; $p \leq .05$; β = -.131). Moreover, older students also reported lower levels of anxiety (b = -.104; *s.e.* = .047; $p \leq .05$; β = -.139) in a way that is consistent with our previous identification of declining trajectories of anxiety over time. In contrast, youth's ID levels (b = -.110; *s.e.* = .093; $p > .05$; β = -.074) and the presence of comorbid conditions (b = -.003; *s.e.* = .112; $p > .05$; β = -.002) had no effects on their levels of

[8] As an additional verification, we tested the invariance of our measures across countries. These results are reported in Table S9 of the online supplements. Despite some latent variance and mean differences, these results supported the equivalence (configural, weak, strong, and strict invariance) of our measures across countries.

anxiety. Based on these conclusions, sex and age were retained as predictors of the intercept of the anxiety trajectories in all upcoming analyses.

School Experiences and Anxiety Trajectories. The results from the models focused on associations between youth's school experiences and anxiety trajectories are reported in the second section of Table 1. For predictions involving the intercepts and slopes of the predictors and youth's anxiety trajectories, although model fit linearly increased from Model 1 to Model 2, and to Model 3, thus supporting the added-value of Model 2 and 3 relative to the null model, neither of these models achieved a minimally acceptable level of fit according to the TLI. In contrast, Model 4 resulted in an excellent level of fit to the data, and in a significant increase in fit relative to Models 1 to 3 (ΔCFI and ΔTLI >.01; ΔRMSEA>.015), suggesting statistically significant associations between the intercepts and slopes of the predictors' trajectories and the intercepts and slopes of the anxiety trajectories. The results from the retained Model 4 are reported in Table 2. These results indicate that initial levels of victimization were positively related to youth's initial levels of anxiety. Moreover, increases over time in youth's experiences of victimization were also significantly related to increases over time in their levels of anxiety. Second, youth's initial perceptions of the safety climate of their schools were negatively related to their initial levels of anxiety. Third, youth's initial perceptions of the educational climate of their schools were negatively related to their initial levels of anxiety, but positively related to increases over time in their levels of anxiety. When considered in the context of the small normative decline observed in the sample, this result indicates that higher perceptions of educational climate stunted the rate at which anxiety normatively decreased over time.

Momentary Associations between Time-Specific Fluctuations on the Theoretical Predictors and Youth's Levels of Anxiety. The results from the models designed to assess the momentary, or time-specific, associations between fluctuations in predictors and fluctuations in anxiety are reported in the last section of Table 1. Once again, the null model (Model 1) failed to achieve an acceptable level of fit to the data, whereas Model 2 and 3 both achieved an excellent level of fit to the data. However, although the model allowing for these effects to vary freely over time (Model 3) resulted in a higher level of fit to the data relative to the model in which these predictions were constrained to equality over time (Model 2), the parameter estimates did not reveal any apparent change in the strength of these predictions over time. This interpretation is consistent with the fact that a robust (Satorra & Bentler, 2001) chi-square difference test calculated

between these two models was non-statistically significant ($\Delta\chi^2 = 24.079$, $df = 16$; $p > .05$) which is noteworthy considering the known oversensitivity of this test to minor misspecifications (e.g., Marsh et al., 2005). The more parsimonious Model 2 (equal over time) was thus retained. The results from this model are reported in Table 3 and reveal that momentary increases in victimization were positively associated with momentary increases in youth's levels of anxiety. In addition, momentary increases in between-student relational climate and educational climate were related to momentary decreases in youth's levels of anxiety. Unexpectedly, momentary increases in school fairness climate and student-teacher relational climate perceptions were related to momentary increases in youth's levels of anxiety.

Discussion

This study sought to fill a gap in our understanding of anxiety development among youth with ID, as well as to document the role of school experiences in this development. Our reliance on measures specifically developed to allow youth with ID to report their symptoms of anxiety and school experiences in a psychometrically sound manner made it possible to consider these questions from youth's own unique perspectives, something that has only rarely been done in relation to anxiety development. Our results revealed a slight normative decrease in youth's anxiety trajectories over time and showed that boys and older youth displayed lower initial levels of anxiety than girls and younger students, whereas youth's levels of ID and the presence of comorbid conditions shared no association with these trajectories. Perhaps more importantly, our results finally showed that school experiences, including peer victimization but also a variety of other components of these experiences, shared multiple associations with youth's levels of anxiety. We discuss each of these results in turn.

Anxiety Trajectories among Youth with ID

Considering the scarcity of prior longitudinal studies of anxiety development conducted among samples of youth with ID and of the inconsistent nature of the results obtained in these studies, it was not possible to hypothesize which shape these trajectories would follow in our sample. In retrospect, it is interesting to note that our results, showcasing the presence of a small normative decline in anxiety in adolescence, are most similar to those obtained in studies relying on reasonably large samples of youth with ID (Einfeld et al., 2006; Foley et al., 2016; Tonge & Einfeld, 2003), rather than on smaller samples of youth primarily selected for presenting other types of developmental disorders (Gotham et al., 2016) or impairments (Botting et al., 2016). This

convergence of results with those obtained in studies of reasonably large samples of youth with ID rated by their parents suggests that youth with ID share their parents' perspective regarding the presence of a normative decline in adolescence in anxiety levels. Our results also revealed substantial variability in youth's initial levels of anxiety and found that these initial levels were independent from this normative decline, suggesting that all youth with ID, irrespective of their initially high or low levels of anxiety, should experience a normative decrease in their levels of anxiety over the course of adolescence.

Youth's Individual Characteristics and their Trajectories of Anxiety

Boys and older participants displayed lower initial levels of anxiety than girls and younger participants but followed a generally similar evolution over time (i.e., they all experienced the same normative decrease). The effect of age is, in and of itself, not surprising as it is consistent (in size and direction) with the normative decline observed in our sample. This effect is also consistent with meta-analytic studies of individuals with autism spectrum disorders. More precisely, the levels of anxiety reported in a meta-analysis of younger samples of youth with autism spectrum disorders (with a mean age close to 10 years; Van Steensel et al., 2011) were substantially lower than those reported in a second meta-analysis focusing on older samples of persons with autism spectrum disorders (M_{age} close to 31 years; Hollocks et al., 2019). These results thus clearly highlight that, as they grow up, youth with ID seem to develop more efficient ways to handle their anxiety (Austin et al., 2018).

The sex differences observed in this study are consistent with the generally well-established higher levels of anxiety typically reported among TD girls relative to TD boys in adolescence (e.g., Vasey et al., 2014). Considering this convergence of results with research conducted among TD populations, where self-reports of anxiety are far more frequent, our results suggest that the lack of consistency observed in previous research focusing on youth with ID or other types of developmental disorders might be anchored in their sole focus on parental reports. Indeed, whereas some of those studies report similarly higher levels of anxiety among girls (Botting et al., 2016; Einfeld et al., 2006), one other study of youth with autism spectrum disorders reported higher levels among boys (Gotham et al., 2016), while others failed to detect sex differences (Foley et al., 2016; Rodas et al., 2020). Similarly, the lack of observed associations between youth levels of ID and the presence of comorbid conditions is not entirely consistent with previous research evidence stemming mainly from studies focusing on youth with specific types of developmental disorders

and parental reports of anxiety (Botting et al., 2016; Einfeld et al., 2006; Foley et al., 2016; Gotham et al., 2016).

When we consider these results, some conclusions seem to be in order. First, the bulk of research evidence indicates that, when focusing on reasonably large samples of youth with ID who self-reported their symptoms of anxiety, differences related to age (i.e., decline), and sex (i.e., lower levels among boys) mimic those typically reported among TD populations. Second, despite some consistency in developmental trends, research focusing on parental reports of anxiety among youth with ID does not seem to entirely converge with research focusing on youth's self-reports. This observation clearly highlights the need for further replication efforts, particularly in relation to the effects of ID levels and comorbid conditions, as well as for comparative research in which both types of reports are jointly considered. Furthermore, our results suggest that researchers and educators aiming to address the needs of youth with ID should prioritize research evidence in which the voice and agency of youth with ID has been taken into consideration, as their unique perspective seems to differ from that of their primary caregivers.

School Experiences and Youth's Trajectories of Anxiety

Consistent with our expectations, anchored in SDT (Ryan & Deci, 2017) and stage-environment fit theory (e.g., Eccles et al., 1993), our results support the idea that all three components (interpersonal, organizational, and instructional) of school experiences had a complementary role to play in influencing the development of anxiety trajectories among youth with ID.

Interpersonal. According to attachment theory (e.g., Bowlby, 1973), SDT (Ryan & Deci, 2017), and stage-environment fit theory (e.g., Eccles et al., 1993), we anticipated that youth's perceptions of the quality of their schools' between-student relational climate, student-teacher relational climate, and bonding climate would all be related to lower levels of anxiety. Our results indicated that none of these components of youth's school experiences were associated with their initial levels of anxiety or with the shape of their longitudinal trajectories of anxiety. Rather, our results revealed momentary effects of some of these components on time-specific fluctuations in youth's levels of anxiety. More precisely, and in agreement with previous results (e.g., Klein et al., 2018), we found that momentary increases in perceptions of the between-student relational climate were associated with momentary decreases in youth's levels of anxiety. In other words, when youth are exposed to a particularly positive between-student relational climate in any given

year, their levels of anxiety appear to benefit from this exposure in the same school year. Unfortunately, these momentary effects are not strong enough to generate change in youth anxiety trajectories, although they are able to help them achieve at least a momentary reprieve from these symptoms.

In contrast, momentary increases in perceptions of the student-teacher relational climate were unexpectedly associated with time-specific increases in their levels of anxiety. As youth with ID tend to rely more heavily on adult caregivers (e.g., Craven et al., 2015), our results suggest that they may attribute this momentary increase in their perception of the student-teacher relational climate as one that does not occur randomly, but rather to compensate for their own limitations, leading them to experience additional pressure to appear worth these additional efforts on the part of their teachers. This felt pressure may explain why these momentary increases lead to matching increases in youth's levels of anxiety in the same school year. This speculative explanation would deserve more extensive investigations specifically focused on replicating and explaining this unexpected association.

Lastly, the lack of effects of youth's perceptions of their school bonding climate suggests that this component of their school experiences may simply be less important for youth with ID than the other interpersonal components of their school experiences. Interestingly, multivariate research accounting for multiple components of youth's school experiences among samples of TD adolescents has also found that the effects of bonding climate perceptions tended to become smaller once all components of youth school experiences were considered (Morin et al., 2009 2013), consistent with the theoretical positioning of this school climate component as representing a synthesis of all other school climate perceptions (Janosz et al., 1998, 2007). Alternatively, it is also possible that bonding might be a difficult concept to grasp for youth with ID, which would then explain why this component appears less relevant for them than among TD youth (e.g., Goldstein et al., 2015; Shochet et al., 2006).

Organizational. Contrasting with the interpersonal component of youth's school experience, all three facets of the organizational component considered in this study (i.e., peer victimization, safety climate, and fairness climate) were found to share significant associations with anxiety. First, and as expected, initial levels of victimization were related to higher initial levels of anxiety, while initial safety climate perceptions were related to lower initial levels of anxiety. Moreover, and providing further support to the importance of peer victimization for youth

with ID more generally (Maïano et al., 2016) and as a driver of internalizing disorders such as anxiety more specifically (e.g., Chiu et al., 2017; Doyle & Sullivan, 2017; Olivier et al., 2020; Reiter & Lapidot-Lefler, 2007; Ung et al., 2016; Whitney et al., 2019; Wright, 2017), our results showed that stable or momentary increases over time in peer victimization were also respectively associated with increasing trajectories of anxiety and with momentary increases in anxiety among youth with ID.

When considering the balance between security and autonomy, we unexpectedly found that momentary increases in youth's perceptions of the fairness climate of their school were related to momentary increases in their levels of anxiety in the same school year, thus mimicking the results observed for teacher-students relational climate. Given the multivariate nature of our analyses, these results cannot be interpreted in disconnection from the fact that youth who were more frequently victimized within a year also experienced momentary increases in their levels of anxiety. On this basis, these unexpected associations could potentially reflect social comparison processes (e.g., Gerber et al., 2018), suggesting that when youth with ID who experience an increase in victimization in a given year also feel that teachers tend to be fair and supportive toward all students, including their aggressors, they might come to experience a momentary increase in their levels of anxiety. Fortunately, these effects do not generalize to their overarching trajectories of anxiety.

Instructional. The lack of associations between achievement and anxiety found in the present study might possibly be related to our focus on youth with ID. Indeed, due to their unique cognitive limitations, schooling most typically focuses on mastery and effort, rather than performance and achievement, for youth with ID (e.g., Deshler et al., 2001; Fuchs et al., 1997). In contrast, our results showed that more positive perceptions of the school educational climate were related to lower initial levels of anxiety among youth with ID, and that momentary increases in these perceptions were themselves associated with similar decreases in their levels of anxiety during the same school year. However, and unexpectedly, higher initial perceptions of the school educational climate were also found to limit the normative rate of decrease in anxiety trajectories among youth with ID. In other words, anxiety levels do not decrease as quickly among youth with ID who perceived that their school values learning, mastery, and competence. We can offer two speculative explanations for this result. First, as youth with ID get older and more advanced academically, they become increasingly confronted with their own limitations (Craven et al., 2015). In this

context, attending a school that places a high level of importance on learning and achievement may progressively generate increasing levels of anxiety. Second, our measure of educational climate did not differentiate between mastery and performance goals, highlighting a generic focus on education that encapsulates both types of goals. Thus, as a complement to the first explanation, youth with ID may also come to be progressively more aware of the focus on performance goals (Bong, 2009), leading them to experience increasing levels of anxiety about their ability to match these educational standards (Furner & Gonzalez-DeHass, 2011), a concern that is quite prevalent among youth with ID (Datta et al., 2013). Clearly, future research will be needed to verify these interpretations, and to unpack the psychological mechanisms underlying these associations.

Globally speaking, our results go beyond supporting the key role of peer victimization for the development of anxiety among youth with ID, to also highlight the complementary role of various components of school experiences that can be modified via research-informed interventions, including their perceptions of their school relational, educational, safety, and fairness climates.

Limitations

Some limitations must be acknowledged in relation to our results. First, this study relied on a convenience sample of youth with mild to moderate levels of ID recruited in Australia and Canada, thus limiting the generalizability of our findings. This limitation is quite important considering the conflicting findings reported in previous research regarding the role of individual characteristics as predictors of anxiety among youth with ID (Botting et al., 2016; Chester et al., 2013; Einfeld et al., 2006; Gotham et al., 2016; Hermans et al., 2013; Maïano et al., 2022; Rodas et al., 2020; Rojahn et al., 2011). Future studies should thus seek to replicate our results among new, and more diversified, samples of youth with a wider range of ID levels recruited from different countries and educational contexts. Second, despite the longitudinal nature of this study, it remains impossible to infer directionality or causality. For instance, it is possible that increases in anxiety may also be contributing to increases in peer victimization or to decreases in school climate perceptions (e.g., Hodges & Perry, 1999). Future studies may want to use a bidirectional research design to specifically investigate the reciprocal associations between these variables, while accounting for a wider range of possible confounders. Third, whereas this is also a strength of this study, our almost total reliance (except for teachers' ratings of achievement) on self-report questionnaires also limits the generalizability of our results to students' perceptions, making it impossible to reach conclusions regarding the role played by objective school characteristics in

relation to clinical measured diagnostics of anxiety. Finally, considering our unexpected findings, it would be interesting for future studies to explicitly assess some of the mechanisms potentially involved in these effects (e.g., achievement goals and goals structures, social comparisons, etc.).

Conclusion

The present study is the first to explicitly capture the unique perspectives of youth with ID in relation to how their longitudinal trajectories of anxiety may relate to their school experiences over the course of adolescence. In this regard, our results revealed a slight normative decreasing trend in anxiety over the course of adolescence, in addition to clearly demonstrating the role of school violence as a core driver of anxiety among youth with ID. Perhaps more importantly, they reveal that a variety of other components of youth's school experience, under the control of schools and teachers, also seem to play a role in this development. Although some of our unexpected results may be specific to the present sample, highlighting the need for replication, many of these results are consistent with previous research conducted among youth with ID and TD youth, reinforcing their potential importance. Incidentally, our results tentatively suggest that school interventions aimed at elevating youth's perspective of a safe, peer supportive, and goal-oriented learning environment will translate into lower levels of anxiety over time. By suggesting that the perspective of youth with ID may differ from those of their significant others, our results therefore suggest that prioritizing the voice and agency of these youth could be essential for future research and intervention.

Tables and Figures

Table 1

Goodness-of-Fit Results from the Latent Curve Models with Predictors

Models	χ^2	df	CFI	TLI	RMSEA (90% CI)
Youth's Personal Characteristics					
Model 1: Null model	23.372*	13	.964	.958	.045 (.011; .074)
Model 2: Prediction of the Intercepts	11.891*	9	.990	.983	.029 (.000; .067)
Model 3: Prediction of the Intercepts and Slopes	9.163*	5	.985	.956	.046 (.000; .092)
Theoretical Predictors					
Model 1: Null model	186.480*	53	.691	.668	.079 (.066, .091)
Model 2: Intercepts predict intercepts	83.849*	45	.907	.883	.047 (.031, .062)
Model 3: Model 2 + intercepts predict slopes	71.742*	37	.918	.873	.049 (.031, .065)
Model 4: Model 3 + slopes predict slopes	34.975*	29	.986	.972	.023 (.000, .047)
Time-Varying Predictors					
Model 1: Null model	156.197*	51	.762	.622	.072 (.060; .085)
Model 2: Time-varying predictions equal over time	52.256*	43	.979	.961	.023 (.000, .043)
Model 3: Time-varying predictions free to vary over time	28.136*	27	.997	.992	.010 (.000, .041)

Note. *$p < .01$; χ^2: Chi-square; df: Degrees of freedom; CFI: Comparative fit index; TLI: Tucker-Lewis index; RMSEA: Root mean square error of approximation; 90% CI: RMSEA 90% confidence interval.

Table 2

Relations Between the Predictors and Anxiety at the Trajectory Level (Model 4)

	Intercept factor		Linear slope factor	
Predictors (Intercepts)	b (SE)	β	b (SE)	β
Academic Achievement	-.024 (.129)	-.023	.062 (.052)	.206
Victimization	.383 (.076)**	.355	.101 (.060)	.319
Safety Climate	-.277 (.104)**	-.204	-.046 (.073)	-.115
Bonding Climate	-.070 (.106)	-.069	.057 (.062)	.192
Between-Students Relational Climate	-.094 (.153)	-.070	.095 (.141)	.240
Teacher-Student Relational Climate	.294 (.151)	.198	-.151 (.099)	-.347
Fairness Climate	.218 (.118)	.138	-.045 (.074)	-.097
Educational Climate	-.335 (.110)**	-.243	.270 (.089)**	.667
Predictors (Slopes)				
Academic Achievement			.017 (.103)	.024
Victimization			1.542 (.334)**	.650
Safety School Climate			-.738 (1.082)	-.087
Bonding School Climate			-.036 (.099)	-.035
Between-Students Relational Climate			-.650 (.886)	-.280
Teacher-Student Relational Climate			-.166 (.258)	-.107
Fairness Climate			-.671 (.393)	-.342
Educational Climate			-.069 (.138)	-.084

Note. *p < .05; **p < .01. b = unstandardized regression coefficients; β = standardized regression coefficients; SE = standard errors of the coefficients.

Table 3

Time-Invariant Associations between the Predictors and Anxiety (Model 2)

	Invariant	Time 1	Time 2	Time 3
Predictors	b (SE)	β (SE)	β (SE)	β (SE)
Academic Achievement	.010 (.098)	.010 (.095)	.010 (.102)	.011 (.102)
Victimization	.295 (.050)**	.297 (.052)**	.293 (.051)**	.288 (.049)**
Safety Climate	-.080 (.049)	-.081 (.050)	-.079 (.048)	-.077 (.047)
Bonding Climate	-.009 (.051)	-.010 (.054)	-.010 (.056)	-.009 (.052)
Between-Students Relational Climate	-.134 (.058)*	-.143 (.061)*	-.148 (.063)*	-.140 (.061)*
Teacher-Student Relational Climate	.239 (.062)**	.245 (.064)**	.263 (.066)**	.267 (.070)**
Fairness Climate	.182 (.052)**	.188 (.053)**	.193 (.055)**	.203 (.059)**
Educational Climate	-.254 (.066)**	-.275 (.072)**	-.285 (.074)**	-.295 (.078)**

Note. *p < .05; **p < .01. b = unstandardized regression coefficients; β = standardized regression coefficients; SE = standard errors of the coefficients.

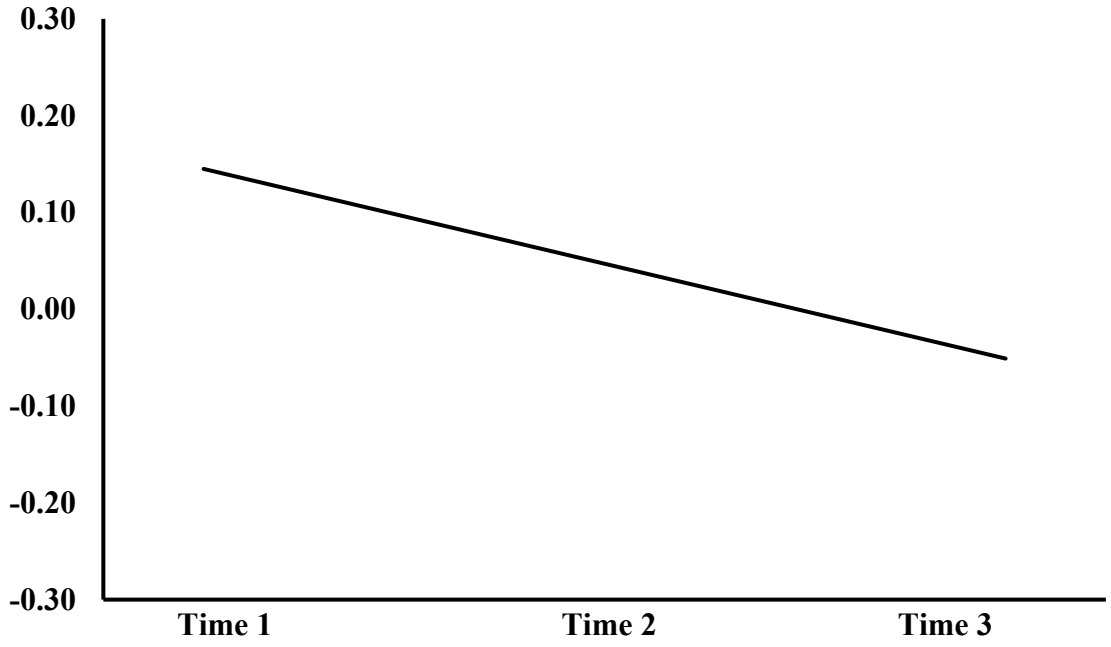

Figure 1. Average Anxiety Trajectories Observed in this Sample
Note. Anxiety levels have a mean of 0 and a SD of 1 over time.

CHAPTER 5:
General Discussion

Relying on a complementary set of methodological approaches, this thesis set out to achieve a comprehensive picture of the role played by a variety of social factors present in the daily lives of youth with ID in relation to their risk of developing a variety of psychosocial adaptation difficulties. In doing so, this thesis was designed to address two important limitations of research conducted among this population. First, by focusing on self-reports provided by youth with ID, we allowed these youths to use their own voices to share with us their unique perspective on their social interactions and psychosocial adaptation difficulties. Second, by relying on a large longitudinal sample of youth with ID recruited in Canada and Australia who completed a wide array of measures focused on their social and psychological reality, we sought to obtain a more comprehensive quantitative picture of this reality than what is typically achieved in this research area. Indeed, acknowledging that research focused on youth with ID has often tended to ignore their own unique perspective (e.g., Maïano et al., 2022; Mindham & Espie, 2003) hides another, possibly even more severe, practical limitation: the piecemeal nature of research typically conducted among youth with ID (i.e., small samples, qualitative analyses, informant reports, weak analyses, cross-sectional designs, limited set of variables, etc.). Although this limitation can be explained by the unique challenges posed by working with a population that has cognitive, verbal, and functional limitations, it has long forced practitioners and educators to rely on guidance from research conducted among TD populations based on the unverified assumption that these results will generalize to youth with ID. It is our hope that, by relying on psychometrically-sound self-report instruments and on a rigorous and diverse methodological approach, results from this thesis will contribute, in some way, to pave the way for improved research methodologies in this area.

Toward a More Comprehensive Picture of the Role Played by the Social Context for the Psychological Adaptation of Youth with ID

A Holistic Person-Centered Perspective on Social Interactions

In the first study, presented in Chapter 2, we relied on person-centered analyses to obtain a comprehensive holistic picture of the social interaction profiles manifested by youth with ID while accounting for their proximal relationships with their parents, teachers, and peers. To maximize the comprehensive nature of this study, we also considered associations between these profiles and youth's self-esteem, prosocial behaviors, and aggressive behaviors as reported by

themselves, their parents and their teachers. Our results revealed four main profiles, similar to those identified among samples of TD youth (Ciarrochi et al., 2017; Jager, 2011; Laursen, 2006; Scholte et al., 2001) and youth with ASD (Uljarević, 2020; Zaidman-Zait et al., 2021). Two of those profiles displayed generally desirable configurations of social interactions (i.e., *Socially Connected* and *Socially Integrated*), whereas the remaining profiles displayed more problematic social interactions (i.e., *Socially Isolated* and *Socially Rejected*).

Socially Integrated youth displayed entirely positive relationships with their parents, teachers, and peers. In contrast, *Socially Connected* youth, although they reported even more positive relationships on most indicators, also reported slightly higher than average levels of peer victimization. This observation suggested that this profile might correspond to "popular" youth. Indeed, popularity means more frequent and numerous social interactions (e.g., Zimmer-Gembeck & Webb, 2017), which increases the likelihood that some of them may become conflictual. As a result, research has previously shown that popular youth tend to experience slightly higher levels of victimization than their peers (Marsh et al., 2011; Olivier et al., 2022b). Some of them may even rely on externalizing behaviors to increase or maintain their popularity (e.g., Snyder, 2002; Snyder & Patterson, 1995), which may in turn increase their risk of victimization (Marsh et al., 2011).

Whereas popularity may explain differences between the two socially desirable profiles, shyness may explain the differences between the less desirable ones. More precisely, *Socially Rejected* youth seemed to be actively excluded by their social environment (as supported by their high levels of victimization), whereas *Socially Isolated* youth seemed to lack a positive connection to others. Shyness, by reducing the ability of these youth to seek out others (e.g., Hassan et al., 2021; MacGowan, & Schmidt, 2021), may contribute to their *Socially Isolated* profile membership.

A previous study conducted by Ciarrocchi et al. (2017) among a sample of TD youth revealed that roughly 15% of their participants were socially "rich" by virtue of their social interaction profile, roughly 25 % were socially "poor", while most of their sample corresponded to a large "middle class". Our results highlighted that this was not the case for youth with ID, among whom no evidence of "middle class" was found. This observation is also consistent with accumulating evidence showcasing the higher risk of youth with ID of experiencing poorer social interactions than their TD peers (e.g., Carter & Spencer, 2006; Hamadi & Fletcher, 2021; Sheard et al., 2001; Teague et al., 2018; Tipton et al., 2013; Tipton-Fisler et al., 2018; Zeedyk et al., 2014).

This result is also consistent with person-centered results obtained among youth with ASD (Zaidman-Zait et al., 2021), suggesting that social interactions tend to be more an "either-or" phenomenon among youth with ID than among their TD peers. Moreover, and also in contradiction to results obtained among TD youth (Ciarrocchi et al., 2017) this either-or phenomenon seems to extend to types of social interactions, as youth with ID systematically reported similar types of relationships with their peers, parents, and teachers, whereas a subset of TD youth report distinct types of social interaction with different members of their social network. This last observation suggests that the internal working models stemming from early attachments (Ainsworth, 1989; Bowlby, 1973) may play a stronger, or more rigid role in determining the nature of future social interactions among youth with ID than among their TD peers.

Finally, as expected, our results clearly indicated that more desirable outcomes were associated with the most desirable profiles (*Socially Integrated* and *Socially Connected*) than with the less desirable ones (*Socially Isolated* and *Socially Rejected*) (e.g., Al-Yagon, 2016; Baker et al., 2019; Caplan et al., 2016; Clark et al., 2016; Crouch et al., 2014; Nambiar et al., 2020; Schuiringa et al., 2015). Although there were some exceptions to this global pattern of associations, these exceptions were consistent with our theoretical inference regarding the possible role played by popularity or shyness. For example, youth's self-reported self-esteem and prosocial behaviors were lower in the *Socially Isolated* profile than in the *Socially Rejected* profile. Shyness is a known predictor of low self-esteem among youth with ID (Wadman et al., 2008), and has also been shown to result in youth's reluctance to engage in prosocial behaviors (Hassan et al., 2021; MacGowan, & Schmidt, 2021). Similarly, we found that *Socially Connected* youth reported the highest levels of self-esteem and prosocial behaviors which may be partly driven by popularity (Mahadevan et al., 2019; Zhou & McLellan, 2021). Moreover, our results demonstrated that *Socially Connected* youth rely on aggressive behaviors as often as their *Socially Rejected* peers, which further supports the idea that aggression may be used by these youth as a way to increase or maintain popularity, in turn explaining their higher levels of victimization (Marsh et al., 2011; Olivier et al., 2022b).

The Complementary Role of Parents and Teachers in the Development of Depressive Symptoms

In our second study, presented in Chapter 3, we investigated the unique and complementary roles of PCR and STR in the development of depressive symptoms among youth with ID. Our longitudinal approach allowed us to investigate how changes occurring over time in STR and PCR were related to changes occurring over time in youth's levels of depression. Informed by the

correspondence in the quality of youth with ID relationships with their parents, teachers, and peers observed in Chapter 2, we decided to focus on the subset of relationships (STR and PCR) sharing a similar operationalization (warmth and conflict) to be able to directly estimate what was shared, and what was different, between these two types of relationships.

As expected, global levels of relational warmth, and increases over time in these levels, both predicted a decrease over time in youth's levels of depression. Similarly, increases over time in global levels of relational conflict predicted increases over time in youth's levels of depression. Unexpectedly, higher initial levels of global relational conflict predicted decreases over time in youth's levels of depression. This unexpected result, however, is consistent with self-consistency theory (Swan, 1983), which suggests that youth may benefit from being treated in ways that confirm their self-concept, at least when we consider that youth with ID tend to share less positive and more conflictual relationships with their adult caregivers (Hamadi & Fletcher, 2021; Teague et al., 2018). Alternatively, this result could also be related to the mutually suppressing associations found between internalizing and externalizing behaviors among youth with ID (Morin et al., 2017) and to the reasonably strong associations typically reported between relational conflict and externalizing behaviors (e.g., Hoeve et al., 2009; Withers et al., 2016). A third possibility is that youth with ID may benefit from the relational attention that characterizes conflictual relationships, at least relative to the experience of neglectful relationships (Kendall-Tackett et al., 2005; Maguire et al., 2015). In any case, it is important to keep in mind that this result cannot be interpreted in a way that is independent from the negative associations between increases in relational conflicts and increases in depressive symptoms, which itself support the need for interventions seeking to reduce the occurrence of relational conflict among youth with ID.

When examining discrepancies in youth's perceptions of relational warmth and conflict, our results demonstrated that higher levels of warmth and conflict at school relative to home both predicted decreases in depression over time, whereas exposure to higher levels of warmth and conflict at home relative to school were related to increases in depression. These results are consistent with self-enhancement theory (Jones, 1964), which suggests that exposure to positive social interactions with at least one adult caregiver may be far more critical for youth's adaptation than exposure to generally positive social interactions (e.g., Ciarrochi, et al., 2017). Thus, not only is sharing high quality relationships with parents and teachers important for mental health (e.g., Longobardi et al., 2019; Smokowski et al., 2015), our results also suggest that it might be critical

to share positive relationships (particularly warm ones) with at least one adult caregiver. Importantly, these results suggest that positive STR may help to protect youth with ID coming from non-supportive or conflictual households against the development of depression, whereas they also highlight that experiencing negative STR may be particularly harmful for youth coming from supportive households. In this regard, they highlight the critical role of STR as a mechanism likely to change internal working models among youth's with ID, for the better or for worse.

The Role of School Life in the Development of Anxiety Trajectories

Our last study, presented in Chapter 4, also relied on longitudinal analyses to consider the role played by school experiences in relation to the developmental trajectories of anxiety observed among youth with ID. Informed by the results obtained in Chapters 2 and 3 showcasing the role of proximal social interactions for the psychosocial development of youth with ID, and highlighting the particular relevance of school experiences (i.e., peer victimization and STR), we adopted a broader focus in this new study, seeking to achieve a comprehensive picture of the role played by school experiences in anxiety development. To this end, we adopted a three-component operationalization (Morin et al., 2009, 2013) of school experiences (interpersonal, organizational, and instructional) developed based on SDT (Ryan & Deci, 2017) and stage-environment fit theory (e.g., Eccles et al., 1993).

Consistent with previous results obtained based on parental reports, our results revealed a slight normative decrease in youth's trajectories of anxiety over time and revealed that boys with ID tended to display lower levels of anxiety than girls with ID (Einfeld et al., 2006; Foley et al., 2016; Hollocks et al., 2019; Tonge & Einfeld, 2003; Van Steensel et al., 2011; Vasey et al., 2014). Our results also revealed significant associations between youth's anxiety trajectories and all three components of their school lives. Within the interpersonal component, we found that when youth reported being exposed to a particularly positive between-student relational climate in any given year, their levels of anxiety seemed to benefit (i.e., decrease) from this exposure in the same school year. Unexpectedly, the opposite was found for the student-teacher relational climate, which could be related to the fact that youth with ID tend to rely more heavily on their adult caregivers than their TD peers (Craven et al., 2015). These youth may thus feel pressured to be worthy of the additional efforts invested by their teachers in maintaining positive student-teacher relationships.

Within the organizational component, our results revealed widespread positive associations between victimization and anxiety, such that higher initial levels of victimization were associated

with higher initial levels of anxiety, increasing trajectories of victimization were associated with increasing trajectories of anxiety, and momentary increases in victimization were associated with momentary increases in anxiety. Similarly, initial perceptions of the school safety climate were also related to lower initial levels of anxiety. These results are consistent with previous research in supporting the critically important role of youth's ability to feel safe at school as a key driver of psychosocial adaptation (e.g., Chiu et al., 2017; Doyle & Sullivan, 2017; Maïano et al., 2016; Olivier et al., 2020; Reiter & Lapidot-Lefler, 2007; Ung et al., 2016; Whitney et al., 2019; Wright, 2017). These results also suggest that the role of victimization may be even more important than what the results from our first study (Chapter 2) suggested, at least in relation to anxiety. However, we also found that youth who report momentary increases in their perception of their school's fairness climate tend to report momentary increases in anxiety. When combined with the widespread negative effects of victimization, this unexpected association (limited to momentary fluctuations rather than to trajectories), may reflect social comparison processes (e.g., Gerber et al., 2018). More precisely, youth with ID who experience momentary increases in victimization in a given year while feeling that their teachers are fair and supportive toward all students (including their aggressors) may come to experience a momentary increase in anxiety.

Within the instructional component, we found that youth reporting more positive initial perceptions of the school educational climate, tended to experience lower initial levels of anxiety. Likewise, momentary increases in educational climate perceptions were related to momentary decreases in anxiety. However, we also found that more positive initial perceptions of their school educational climate stunted the normative decrease in anxiety trajectories observed in the sample. There may be two reasons for this unexpected effect. First, as youth with ID get older and more advanced academically, they become increasingly confronted with their own limitations (Craven et al., 2015). In this context, attending a school that places a high level of importance on learning and achievement may progressively come to increase their levels of anxiety (or to stunt the normative decrease in these levels). Second, our measure of educational climate did not differentiate between mastery and performance goals, highlighting a generic focus on education that encapsulates both types of goals. Thus, as a complement to the first explanation, youth with ID may also come to be progressively more aware of their schools' focus on performance goals (Bong, 2009), leading them to experience increasing levels of anxiety about their ability to match these educational standards (Furner & Gonzalez-DeHass, 2011), a concern that is quite prevalent

among youth with ID (Datta et al., 2013).

Attachment Theory and its Limits Among Youth with ID

Attachment theory describes how early interactions between children and their primary caregivers have an important lasting impact on development (Bowlby, 1973). These early interactions form the base upon which the PCR is established, and becomes the template for the development of all new future relationships, including those with peers and teachers (Ainsworth, 1989; Bowlby, 1973). Similarities are thus expected between these various types of social relationships. In Chapter 2, our results clearly highlighted these similarities, as all profiles displayed matching types of social interactions involving parents, peers, and teachers. More importantly, the high level of similarity observed across types of relationships identified in chapter 2 suggests that early attachment templated may play an even stronger role among youth with ID than among their TD peers. Furthermore, our results showed that youth who share high quality relationships with most members of their social network, are better equipped to cope with stressful events and more protected against the experience of psychosocial adjustment difficulties (e.g., McElwain & Booth-LaForce, 2006). Conversely, youth who share lower quality relationships tend to display a distorted view of themselves and others and are more at risk of psychosocial difficulties (Bowlby, 1980; Davies & Sturge-Apple, 2014; Kerstis et al., 2018; Rohner, 2004; Steele & Steele, 2014). All three chapters provide evidence supporting the benefits of positive social interactions, and the risk posed by problematic social interactions.

However, all three chapters also reveal clear deviations from this generic pattern, which suggest that at least some mechanisms via which social interactions influence development may be unique to youth with ID, possibly as a result of their more limited cognitive, social and functional skills (Craven et al., 2015; Schmückle et al., 2017). For instance, in Chapter 2, peer victimization levels did not always match youth's levels of exposure to PCR and STR conflict. Moreover, these deviations suggested that some youth with ID may rely on aggression to maintain or increase their popularity or experience victimization as a result of their popularity. Whatever the reason, these interpretations both suggest deviations from youth's internal working models.

Likewise, across studies, some results highlight the idea that youth with ID do seem to benefit from adult attention, even when this attention is expressed in a suboptimal manner. For instance, in Chapter 2, we found that self-esteem was lowest in the *Socially Isolated* profile, even when compared to the *Socially Rejected* profile. This result suggests that flying under the social

radar may be worse for internal self-appraisal than garnering negative attention, or even experiencing conflict. Similarly, in Chapter 3, we found that higher initial levels of global relational conflict were related to decreases over time in depression. Interestingly, low self-esteem and depression are known to be positively related among youth with ID (e.g., Lee et al., 2023). These findings support the idea that, for youth with ID, negative social experiences may be less harmful than being socially neglected. We are not arguing that this observation should become a basis for intervention, especially given the abundant amount of evidence obtained in Chapters 2, 3, and 4 showing that the benefits of positive forms of attention far outweigh those of negative social interactions, as well as the risks associated with some types of "positive" social characteristics (teacher-student relational climate, fairness climate, educational climate) identified in Chapter 4. However, this observation clearly suggests that future research is needed to consider the relative role of positive and negative forms of social attention, as well as the mechanisms underpinning the actions of these forms of social attention, among youth with ID. Moreover, it also reinforces the practical importance of devising interventions focusing not only on conflictual relationships, but also on social negligence to prevent harmful consequences in this population.

In Chapter 3, we relied on a methodological approach which allowed us to specifically consider how youth relationships with their parents and teachers deviate from one another, and found not only that STR can diverge from PCR, but that sharing at least one positive relationship with an adult caregiver could be particularly beneficial for youth with ID. This finding supports the notion that youth with ID can reconstruct their internal working models based on new forms of social experiences. This protective nature of a single adult-child relationship could possibly be related to the lower level of functional autonomy of youth with ID. Likewise, in Chapter 3 we found that macro-social school-related experiences also played a critical role that appeared to be quite distinct from that of more proximal social interactions – although proximal experiences of peer victimization appeared critical to anxiety development. Importantly, our results suggested that schools' ability to fulfill youth with ID's needs for autonomy and safety seemed to be at least as important, if not more, than their ability to meet their interpersonal needs.

Taken together, these results have important practical implications, to which we will shortly turn our attention. However, they also have theoretical implications for attachment theory, suggesting a variety of deviations from the body of supporting knowledge accumulated thus far among TD populations. These various observations all highlight the need for further research

designed to capture the unique reality of youth with ID.

Limitations and Future Directions

A key strength of this thesis comes from our reliance on different methodologies (person-centered vs. variable-centered; cross-sectional vs. longitudinal), whose convergence in a similar set of conclusions serves to reinforce the generalizability of these conclusions. However, this thesis still presents limitations that have to be considered. First, all three studies relied on the same convenience sample of youth with mild to moderate levels of ID recruited in Australia and Canada. As a result, our findings are limited in their generalizability to different cultures (Australia and Canada have very similar cultures), ages (e.g., younger children), ID levels (e.g., severe ID), and other forms of developmental disorders. To verify the generalizability of our results, replications efforts using diverse samples of youth with ID are needed. Of particular note, future investigations may want to explore the mechanisms underpinning the observed cultural differences observed in Chapter 2. Second, this area of research would benefit from comparative research designed to explicitly test differences between samples of youth with ID and TD youth. In the meantime, any interpretation of possible differences between these two populations formulated in this thesis remain speculative. Third, none of the three studies included in this thesis tested the directionality (or causal nature) of the observed associations. For instance, although we talked about the *effects* of social interactions on psychosocial adaptation, we know that psychosocial adaptation also influences the quality of social relationships (Branje et al., 2010; Ly & Zhou, 2018; van Eijck et al., 2012). Future studies should more carefully examine possible reciprocal associations to achieve a clearer picture of the mechanisms involved in these associations, such as our inference that that higher levels of victimization observed among popular youth may reflect their reliance on aggression (Chapter 2). Fourth, while this is also a strength of this thesis, most of our variables were self-reported. Notwithstanding the value of these self-reports, they are known to incorporate some unavoidable limitations (e.g., social desirability, self-consistency). Likewise, complementary perspectives often help achieve a more comprehensive picture of the reality (e.g., Dubé et al., 2022). This limitation thus limits the generalizability of our conclusions to the unique perspective of youth with ID, preventing us from drawing conclusions regarding the role played by more objective school characteristics, parental behaviors, and teacher behaviors. Likewise, many of our inferences may benefit from a cross-examination relying on informant reports or objective measures.

Practical Implications

Our findings provide a starting point from which to devise interventions focused on the home and school contexts in the hope of helping to reduce youth with ID's risk of developing symptoms of depression, anxiety and aggression, as well as to support their self-esteem and prosocial behaviors. However, before highlighting these practical implications, we need to keep in mind that these implications are anchored in the subjective experiences of youth with ID. In other words, our results may inform interventions designed to support youth's subjective well-being, rather than to help reduce problems reported by their parents or teachers. Likewise, the critical component of these interventions should be to improve youth's perceptions of their social contexts, rather than any objective characteristics of these social contexts. Although we can hope that the latter may lead to the former, the critical mechanisms of actions identified in this thesis remain focused on the former.

As expected, we found that youth with ID seem especially likely to benefit from positive social interactions with various members of their social networks (Schmückle et al., 2017). In fact, we even found that sharing at least one warm relationship with an adult caregiver may help protect them against the risk posed by other problematic relationships. With this in mind, interventions geared at increasing youth's perceptions of the quality of their STR or PCR should jointly focus on limiting the occurrence of relational conflict while also seeking to increase their perceptions of relational warmth – as this second component seems even more critical than the former. In other words, interventions should seek to replace negative (e.g., hostile) interactions by positive (e.g., supportive) ones. Indeed, interventions that solely focus on reducing relational conflict may even lead to harmful consequences by placing youth in a situation of social isolation or neglect, which seems to be even more problematic than social rejection.

Furthermore, our results do not support a one-size-fits-all approach to intervention, especially when it comes to externalizing behaviors and self-esteem. More precisely, our results suggested that shy youth, as well as socially isolated youth, seemed especially vulnerable to lower self-esteem and tended to display fewer prosocial behaviors. To address these concerns, interventions may want to inform caregivers and peers that it may be more useful to approach youth that appear shy rather than to wait for them to make the first move. Our results also suggest that popular youth with ID may experience higher than expected levels of peer victimization. These results thus clearly highlight the need to adapt interventions seeking to reduce the occurrence of

school violence to also consider the reality of youth who seemingly get along well with others.

It was encouraging to note that depression and anxiety levels tend to follow a slight decreasing trend among youth with ID. However, Chapter 4 suggested that this normative trend was threatened by victimization and higher perceptions of the educational climate. The first of these observations serves to further reinforce the critical importance of interventions aiming to reduce school bullying. However, the second one highlights the need to more carefully examine the nature of the message used by schools to convey the importance of education to youth who may not have the cognitive ability to follow educational trajectories valued by mainstream society (e.g., University). In practice, working at improving schools' safety, mastery-oriented learning, and peer support could potentially help limit anxiety development among youth with ID.

Moreover, from the perspective of attachment theory (Bowlby, 1973), our results suggest that more intensive attempts to modify the nature of youth's relationships with at least one critical member of their social network may help to move their developmental trajectories away from the influence of problematic early relational template. Once exposed to a new relational model, youth may then come to apply this new template to their other relationships.

Conclusion:

Toward a Strengths-Based Approach: Giving Voices to Youth with ID

Although deficit models have long plagued research on youth with ID, our results collectively highlight the value of a strength-based approach. For instance, whereas the bulk of research on youth with ID highlights their functional deficits (e.g., Harris & Greenspan, 2016; O'Byrne & Muldoon, 2018; Patel et al., 2020), relational and social difficulties (e.g., Blacher et al., 2009; Hamadi & Fletcher, 2021; Maïano et al., 2016; Teague et al., 2018; Tipton et al., 2013; Tipton-Fisler et al., 2018; Zeedyk et al., 2014), and higher risk of experiencing psychosocial adaptation problems (e.g., Einfeld et al., 2011; Maïano et al., 2018; Tipton-Fisler et al., 2018), our results revealed that a substantial portion of these youth function well. For instance, although Chapter 2 highlights the high prevalence (close to 50%) of socially undesirable social interaction profiles, it also highlights that close to half of our sample experienced positive social relationships with their peers, parents, and teachers. Likewise, although these results are not reported in Chapter 3 (as they were not critical to our objectives), the average "latent change" in depression levels observed in our sample is consistent with the presence of a normative decrease over time (M = -.176 SD units over one year). Chapter 4 highlights the presence of a similar normative decrease in

anxiety levels over time. Likewise, our results collectively highlight that positive social interactions with parents, teachers, and peers, as well as positive school experiences, can help youth with ID to stay away, or recover, from psychosocial adaptation difficulties. They also show that positive school experiences and STR may be enough to circumvent the negative effects of problematic internal working models.

Likewise, although research on youth with ID has long ignored their unique perspective on their own patterns of strengths, difficulties, and relationships (e.g., Green et al., 2015; Rodas et al., 2016; Zaidman-Zait et al. 2021), accumulating evidence demonstrates that it is possible to reliably capture their perspective (e.g., Dubé et al., 2022; Maïano et al., 2022; Olivier et al., 2021, 2022a). Our results showcase how relying on strong psychometric instruments may help to uncover important associations between a variety of social factors (whose mechanism of action lies in youth's perceptions) and various types of psychological difficulties. Moreover, the outcome associations reported in Chapter 2 even demonstrate how focusing on self-reports may yield complementary, and potentially more precise, conclusions.

In sum, although our focus remained placed on the prediction of difficulties, our results do suggest that it would be time for research on youth with ID to start adopting a more positive approach, capitalizing on strengths, success, and resilience (e.g., Craven et al., 2016; Hayes & Ciarrochi, 2015). It also highlights that it is time for researchers to start listening to what these youth have to tell us about their lives, difficulties, successes, and experiences. It is our hope that by highlighting how this positive approach can help to achieve a more accurate understanding of the unique reality of youth with ID, this thesis may help spark a new interest in finding ways to better support healthy psychosocial development among youth with ID.

REFERENCES

Adrian, C., & Hammen, C. (1993). Stress exposure and stress generation in children of depressed mothers. *Journal of Consulting and Clinical Psychology*, *61*, 354-359.

Ainsworth, M.S. (1989). Attachments beyond infancy. *American Psychologist*, *44*, 709-716.

Aldridge, J.M., & McChesney, K. (2018). The relationships between school climate and adolescent mental health and wellbeing: A systematic literature review. *International Journal of Educational Research*, *88*, 121-145.

Al-Yagon, M. (2016). Perceived close relationships with parents, teachers, and peers: Predictors of social, emotional, and behavioral features in adolescents with LD or comorbid LD and ADHD. *Journal of Learning Disabilities*, *49*, 597-615.

American Psychological Association [APA]. (2000). *Diagnostic and Statistical Manual of Mental Disorders (4th edition, text revised)*. APA.

American Psychological Association [APA]. (2013). *Diagnostic and Statistical Manual, Fifth Edition (DSM-V).* APA.

American Psychological Association [APA]. (2020). APA Dictionary of Psychology. APA.

Asher, S.R., Hymel, S., & Renshaw, P.D. (1984). Loneliness in children. *Child Development*, 1456-1464.

Asparouhov, T., & Muthén, B. (2009). Exploratory structural equation modeling. *Structural Equation Modeling*, *16*, 397–438.

Asparouhov, T., & Muthén, B. (2010). *Mplus Technical Appendix*: *Weighted least squares estimation with missing data*. Muthén & Muthén.

Asparouhov, T., Muthén, B., & Morin, A.J.S. (2015). Bayesian structural equation modeling with crossloadings and residual covariances. *Journal of Management*, *41*, 1561-1577.

Austin, K. L., Hunter, M., Gallagher, E., & Campbell, L. E. (2018). Depression and anxiety symptoms during the transition to early adulthood for people with intellectual disabilities. *Journal of Intellectual Disability Research*, *62*(5), 407-421.

Averdijk, M., Eisner, M., & Ribeaud, D. (2013). Do social relationships protect victimized children against internalizing problems? *Journal of School Violence, 13*, 80-99. doi:10.1080/15388220.2013.842175

Bailey, T., Totsika, V., Hastings, R.P., Hatton, C., & Emerson, E. (2019). Developmental

trajectories of behaviour problems and prosocial behaviours of children with intellectual disabilities in a population-based cohort. *Journal of Child Psychology and Psychiatry*, *60*, 1210-1218.

Baker, J.K., Fenning, R.M., Howland, M.A., & Huynh, D. (2019). Parental criticism and behavior problems in children with autism spectrum disorder. *Autism*, *23*, 1249-1261.

Balboni, G., Mumbardó-Adam, C., & Coscarelli, A. (2020). Influence of adaptive behaviour on the quality of life of adults with intellectual and developmental disabilities. *Journal of Applied Research in Intellectual Disability*, *33*, 584-594.

Bandelow, B., & Michaelis, S. (2015). Epidemiology of anxiety disorders in the 21st century. *Dialogues in Clinical Neuroscience*, *17*, 327-335.

Bathelt, J., Geurts, H.M., & Borsboom, D. (2022). More than the sum of its parts: Merging network psychometrics and network neuroscience with application in autism. *Network Neuroscience*, *6,* 445-466.

Baumrind, D. (1991). The influence of parenting style on adolescent competence and substance use. *Journal of Early Adolescence*, *11*, 56-95.

Baxter, A., Scott, K., Vos, T., & Whiteford, H. (2013). Global prevalence of anxiety disorders: A systematic review and meta-regression. *Psychological Medicine, 43*, 897-910.

Bear, G.G., Minke, K.M., & Manning, M.A. (2002). Self-concept of students with learning disabilities: A meta-analysis. *School Psychology Review*, *31*, 405-427.

Beck, A.T. (1987). Cognitive models of depression. *Journal of Cognitive Psychotherapy*, *1*, 5–37.

Beesdo-Baum, K., & Knappe, S. (2012). Developmental epidemiology of anxiety disorders. *Child and Adolescent Psychiatric Clinics*, *21*, 457-478.

Besemer, S., Loeber, R., Hinshaw, S.P., & Pardini, D.A. (2016). Bidirectional associations between externalizing behavior problems and maladaptive parenting within parent-son dyads across childhood. *Journal of Abnormal Child Psychology*, *44*, 1387-1398.

Birch, S.H., & Ladd, G.W. (1997). The teacher-child relationship and children's early school adjustment. *Journal of School Psychology*, *35*, 61-79.

Blacher, J., Baker, B.L., & Eisenhower, A.S. (2009). Student–teacher relationship stability across early school years for children with intellectual disability or typical development. *American Journal on Intellectual and Developmental Disabilities*, *114*, 322-339.

Boele, S., Van der Graaff, J., De Wied, M., Van der Valk, I.E., Crocetti, E., & Branje, S. (2019). Linking parent–child and peer relationship quality to empathy in adolescence: a multilevel meta-analysis. *Journal of Youth and Adolescence*, *48*, 1033-1055.

Bollen, K.A., & Curran, P.J. (2006). *Latent curve models*. Wiley.

Bong, M. (2009). Age-related differences in achievement goal differentiation. *Journal of educational psychology*, *101*(4), 879.

Botting, N., Toseeb, U., Pickles, A., Durkin, K., & Conti-Ramsden, G. (2016). Depression and anxiety change from adolescence to adulthood in individuals with and without language impairment. *PLoS One*, *11*, e0156678.

Bowlby, J. (1973). *Attachment and Loss, Volume II: Separation, Anxiety and Anger*. Hogarth Press.

Bowlby, J. (1980). *Attachment and Loss: Vol III. Loss, Sadness, and Depression.* Basic Books.

Branje, S. J., Hale, W. W., Frijns, T., & Meeus, W. H. (2010). Longitudinal associations between perceived parent-child relationship quality and depressive symptoms in adolescence. *Journal of abnormal child psychology*, *38*, 751-763.

Brière, F.N., Archambault, K., & Janosz, M. (2013). Reciprocal prospective associations between depressive symptoms and perceived relationship with parents in early adolescence. *Canadian Journal of Psychiatry*, *58*, 169-176.

Bronfenbrenner, U., & Morris, P.A. (1998). The ecology of developmental processes. In W. Damon & R.M. Lerner (Eds.), *Handbook of Child Psychology, 5th edition* (pp. 993-1028). Wiley.

Brown, L.M., & Gilligan, C. (1993). Meeting at the crossroads: Women's psychology and girls' development. *Feminism & Psychology*, *3*, 11-35.

Browne, M.W. (2001). An overview of analytic rotation in exploratory factor analysis. *Multivariate Behavioral Research*, *36*, 111–150.

Buckles, J., Luckasson, R., & Keefe, E. (2013). A systematic review of the prevalence of psychiatric disorders in adults with intellectual disability, 2003–2010. *Journal of Mental Health Research in Intellectual Disabilities, 6*, 181–207.

Buhrmester, D. (1996). Need fulfillment, interpersonal competence, and the developmental contexts of early adolescent friendship. In W. Bukowski, A. Newcomb, & W. Hartup (Eds.), *The Company they Keep: Friendship in Childhood and Adolescence* (pp. 158 –

185). Cambridge University.

Bukowski, W.M., Newcomb, A.F., & Hoza, B. (1987). Friendship conceptions among early adolescents: A longitudinal study of stability and change. *Journal of Early Adolescence*, *7*, 143-152.

Caplan, B., Feldman, M., Eisenhower, A., & Blacher, J. (2016). Student–teacher relationships for young children with autism spectrum disorder: Risk and protective factors. *Journal of Autism and Developmental Disorders*, *46*, 3653-3666.

Carter, B.B., & Spencer, V.G. (2006). The fear factor: Bullying and students with disabilities. *International Journal of Special Education*, *21*, 11-23.

Chadwick, O., Kusel, Y., & Cuddy, M. (2008). Factors associated with the risk of behaviour problems in adolescents with severe intellectual disabilities. *Journal of Intellectual Disability Research*, *52*, 864-876.

Chen, F.F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling*, *14*, 464–504.

Chester, R., Chaplin, E., Tsakanikos, E., McCarthy, J., Bouras, N., & Craig, T. (2013). Gender differences in self-reported symptoms of depression and anxiety in adults with intellectual disabilities. *Advances in Mental Health and Intellectual Disabilities*, *7*(4), 191-200.

Cheung, G.W., & Rensvold, R.B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9*, 233-255.

Chiu, Y.L., Kao, S., Tou, S.W., & Lin, F.G. (2017). Effect of personal characteristics, victimization types, and family-and school-related factors on psychological distress in adolescents with intellectual disabilities. *Psychiatry research*, *248*, 48-55.

Chu, P., Saucier, D., & Hafner, E. (2010). Meta-analysis of the relationships between social support and well-being in children and adolescents. *Journal of Social and Clinical Psychology*, 29, 624-645.

Ciarrochi, J., Morin, A.J.S., Sahdra, B., Litalien, D., & Parker, P.D. (2017). A Longitudinal person-centered perspective on youth social support: Relations with psychological wellbeing. *Developmental Psychology*, *53*, 1154-1169.

Clark, M., Crocker, A. G., & Morin, D. (2016). Victimization history and aggressive behavior among adults with intellectual disabilities: The mediating role of mental health. *International Journal of Forensic Mental Health*, *15*, 301–311.

Costello, E.J., Egger, H.L., & Angold, A. (2005). The developmental epidemiology of anxiety disorders: Phenomenology, prevalence, and comorbidity. *Child and Adolescent Psychiatric Clinics of North America*, *14*, 631–648.

Costello, E.J., Foley, D.L., & Angold, A. (2006). 10-year research update review: the epidemiology of child and adolescent psychiatric disorders: II. Developmental epidemiology. *Journal of the American Academy of Child & Adolescent Psychiatry*, *45*, 8-25.

Costello, E.J., Mustillo, S., Erkanli, A., Keeler, G., & Angold, A. (2003). Prevalence and development of psychiatric disorders in childhood and adolescence. *Archives of General Psychiatry*, *60*, 837-844.

Craven, R.G. & 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.

Craven, R.G., Morin, A.J.S., Tracey, D., Parker, P.D., & Zhong, H.F. (2015). *Inclusive Education for Students with Intellectual Disabilities*. Information Age.

Craven, R.G., Ryan, R.M., Mooney, J., Vallerand, R.J., Dillon, A., Blacklock, F., & Magson, N. (2016) Toward a positive psychology of indigenous thriving and reciprocal research partnership model. *Contemporary Educational Psychology, 47*, 32-43.

Crouch, R., Keys, C.B., & McMahon, S.D. (2014). Student–teacher relationships matter for school inclusion: School belonging, disability, and school transitions. *Journal of Prevention & Intervention in the Community*, *42*, 20-30.

Cuthill, F.M., Espie, C.A., & Cooper, S.-A. (2003). Development and psychometric properties of the Glasgow Depression Scale for people with a learning disability. *British Journal of Psychiatry, 182*, 347-353.

D'Amato, R.C., Crepeau-Hobson, F., Huang, L.V., & Geil, M. (2005). Ecological neuropsychology: An alternative to the deficit model for conceptualizing and serving students with learning disabilities. *Neuropsychology Review*, *15*, 97-103.

Datta, P. (2013). Is test anxiety a peril for students with intellectual disabilities? *Journal of Intellectual Disabilities, 17*, 122-133.

Davies, P.T., & Sturge-Apple, M.L. (2014). Family context in the development of psychopathology. In M. Lewis & K.D. Rudolph (Eds.), *Handbook of Developmental*

Psychopathology (pp. 143-161). Springer.

Deci, E.L., & Ryan, R.M. (2000). The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological inquiry*, *11*, 227-268.

Dell'Armo, K.A. & Tassé, M.J. (2019). The role of adaptive behavior and parent expectations in predicting post-school outcomes for young adults with intellectual disability. *Journal of Autism and Developmental Disorders*, *49*, 1638-1651.

Deshler, D.D., Schumaker, J.B., Lenz, B.K., Bulgren, J.A., Hock, M.F., Knight, J., & Ehren, B.J. (2001). Ensuring Content-Area Learning by Secondary Students with Learning Disabilities. *Learning Disabilities Research & Practice*, *16*, 96-108.

Diallo, T.M.O, Morin, A.J.S. & Lu, H. (2016). 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. (2017). The impact of total and partial inclusion or exclusion of active and inactive time invariant covariates in growth mixture models. *Psychological Methods, 22*, 166-190.

Diallo, T.M.O., Morin, A.J.S., & Parker, P.D. (2014). Statistical power of latent growth curve models to detect quadratic growth. *Behavior Research Methods*, *46*, 357–371.

Dinishak, J. (2016). The deficit view and its critics. *Disability Studies Quarterly*, *36*, 5236.

Donnellan, M.B., Trzesniewski, K.H., & Robins, R.W. (2011). Self-esteem: Enduring issues and controversies. In T. Chamorro-Premuzic, S. von Stumm, & A. Furnham (Eds.), *The Wiley-Blackwell Handbook of Individual Differences* (pp. 718-746). Wiley-Blackwell.

Doyle, S.T., & Sullivan, T.N. (2017). Longitudinal relations between peer victimization, emotion dysregulation, and internalizing symptoms among early adolescents. *Journal of Early Adolescence*, *37*, 165-191.

Drugli, M. B. (2013). How are closeness and conflict in student–teacher relationships associated with demographic factors, school functioning and mental health in Norwegian schoolchildren aged 6–13?. *Scandinavian Journal of Educational Research*, *57*(2), 217-225.

Dubé, C., Olivier, E., Morin, A.J.S., Tracey, D., Craven, R.G., & Maïano, C. (2022). Toward a comprehensive assessment of relationships with teachers and parents for youth with intellectual disabilities. *Journal of Autism and Developmental Disorders*, *52*, 2670-2688.

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

Eccles, J. S., Midgley, C., Buchanan, C. M., Wigfield, A., Reuman, D., & Iver, D. (1993). Development during adolescence: The impact of stage/environment fit. *American Psychologist, 48*, 90-101.

Eccles, J.S., & Roeser, R.W. (2009). Schools, academic motivation, and stage-environment fit. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of Adolescent Psychology* (3rd ed., pp. 404–434). Wiley.

Eid, M. (2000). A multitrait-multimethod model with minimal assumptions. *Psychometrika, 65*, 241-261.

Eid, M., Nussbeck, F.W., Geiser, C., Cole, D.A., Gollwitzer, M., & Lischetzke, T. (2008). Structural equation modeling of multitrait-multimethod data: Different models for different types of methods. *Psychological Methods, 13*, 230-253.

Einfeld, S.L., Ellis, L.A., & Emerson, E. (2011). Comorbidity of intellectual disability and mental disorder in children and adolescents: A systematic review. *Journal of Intellectual and Developmental Disability*, *36*, 137-143.

Einfeld, S.L., Piccinin, A.M., Mackinnon, A., Hofer, S.M., Taffe, J., Gray, K.M., ... & Tonge, B.J. (2006). Psychopathology in young people with intellectual disability. *Journal of The American Medical Association (JAMA), 296*, 1981-1989

Eisenhower, A.S., Baker, B.L., & Blacher, J. (2007). Early student–teacher relationships of children with and without intellectual disability: Contributions of behavioral, social, and self-regulatory competence. *Journal of School Psychology*, *45*, 363-383.

Enders, C.K. (2010). *Applied Missing Data Analysis.* Guilford.

Finney, S.J., & DiStefano, C. (2013). Non-normal and categorical data in structural equation modeling. In G.R. Hancock, & R.O. Mueller (Eds.). *Structural Equation Modeling: A Second Course, 2nd Ed.* (pp. 439-492). Information Age.

Foley, K.R., Taffe, J., Bourke, J., Einfeld, S.L., Tonge, B.J., Trollor, J., & Leonard, H. (2016). Young people with intellectual disability transitioning to adulthood: Do behaviour trajectories differ in those with and without Down syndrome? *PloS one*, *11*, e0157667.

Forte, M., Jahoda, A., & Dagnan D. (2011). An anxious time? Exploring the nature of worries experienced by young people with a mild to moderate intellectual disability as they make the transition to adulthood. *British Journal of Clinical Psychology*, *50*, 398-411.

Freund, P.A., Tietjens, M., & Strauss, B. (2013). Using rating scales for the assessment of physical self-concept: Why the number of response categories matters. *Measurement, 17*, 249-263.

Fuchs, LS., Karns, K., Hamlett, C.L., Katzaroff, M., & Dutka, S. (1997). Effects of task-focused goals on low-achieving students with and without learning disabilities. *American Educational Research Journal*, *34*, 513-543.

Furner, J. M., & Gonzalez-DeHass, A. (2011). How do students' mastery and performance goals relate to math anxiety? *Eurasia Journal of Mathematics, Science and Technology Education*, *7*(4), 227-242.

Gerber, J.P., Wheeler, L., & Suls, J. (2018). A social comparison theory meta-analysis 60+ years on. *Psychological Bulletin, 144*, 177-197.

Goldstein, S.E., Boxer, P., & Rudolph, E. (2015). Middle school transition stress: Links with academic performance, motivation, and school experiences. *Contemporary School Psychology*, *19*, 21-29.

Gotham, K., Brunwasser, S.M., & Lord, C.L. (2015). Depressive and anxiety symptom trajectories from school age through young adulthood in samples with autism spectrum disorder and developmental delay. *Journal of the American Academy of Child and Adolescent Psychiatry*, *54*, 369-376.

Green, S.A., Berkovits, L.D., & Baker, B.L. (2015). Symptoms and development of anxiety in children with or without intellectual disability. *Journal of Clinical Child & Adolescent Psychology*, *44*, 137-144.

Gutman, L. M., & Eccles, J. S. (2007). Stage-environment fit during adolescence: trajectories of family relations and adolescent outcomes. *Developmental psychology*, *43*(2), 522.

Hajovsky, D.B., Mason, B.A., & McCune, L.A. (2017). Teacher-student relationship quality and academic achievement in elementary school: A longitudinal examination of gender differences. *Journal of School Psychology*, *63*, 119-133.

Hale, W. W., III, Raaijmakers, Q. A. W., Muris, P., van Hoof, A., & Meeus, W. H. J. (2008). Developmental trajectories of adolescent anxiety disorder symptoms: A 5-year prospective study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *47*, 556–564.

Hale, W. W., III, Raaijmakers, Q. A. W., Muris, P., van Hoof, A., & Meeus, W. H. J. (2009).

One factor or two parallel processes? Comorbidity and development of adolescent anxiety and depressive disorders symptoms. *Journal of Child Psychology and Psychiatry*, *50*, 1218–1226.

Halfon, N., Houtrow, A., Larson, K., & Newacheck, P.W. (2012). The changing landscape of disability in childhood. *The Future of Children, 22*, 13-42.

Hamadi, L., & Fletcher, H.K. (2021). Are people with an intellectual disability at increased risk of attachment difficulties? A critical review. *Journal of Intellectual Disabilities*, *25,* 114-130.

Hamre, B. K., & Pianta, R. C. (2001). Early teacher–child relationships and the trajectory of children's school outcomes through eighth grade. *Child development*, *72*(2), 625-638.

Harris, J. C., & Greenspan, S. (2016). Definition and nature of intellectual disability. *Handbook of evidence-based practices in intellectual and developmental disabilities*, 11-39.

Hassan, R., Willoughby, T., & Schmidt, L.A. (2021). Shyness and prosocial tendencies during adolescence: Prospective influence of two types of self-regulation. *Emotion*, *21*, 1721-1730.

Hayes, L.L., & Ciarrochi, J. (2015). *The Thriving Adolescent*. Context Press.

Hermans, H., & Evenhuis, H. M. (2013). Factors associated with depression and anxiety in older adults with intellectual disabilities: results of the healthy ageing and intellectual disabilities study. *International journal of geriatric psychiatry*, *28*(7), 691-699.

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

Hodapp, R.M., & Dykens, E.M. (2012). Genetic disorders of intellectual disability: Expanding our concepts of phenotypes and of family outcomes. *Journal of Genetic Counseling*, *21*, 761-769.

Hodges, E. V., & Perry, D. G. (1999). Personal and interpersonal antecedents and consequences of victimization by peers. *Journal of personality and social psychology*, *76*(4), 677.

Hoeve, M., Dubas, J.S., Eichelsheim, V.I., Van der Laan, P.H., Smeenk, W., & Gerris, J.R. (2009). The relationship between parenting and delinquency: A meta-analysis. *Journal of Abnormal Child Psychology*, *37*, 749-775.

Hoge, D. R., Smit, E. K., & Hanson, S. L. (1990). School experiences predicting changes in self-esteem of sixth and seventh-grade students. *Journal of Educational Psychology*, *82*, 117–

127.

Holfeld, B., & Baitz, R. (2020). The mediating and moderating effects of social support and school climate on the association between cyber victimization and internalizing symptoms. *Journal of Youth and Adolescence*, *49*, 2214-2228.

Hollocks, M. J., Lerh, J. W., Magiati, I., Meiser-Stedman, R., & Brugha, T. S. (2019). Anxiety and depression in adults with autism spectrum disorder: a systematic review and meta-analysis. *Psychological medicine*, *49*(4), 559-572.

Hu, L.T., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1-55.

Hudson, B. (2003). From adolescence to young adulthood: the partnership challenge for learning disability services in England. *Disability & Society*, *18*(3), 259-276.

Hughes-McCormack, L. A., Rydzewska, E., Henderson, A., MacIntyre, C., Rintoul, J., & Cooper, S. A. (2018). Prevalence and general health status of people with intellectual disabilities in Scotland: a total population study. *J Epidemiol Community Health*, *72*(1), 78-85.

Hunter, S.C., Boyle, J.M.E., & Warden, D. (2004). Help seeking amongst child and adolescent victims of peer-aggression and bullying: The influence of school-stage, gender, victimisation, appraisal, and emotion. *British Educational Research Journal*, *74*, 375-390.

Inguglia, C., Ingoglia, S., Liga, F., Coco, A.L., & Cricchio, M.G.L. (2015). Autonomy and relatedness in adolescence and emerging adulthood: Relationships with parental support and psychological distress. *Journal of Adult Development*, *22*, 1-13.

Jager, J. (2011). Convergence and nonconvergence in the quality of adolescent relationships and its association with adolescent adjustment and young-adult relationship quality. *International Journal of Behavioral Development*, *35*, 497-506.

Janosz, M., & Bouthillier, C. (2007). *Report on the validation of the Socio Educative Questionnaire for secondary schools*. University of Montreal.

Janosz, M., Bouthillier, C., Bowen, F., Chouinard, R., & Desbiens, N. (2007). *Rapport de validation du questionnaire sur l'environnement socioéducatif des écoles primaires*. Université de Montréal.

Janosz, M., Georges, P., and Parent, S. (1998). L'environnement éducatif à l'école secondaire: Un modèle théorique pour guider l'évaluation du milieu. Revue Canadienne de

Psychoéducation, 27, 285-306.

Jones, E.E. (1964). *lngratiation*. Appleton-Century-Croft.

Jones, J.L. (2012). Factors associated with self-concept: Adolescents with intellectual and development disabilities share their perspectives. Intellectual & developmental disabilities, 50, 31-40.

Kendall-Tackett, K., Lyon, T., Taliaferro, G., & Little, L. (2005). Why child maltreatment researchers should include children's disability status in their maltreatment studies. *Child Abuse & Neglect*, *29*, 147-151.

Kerstis, B., Åslund, C., & Sonnby, K. (2018). More secure attachment to the father and the mother is associated with fewer depressive symptoms in adolescents. *Upsala Journal of Medical Sciences*, *123*, 62-67.

Klein, A.M., Houtkamp, E.O., Salemink, E., Baartmans, J.M.D., Rinck, M., van der Molen, M.J. (2018). Differences between self- and peer-rated likability in relation to social anxiety and depression in adolescents with mild intellectual disabilities. *Research in Developmental Disabilities, 80*, 44-51.

Kurtek, P. (2018). Prosocial vs antisocial coping and general life satisfaction of youth with mild intellectual disability. *Journal of Intellectual Disability Research*, *62*, 581-592.

Laursen, B., & Collins, W. A. (2004). Parent-child communication during adolescence. In A.L. Vangelisti (Ed.). *Handbook of Family Communication* (pp. 333-348). Erlbaum.

Laursen, B., Furnman W., & Mooney K.S. (2006). Predicting interpersonal competence and self-worth from adolescent relationships and relationship networks: Variable-centered and person-centered perspectives. *Merrill-Palmer Quarterly*, *52*, 572-600.

Lee, A., & Hankin, B.L. (2009). Insecure attachment, dysfunctional attitudes, and low self-esteem predicting prospective symptoms of depression and anxiety during adolescence. *Journal of Clinical Child & Adolescent Psychology*, *38*, 219-231.

Lee, J. Y., Patel, M., & Scior, K. (2023). Self-esteem and its relationship with depression and anxiety in adults with intellectual disabilities: a systematic literature review. *Journal of Intellectual Disability Research, 67*, 499-518.

Lépine, J.P. (2002). The epidemiology of anxiety disorders: prevalence and societal costs. *Journal of Clinical Psychiatry*, *63*, 4-8.

Lewis, C. (1981). The effects of parental firm control: A reinterpretation of findings.

Psychological Bulletin, *90*, 547-563.

Li, C.H. (2016). Confirmatory factor analysis with ordinal data: Comparing robust maximum likelihood and diagonally weighted least squares. *Behavior Research Methods*, *48*, 936-949.

Longobardi, C., Settanni, M., Prino, L.E., Fabris, M.A., & Marengo, D. (2019). Students' Psychological Adjustment in normative school transitions from kindergarten to high school: Investigating the role of teacher-student relationship quality. *Frontiers in Psychology*, *10*, 1238.

Ly, J., & Zhou, Q. (2018). Bidirectional associations between teacher–child relationship quality and Chinese American immigrant children's behavior problems. *Journal of Clinical Child & Adolescent Psychology*, *47*(6), 954-966.

MacGowan, T.L., & Schmidt, L.A. (2021) Helping as prosocial practice: Longitudinal relations among children's shyness, helping behavior, and empathic response. *Journal Experimental Child Psychology, 209,* 105-154.

Maguire, S.A., Williams, B., Naughton, A.M., Cowley, L.E., Tempest, V., Mann, M.K., Teague, M., & Kemp, A.M. (2015). A systematic review of the emotional, behavioural and cognitive features exhibited by school-aged children experiencing neglect or emotional abuse. *Child: Care, Health and Development*, *41*, 641-653.

Mahadevan, N., Gregg, A.P., & Sedikides, C. (2019) Is self-regard a sociometer or a hierometer? Self-esteem tracks status and inclusion, narcissism tracks status. *Journal of Personality and Social Psychology*, *116*, 444-466.

Mai, Y., Zhang, Z., & Wen, Z. (2018). Comparing exploratory structural equation modeling and existing approaches for multiple regression with latent variables. *Structural Equation Modeling*, *25*, 737-749.

Maïano, C., Aimé, A., Salvas, M.-C., Morin, A. J. S., & Normand, C. (2016). Prevalence and correlates of bullying perpetration and victimization among school-aged youth with intellectual disabilities: A systematic review. *Research in Developmental Disabilities*, *49-50*, 181-195.

Maïano, C., Coutu, S., Morin, A. J. S., Tracey, D., Lepage, G., & Moullec, G. (2019). Self-concept research with school-aged youth with intellectual disabilities: A systematic review. *Journal of Applied Research in Intellectual Disabilities*, *32*, 238-255.

Maïano, C., Coutu, S., Tracey, D., Bouchard, S., Lepage, G., Morin, A.J.S., & Moullec, G. (2018). Prevalence of anxiety and depressive disorders among youth with intellectual disabilities: A systematic review and meta-analysis. *Journal of Affective Disorders*, *236*, 230-242.

Maïano, C., Morin, A.J.S., Gagnon, C., Olivier, E., Tracey, D., Craven, R.G., & Bouchard, S. (2022). Validation of an adapted version of the Glasgow Anxiety Scale for people with Intellectual Disabilities (GAS-ID). *Journal of Autism and Developmental Disorders.* Early View doi: 10.1007/s10803-021-05398-7

Marsh, H.W. (2007). Application of confirmatory factor analysis and structural equation modeling in sport/exercise psychology. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of Sport Psychology* (3rd edition, pp. 774-798). Wiley.

Marsh, H.W., Hau, K.-T., & Grayson, D. (2005). Goodness of fit evaluation in structural equation modeling. In A. Maydeu-Olivares & J. McArdle (Eds.), *Contemporary Psychometric* (pp.275-340). Erlbaum.

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). Oxford University.

Marsh, H.W., Lüdtke, O., Trautwein, U., & Morin, A.J.S. (2009). Classical latent profile analysis of academic self-concept dimensions: Synergy of person- and variable-centered approaches to theoretical models of self-concept. *Structural Equation Modeling*, *16*, 191-225.

Marsh, H.W., Nagengast, B., Morin, A.J.S., Parada, R.H., Craven, R.G., & Hamilton, L.R. (2011). Construct validity of the multidimensional structure of bullying and victimization: An application of exploratory structural equation modeling. *Journal of Educational Psychology*, *103*, 701-732.

Marsh, H.W., Tracey, D.K., & Craven, R.G. (2006). Multidimensional self-concept structure for preadolescents with mild intellectual disabilities: A hybrid multigroup–MIMC approach to factorial invariance and latent mean differences. *Educational and Psychological Measurement*, *66*, 795-818.

Matson, J.L. (2017). *Handbook of Social Behavior and Skills in Children*. Springer.

Maulik, P.K., Mascarenhas, M.N., Mathers, C.D., Dua, T., & Saxena, S. (2011). Prevalence of

intellectual disability: a meta-analysis of population-based studies. *Research in Developmental Disabilities*, *32*, 419-436.

McArdle, J.J. (2009). Latent variable modeling of differences and changes with longitudinal data. *Annual Review of Psychology, 60*, 577-605.

McCall-Hosenfeld, J.S., Mukherjee, S., & Lehman, E.B. (2014). The prevalence and correlates of lifetime psychiatric disorders and trauma exposures in urban and rural settings: Results from the National Comorbidity Survey Replication (NCS-R). *Plos One*, *9*, e112416.

McDonald, R.P. (1970). Theoretical foundations of principal factor analysis and alpha factor analysis. *British Journal of Mathematical and Statistical Psychology*, *23*, 1-21.

McElwain, N.L., & Booth-LaForce, C. (2006). Maternal sensitivity to infant distress and nondistress as predictors of infant-mother attachment security. *Journal of Family Psychology*, *20*, 247-255.

McIntyre, L.L., Blacher, J., & Baker, B.L. (2006). The transition to school: Adaptation in young children with and without intellectual disability. *Journal of Intellectual Disability Research*, *50*, 349-361.

Merikangas, K.R., & Knight, E. (2009). The epidemiology of depression in adolescents. In S. Nolen-Hoeksema & L.M. Hilt (Eds.), *Handbook of Depression in Adolescents* (pp. 386–404). Taylor & Francis.

Merikangas, K.R., He, J.-P., Burstein, M., Swanson, S.A., Avenevoli, S., Cui, L., Benjet, C., Georgiades, K., & Swendsen, J. (2010). Lifetime prevalence of mental disorders in U.S. adolescents: Results from the National Comorbidity Survey Replication–Adolescent supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, *49*, 980-989.

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

Mikulincer, M. (1995). Attachment style and the mental representation of the self. *Journal of Personality and Social Psychology*, *69*, 1203.

Millsap, R. (2011). *Statistical Approaches to Measurement Invariance*. Taylor & Francis.

Mindham, J., & Espie, C.A. (2003). Glasgow Anxiety Scale for people with an Intellectual Disability (GAS-ID): Development and psychometric properties of a new measure for use with people with mild intellectual disability. *Journal of Intellectual Disability Research*,

47, 22-30.

Morin, A.J.S. (2016). Person-centered research strategies in commitment research. In J.P. Meyer (Eds.), Handbook of employee commitment (pp. 490-508). Edward Elgar.

Morin, A.J.S., & Litalien, D. (2019). Mixture modeling for lifespan developmental research. In *Oxford Research Encyclopedia of Psychology*. Oxford University Press.

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., Boudrias, J.-S., Marsh, H.W., Madore, I., & Desrumaux, P. (2016). Further reflections on disentangling shape and level effects in person-centered analyses: An illustration aimed at exploring the dimensionality of psychological health. *Structural Equation Modeling, 23,* 438-454.

Morin, A.J.S., Bujacz, A., & Gagné, M. (2018). Person-centered methodologies in the organizational sciences. *Organizational Research Methods, 21,* 803-813.

Morin, A.J.S., Janosz, M., & Larivée, S. (2009). The Montreal Adolescent Depression Development Project (MADDP): School life and depression following high school transition. *Psychiatry Research Journal*, *1*, 1-50.

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. (2011). Growth mixture modeling of adolescents' developmental trajectories of anxiety: The impact of untested invariance assumptions on substantive interpretations. *Structural Equation Modeling, 18,* 613-648.

Morin, A.J.S., Myers, N.D., & Lee, S. (2020). Modern factor analytic techniques: Bifactor models, exploratory structural equation modeling (ESEM) and bifactor-ESEM. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of Sport Psychology* (4th edition, pp. 1044–1073). Wiley.

Morin, A.J.S., Arens, A.K., Maïano, C., Ciarrochi, J., Tracey, D., Parker, P.D., & Craven, R.G. (2017). Reciprocal relationships between teacher ratings of internalizing and externalizing behaviors in adolescents with different levels of cognitive abilities. *Journal of Youth and Adolescence*, *46*, 801-825.

Muris, P., & Maas, A. (2004). Strengths and difficulties as correlates of attachment style in institutionalized and non-institutionalized children with below-average intellectual abilities. *Child Psychiatry and Human Development*, *34*, 317-328.

Muthén, L., & Muthén, B. (2019). *Mplus User's Guide*. Muthén & Muthén.

Muthén, L., & Muthén, B. (2021). Mplus User's Guide. Muthén & Muthén.

Naber, F.B., Swinkels, S.H., Buitelaar, J.K., Bakermans-Kranenburg, M.J., Van IJzendoorn, M.H., Dietz, C., Can Daalen, E., & Van Engeland, H. (2007). Attachment in toddlers with autism and other developmental disorders. *Journal of Autism and Developmental Disorders*, *37*, 1123-1138.

Nambiar, P., Jangam, K., Roopesh, B.N., & Bhaskar, A. (2020). Peer victimization and its relationship to self-esteem in children with mild intellectual disability and borderline intellectual functioning in regular and special schools: An exploratory study in urban Bengaluru. *Journal of Intellectual Disabilities*, *24*, 474-488.

Neff, K.D. (2011). Self-compassion, self-esteem, and well-being. *Social and Personality Psychology Compass*, *5*, 1-12.

Neff, K.D., & Vonk, R. (2009). Self-compassion versus global self-esteem: Two different ways of relating to oneself. *Journal of personality*, *77*, 23-50.

Nordahl, C.W., Andrews, D.S., Dwyer, P., Waizbard-Bartov, E., Restrepo, B., Lee, J.K., Health, B., Saron, C., Rivera, S.M., Solomon, M., Ashwood, P., & Amaral, D.G. (2022). The autism phenome project: Toward identifying clinically meaningful subgroups of autism. *Frontiers in Psychology*, *15*, 786220.

Obsuth, I., Murray, A. L., Malti, T., Sulger, P., Ribeaud, D., & Eisner, M. (2017). A non-bipartite propensity score analysis of the effects of teacher–student relationships on adolescent problem and prosocial behavior. *Journal of Youth and Adolescence*, *46*, 1661-1687.

Obsuth, I., Murray, A.L., Malti, T., Sulger, P., Ribeaud, D., & Eisner, M. (2017). A non-bipartite propensity score analysis of the effects of teacher–student relationships on adolescent problem and prosocial behavior. *Journal of Youth and Adolescence*, *46*, 1661-1687.

O'Byrne, C., & Muldoon, O. T. (2019). The construction of intellectual disability by parents and teachers. *Disability & Society*, *34*(1), 46-67.

Olivier, E., Azarnia, P., Morin, A.J.S., Houle, S.A., Dubé, C., Tracey, D., & Maïano, C. (2020). The moderating role of teacher-student relationships on the association between peer

victimization and depression in students with intellectual disabilities. *Research in Developmental Disabilities*, *98*, 103572.

Olivier, E., Lacombe, C., Morin, A.J.S., Houle, S.A., Gagnon, C., Tracey, D., Craven, R.G., & Maïano, C. (2022a). Validation of a revised version of the Center for Epidemiologic Depression Scale for youth with intellectual disabilities (CESD-ID-*R*). *Journal of Autism and Developmental Disorders*, *52*, 4554-4567.

Olivier, E., Morin, A.J.S., Verma, N., Dubé, C., Gagnon, C., Tracey, D., Craven, R.G. & Maïano, C. (2021). Development and validation of a multi-informant measure of social behavior for youth with intellectual disabilities. *Research on Child and Adolescent Psychopathology*, *49*, 1649-1667.

Olivier, E., Morin, A.J.S., Vitaro, F., & Galand, B. (2022b, in press). Challenging the "Mean Kid" perception: Boys' and girls' profiles of peer victimization and aggression from 4th to 10th grades. *Journal of Interpersonal Violence.* Early view doi: 10.1177/0886260521997949

Patel, D. R., Cabral, M. D., Ho, A., & Merrick, J. (2020). A clinical primer on intellectual disability. *Translational pediatrics*, *9*, 23-35.

Peugh, J. & Fan, X. (2013). Modeling unobserved heterogeneity using latent profile analysis: A Monte Carlo simulation. *Structural Equation Modeling, 20*, 616-639.

Pianta, R.C. (1999). *Enhancing Relationships between Children and Teachers*. APA.

Pianta, R.C. (2001). *Student-Teacher Relationship Scale–Short Form*. Psychological Assessment.

Pinquart, M. (2017). Associations of parenting dimensions and styles with externalizing problems of children and adolescents: An updated meta-analysis. *Developmental Psychology*, *53*, 873-932.

Planalp, E.M. & Braungart-Rieker, J.M. (2013). Temperamental precursors of infant attachment with mothers and fathers. *Infant Behavior and Development*, *36*, 796-808.

Polanczyk, G.V., Salum, G.A., Sugaya, L.S., Caye, A., & Rohde, L.A. (2015). Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry*, *56*, 345-365.

Priestley, M. (2003). *Disability: A Life Course Approach*. Polity.

Raaska, H., Elovainio, M., Sinkkonen, J., Matomäki, J., Mäkipää, S., & Lapinleimu, H. (2012).

Internationally adopted children in Finland: parental evaluations of symptoms of reactive attachment disorder and learning difficulties–FINADO study. *Child: Care, Health and Development*, *38*, 697-705.

Raykov, T., & Marcoulides, G.A. (2004). Using the delta method for approximate interval estimation of parameter functions in SEM. *Structural Equation Modeling*, *11*, 621-637.

Reiter, S., & Lapidot-Lefler, N. (2007). Bullying among special education students with intellectual disabilities: Differences in social adjustment and social skills. *Intellectual and Developmental Disabilities*, *45*, 174-181.

Rodas, N.V., Blacher, J., & Baker, B.L. (2020). Predictors of anxiety symptom trajectory in children with or without ID from early childhood to adolescence. *Journal of Mental Health Research in Intellectual Disabilities*, *13*, 25-42.

Rodas, N.V., Zeedyk, S.M., & Baker, B.L. (2016). Unsupportive parenting and internalising behaviour problems in children with or without intellectual disability. *Journal of Intellectual Disability Research*, *60*, 1200-1211.

Roeser, R. W., Eccles, J. S., & Sameroff, A. (2000). School as a context of early adolescents' development: A summary of research findings. *Elementary School Journal*, *100*, 443-471.

Rohner, R.P. (2004). The parental" acceptance-rejection syndrome": universal correlates of perceived rejection. *American Psychologist*, *59*, 830-840.

Roid, G. H., & Miller, L. J. (1997). *Leiter international performance scale-revised.* Stoelting.

Rojahn, J., Rowe, E. W., Kasdan, S., Moore, L., & van Ingen, D. J. (2011). Psychometric properties of the aberrant behavior checklist, the anxiety, depression and mood scale, the assessment of dual diagnosis and the social performance survey schedule in adults with intellectual disabilities. *Research in Developmental Disabilities*, *32*(6), 2309-2320.

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.

Roza, S.J., Hofstra, M.B., Van Der Ende, J., & Verhulst, F.C. (2003). Stable prediction of mood and anxiety disorders based on behavioral and emotional problems in childhood. *American Journal of Psychiatry*, *160*, 2116-2121.

Ryan, R.M., & Deci, E.L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Sabol, T.J., & Pianta, R.C. (2012). Recent trends in research on teacher–child relationships. *Attachment & Human Development*, *14*, 213-231.

Sainio, P.J., Eklund, K.M., Ahonen, T.P., & Kiuru, N.H. (2019). The role of learning difficulties in academic emotions and academic achievement. *Journal of Learning Disabilities*, *52*, 287-298.

Salmivalli, C. & Nieminen, E. (2002). Proactive and reactive aggression in bullies, victims, and bully– victims. *Aggressive Behavior*, *28*, 30-44.

Satorra, A., & Bentler, P.M. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika*, *66*, 507-514.

Scholte, R., Lieshout, C., & Aken, M. (2001). Perceived relational support in adolescence: Dimensions, configurations, and adolescent adjustment. *Journal of Research on Adolescence*, *11*, 71-94.

Schmückle, D., Schmolz, G.K., & Lindert, J. (2017). Mental health in adults with intellectual disabilities: Protective and risk factors for depression & anxiety. *Gesundheitswesen*, *79*, 415-418.

Schuiringa, H., van Nieuwenhuijzen, M., de Castro, B. O., & Matthys, W. (2015). Parenting and the parent–child relationship in families of children with mild to borderline intellectual disabilities and externalizing behavior. *Research in Developmental Disabilities*, *36*, 1-12.

Schwab, S., & Rossmann, P. (2020). Peer integration, teacher-student relationships and the associations with depressive symptoms in secondary school students with and without special needs. *Educational Studies*, *46*, 302-315.

Scott, H. M., & Havercamp, S. M. (2018). Comparisons of self and proxy report on health-related factors in people with intellectual disability. *Journal of Applied Research in Intellectual Disabilities*, *31*(5), 927-936.

Searle, A.K., Miller-Lewis, L.R., Sawyer, M.G., & Baghurst, P.A. (2013). Predictors of children's kindergarten classroom engagement: Preschool adult–child relationships, self-concept, and hyperactivity/inattention. *Early Education & Development*, *24*, 1112-1136.

Shaver, P.R., Mikulincer, M., & Cassidy, J. (2019). Attachment, caregiving in couple relationships, and prosocial behavior in the wider world. *Current Opinion in Psychology*, *25*, 16-20.

Sheard, C., Clegg, J., Standen, P., & Cromby, J. (2001). Bullying and people with severe

intellectual disability. *Journal of Intellectual Disability Research*, *45*, 407-415.

Shochet, I.M., Dadds, M.R., Ham, D., & Montague, R. (2006). School connectedness is an underemphasized parameter in adolescent mental health: Results of a community prediction study. *Journal of Clinical Child & Adolescent Psychology*, *35*, 170-179.

Shulman, S., Elicker, J., & Sroufe, L.A. (1994). Stages of friendship growth in preadolescence as related to attachment history. *Journal of Social and Personal Relationships*, *11*, 341-361.

Siddaway, A.P., Wood, A.M., & Taylor, P.J. (2017). The Center for Epidemiologic Studies-Depression (CES-D) scale measures a continuum from well-being to depression: Testing two key predictions of positive clinical psychology. *Journal of Affective Disorders*, *213*, 180-186.

Skrondal, A., & Laake, P. (2001). Regression among factor scores. *Psychometrika, 66*, 563–575.

Smokowski, P.R., Bacallao, M.L., Cotter, K.L., & Evans, C.B. (2015). The effects of positive and negative parenting practices on adolescent mental health outcomes in a multicultural sample of rural youth. *Child Psychiatry & Human Development*, *46*, 333-345.

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: A developmental analysis and model for intervention (pp. 101-122). APA.

Snyder, J., & Patterson, G.R. (1995). Individual differences in social aggression: A test of a reinforcement model of socialization in the natural environment. *Behavior Therapy*, *26*, 371-391.

Solish, A., Perry, A., & Minnes, P. (2010). Participation of children with and without disabilities in social, recreational and leisure activities. *Journal of Applied Research in Intellectual Disabilities*, *23*, 226-236.

Soresi, S., Nota, L., & Wehmeyer, M.L. (2011). Community involvement in promoting inclusion, participation and self-determination. *International Journal of Inclusive Education, 15*, 15-28.

Steele, H., & Steele, M. (2014). Attachment disorders: Theory, research, and treatment considerations. In M. Lewis & K.D. Rudolph (Eds.), *Handbook of Developmental*

Psychopathology (pp. 357-370). Springer.

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

Swann, W.B. (1983). Self-verification; Bringing social reality into harmony with the self. In J. Suls & A.G. Greenwald (Eds.), *Social Psychological Perspectives on the Self, Vol. 2* (pp. 33-66), Erlbaum.

Swanson, S., & Howell, C. (1996). Test anxiety in adolescents with learning disabilities and behavior disorders. *Exceptional Children*, *62*, 389-397.

Te Brinke, L.W., Schuiringa, H.D., & Matthys, W. (2021). Emotion regulation and angry mood among adolescents with externalizing problems and intellectual disabilities. *Research in Developmental Disabilities*, *109*, 103833.

Teague, S.J., Newman, L.K., Tonge, B.J., & Gray, K.M. (2018). Caregiver mental health, parenting practices, and perceptions of child attachment in children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *48*, 2642-2652.

Tipton, L.A., Christensen, L., & Blacher, J. (2013). Friendship quality in adolescents with and without an intellectual disability. *Journal of Applied Research in Intellectual Disabilities*, *26*, 522-532.

Tipton-Fisler, L.A., Rodriguez, G., Zeedyk, S.M., & Blacher, J. (2018). Stability of bullying and internalizing problems among adolescents with ASD, ID, or typical development. *Research in Developmental Disabilities*, *80*, 131-141.

Tonge, B.J., & Einfeld, S.L. (2003). Psychopathology and intellectual disability. *International Review of Research in Mental Retardation*, *26*, 61-91.

Tóth-Király, I., Morin, A.J.S., & Salmela-Aro, K. (2021). A Longitudinal perspective on the associations between work engagement and workaholism. *Work & Stress, 35,* 27-56.

Totsika, V., Hastings, R.P., Vagenas, D., & Emerson, E. (2014). Parenting and the behavior problems of young children with an intellectual disability: Concurrent and longitudinal relationships in a population-based study. *American Journal on Intellectual and Developmental Disabilities*, *119*, 422-435.

Turk, V., Khattran, S., Kerry, S., Corney, R., & Painter, K. (2012). Reporting of health problems and pain by adults with an intellectual disability and by their carers. *Journal of Applied Research in Intellectual Disabilities*, *25*, 155-165.

Twenge, J.M., & Nolen-Hoeksema, S. (2002). Age, gender, race, socioeconomic status, and birth cohort difference on the children's depression inventory: A meta-analysis. *Journal of Abnormal Psychology*, *111*, 578-588.

Uljarević, M., Phillips, J.M., Schuck, R.K., Schapp, S., Solomon, E.M., Salzman, E., Allerhand, L., Libove, R.A., Frazier, T.W., & Hardan, A. Y. (2020). Exploring social subtypes in autism spectrum disorder: A preliminary study. *Autism Research*, *13*, 1335-1342.

Ung, D., McBride, N., Collier, A., Selles, R., Small, B., Phares, V., & Storch, E. (2016). The relationship between peer victimization and the psychological characteristics of youth with autism spectrum disorder. *Research in Autism Spectrum Disorders*, *32*, 70-79.

van Eijck, F. E., Branje, S. J., Hale, W. W., & Meeus, W. H. (2012). Longitudinal associations between perceived parent-adolescent attachment relationship quality and generalized anxiety disorder symptoms in adolescence. *Journal of abnormal child psychology*, *40*, 871-883.

van Oort, F. V. A., Greaves-Lord, K., Verhulst, F. C., Ormel, J., & Huizink, A. C. (2009). The developmental course of anxiety symptoms during adolescence: The TRAILS study. *Journal of Child Psychology and Psychiatry*, *50*, 1209–1217.

Van Steensel, F. J., Bögels, S. M., & Perrin, S. (2011). Anxiety disorders in children and adolescents with autistic spectrum disorders: a meta-analysis. *Clinical child and family psychology review*, *14*(3), 302-317.

Vasa, R.A., Kalb, L., Mazurek, M., Kanne, S., Freedman, B., Keefer, A., ... & Murray, D. (2013). Age-related differences in the prevalence and correlates of anxiety in youth with autism spectrum disorders. *Research in Autism Spectrum Disorders*, *7*, 1358-1369.

Vasey, M.W., Bosmans, G., & Ollendick, T.H. (2014). The developmental psychopathology of anxiety. In *Handbook of developmental psychopathology* (pp. 543-560). Springer.

Verschueren, K., & Koomen, H.M. (2012). Teacher–child relationships from an attachment perspective. *Attachment & Human Development*, *14*, 205-211.

Visser, E.M., Berger, H.J.C., Van Schrojenstein Lantman-De Valk, H.M.J., Prins, J.B., & Teunisse, J.P. (2015). Cognitive shifting and externalising problem behaviour in intellectual disability and autism spectrum disorder. *Journal of Intellectual Disability Research, 59,* 755–766.

Wadman, R., Durkin, K., & Conti-Ramsden, G. (2008). Self-esteem, shyness, and sociability in

adolescents with specific language impairment (SLI). *Journal of Speech, Language and Hearing Research*, *51*(4), 938–952.

Way, N., Reddy, R., & Rhodes, J. (2007). Students' perceptions of school climate during the middle school years: Associations with trajectories of psychological and behavioral adjustment. *American Journal of Community Psychology*, *40*, 194-213.

Weaver, C. M., Shaw, D. S., Crossan, J. L., Dishion, T. J., & Wilson, M. N. (2015). Parent–child conflict and early childhood adjustment in two-parent low-income families: Parallel developmental processes. *Child Psychiatry & Human Development, 46*, 94–107.

Wechsler, D. (2003). WISC-IV Technical and Interpretive Manual. Psychological Corporation.

Wechsler, D. (2008). *Weschler Intelligence Scale for Children-Fourth Edition*. Pearson.

Wehmeyer, M. L. (2005). Self-determination and individuals with severe disabilities. *Research & Practice for Persons with Severe Disabilities*, *30*, 113-120.

Wells, T., Sandefur, G., Hogan, D., 2003. What happens after the high school years among young persons with disabilities. *Social Forces, 82* (2), 803–832.

Whitney, D.G., Shapiro, D.N., Peterson, M.D., & Warschausky, S.A. (2019). Factors associated with depression and anxiety in children with intellectual disabilities. *Journal of Intellectual Disability Research*, *63*, 408-417.

Wigfield, A., Byrnes, J.P., & Eccles, J.S. (2006). Development during early and middle adolescence. In P.A. Alexander & Winne (Eds.). *Handbook of Educational Psychology* (pp. 87-113). Erlbaum.

Withers, M.C., McWey, L.M., & Lucier-Greer, M. (2016). Parent–adolescent relationship factors and adolescent outcomes among high-risk families. *Family Relations*, *65*, 661-672.

Wood, A.M., Taylor, P.J., & Joseph, S. (2010). Does the CES-D measure a continuum from depression to happiness? Comparing substantive and artifactual models. *Psychiatry Research*, *177*, 120-123.

Woodward, L.J., & Fergusson, D.M. (2001). Life course outcomes of young people with anxiety disorders in adolescence. *Journal of the American Academy of Child and Adolescent Psychiatry*, *40*, 1086–1093.

Wright, M.F. (2017). Cyber victimization and depression among adolescents with intellectual disabilities and developmental disorders: The moderation of perceived social

support. *Journal of Mental Health Research in Intellectual Disabilities*, *10*, 126-143.

Yap, M.B.H., Pilkington, P.D., Ryan, S.M., & Jorm, A.F. (2014). Parental factors associated with depression and anxiety in young people: A systematic review and meta-analysis. *Journal of Affective Disorders*, *156*, 8-23.

Young, R., Dagnan, D., & Jahoda, A. (2016). Leaving school: a comparison of the worries held by adolescents with and without intellectual disabilities. *Journal of Intellectual Disability Research*, *60*, 9-21.

Young-Southward, G., Cooper, S.A., & Philo, C. (2017). Health and wellbeing during transition to adulthood for young people with intellectual disabilities: A qualitative study. *Research in Developmental Disabilities, 70*, 94-103

Yu, C.Y. (2002). *Evaluating cutoff criteria of model fit indices for latent variable models with binary and continuous outcomes*. University of California.

Zaidman-Zait, A., Mirenda, P., Szatmari, P., Duku, E., Smith, I.M., Zwaigenbaum, L., Vaillancourt, T., Kerns, C., Volden, J., Waddell, C., Bennett, T., Georgiades, S., Ungar, W.J., & Elsabbagh, M. (2021). Profiles and predictors of academic and social school functioning among children with autism spectrum disorder. *Journal of Clinical Child & Adolescent Psychology*, *50*, 656-668.

Zeedyk, S.M., Rodriguez, G., Tipton, L.A., Baker, B.L., & Blacher, J. (2014). Bullying of youth with autism spectrum disorder, intellectual disability, or typical development: Victim and parent perspectives. *Research in Autism Spectrum Disorders*, *8*, 1173-1183.

Zhou, W., & McLellan, R. (2021). Examining social status profiles with gender, school attended, SES, academic achievement and wellbeing in urban china. *Journal of Youth and Adolescence*, *50*, 1464-1477.

Zimmer-Gembeck, M.J., & Webb, H.J. (2017) Body image and peer relationships: Unique associations of adolescents' social status and competence with peer- and self-reported appearance victimization. *Journal of Adolescence*, *61*, 131-140.

APPENDIX A:
Online Supplements for
Social Interaction Profiles Among Youth with Intellectual Disabilities: Associations with Indicators of Psychosocial Adjustment

Table S1

Standardized Parameter Estimates for the Profile Indicators Measurement Model

	WT (λ)	CT (λ)	WP (λ)	CF (λ)	PR (λ)	L (λ)	VI (λ)	SB (λ)	δ
Warmth: teacher (WT)									
Item 1	.650**								.577
Item 2	.679**								.539
Item 3	.856**								.268
Item 4	.623**								.611
Item 5	.824**								.322
Item 6	.843**								.290
Conflict: teacher (CT)									
Item 1		.711**							.495
Item 2		.731**							.465
Item 3		.799**							.362
Item 4		.799**							.362
Item 5		.769**							.408
Item 6		.711**							.495
Item 7		.844**							.288
Warmth: parent (WP)									
Item 1			.726**						.473
Item 2			.725**						.474
Item 3			.837**						.299
Item 4			.826**						.318
Item 5			.865**						.252
Item 6			.792**						.373
Conflict: parent (CP)									
Item 1				.684**					.531
Item 2				.786**					.382
Item 3				.685**					.531
Item 4				.653**					.574
Item 5				.799**					.361
Item 6				.770**					.408
Item 7				.719**					.482
Peer relationships (PE)									
Item 1					.691**				.522
Item 2					.869**				.245
Item 3					.837**				.300
Item 4					.799**				.362
Item 5					.853**				.273
Item 6					.681**				.536
Item 7					.846**				.284
Item 8					.842**				.291
Loneliness (L)									
Item 1						.508**			.742
Item 2						.711**			.494
Item 3						.650**			.577

	WT (λ)	CT (λ)	WP (λ)	CF (λ)	PR (λ)	L (λ)	VI (λ)	SB (λ)	δ
Item 4						.795**			.368
Item 5						.858**			.264
Victimization (VI)									
Item 1							.743**		.448
Item 2							.766**		.413
Item 3							.827**		.315
Item 4							.825**		.319
Item 5							.774**		.400
Item 6							.809**		.345
Item 7							.840**		.294
Item 8							.794**		.369
Item 9							.797**		.365
Item 10							.777**		.396
Item 11							.862**		.257
Item 12							.817**		.332
Item 13							.829**		.313
Item 14							.770**		.408
Item 15							.822**		.324
Item 16							.884**		.218
Item 17							.861**		.258
School belonging (SB)									
Item 1								.868**	.247
Item 2								.863**	.255
Item 3								.753**	.434
Item 4								.861**	.259
ω	.885	.909	.912	.888	.936	.835	.971	.904	

Note. ** $p < .01$; λ: Factor loading; δ: Item uniqueness; ω: model-based omega composite reliability based on McDonald (1970).

Table S2

Standardized Parameter Estimates for the Outcomes Measurement Model

	SE (λ)	SS (λ)	AS (λ)	ST (λ)	AT (λ)	SP (λ)	AP (λ)	δ
Self-esteem (SE)								
Item 1	.675**							.544
Item 2	.820**							.328
Item 3	.829**							.313
Item 4	.809**							.346
Item 5	.755**							.430
Item 6	.800**							.359
Item 7	.793**							.372
Item 8	.769**							.408
Prosocial behaviors: self (SS)								
Item 1		.642**						.587
Item 2		.681**						.536
Item 3		.827**						.317
Item 4		.580**						.664
Item 5		.812**						.340
Aggressive behaviors: self (AS)								
Item 1			.922**					.150
Item 2			.864**					.254
Item 3			.674**					.546
Item 4			.863**					.256
Item 5			.824**					.320
Prosocial behaviors: teacher (ST)								
Item 1				.838**				.298
Item 2				.779**				.393
Item 3				.814**				.337
Item 4				.707**				.500
Item 5				.822**				.324
Item 6				.836**				.300
Item 7				.675**				.544
Aggressive behaviors: teacher (AT)								
Item 1					.860**			.261
Item 2					.910**			.171
Item 3					.868**			.247
Item 4					.816**			.335
Item 5					.680**			.537
Item 6					.939**			.118
Item 7					.924**			.146
Item 8					.896**			.197
Prosocial behaviors: parent (SP)								
Item 1						.727**		.472
Item 2						.744**		.447
Item 3						.732**		.464
Item 4						.736**		.459
Item 5						.776**		.398
Item 6						.869**		.245
Item 7						.794**		.369
Aggressive behaviors: parent (AP)								
Item 1							.908**	.176
Item 2							.958**	.083
Item 3							.758**	.425
Item 4							.803**	.355
Item 5							.437**	.809

	SE (λ)	SS (λ)	AS (λ)	ST (λ)	AT (λ)	SP (λ)	AP (λ)	δ
Item 6							.908**	.176
Item 7							.840**	.295
Item 8							.947**	.104
ω	.926	.837	.918	.917	.959	.910	.947	

Note. ** $p < .01$; λ: Factor loading; δ: Item uniqueness; ω: model-based omega composite reliability based on McDonald (1970).

Table S3

Correlations between the Variables Included in this Study

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Warmth: teacher	—																		
2. Conflict: teacher	-.607**	—																	
3. Warmth: parent	.589**	-.253**	—																
4. Conflict: parent	-.209**	.640**	-.344**	—															
5. Peer relations	.642**	-.241**	.662**	-.098	—														
6. Loneliness	-.374**	.556**	-.302**	.352**	-.540**	—													
7. Victimization	.010	.382**	-.043	.363**	-.070	.319**	—												
8. School belonging	.811**	-.595**	.474**	-.307**	.617**	-.478**	-.150**	—											
9. Sex	-.045	.008	-.028	-.002	.002	-.065	.047	-.023	—										
10. ID level	.324**	-.131*	.215**	-.109*	.260**	-.071	-.027	.292**	.027	—									
11. Country	-.325**	.320**	-.231**	.289**	-.349**	.282**	.209**	-.285**	.184**	-.254**	—								
12. Age	.174**	-.139*	.153**	-.102	.187**	-.154**	-.105	.146**	-.093	.187**	-.343**	—							
13. Comorbidity	.090	-.027	.065	-.114	.057	-.048	.006	.107	.122	.108	.055	-.044	—						
14. Self-esteem	.602**	-.283**	.654**	-.191**	.826**	-.400**	-.065	.561**	.025	.248**	-.319**	.194**	.080	—					
15. Prosoc.: self	.215**	.047	.284**	.088	.257**	-.083	.368**	.091	-.012	.039	.110*	-.001	.052	.318**	—				
16. Aggres.: self	-.195**	.393**	-.177**	.377**	-.177**	.281**	.617**	-.262**	.088	-.108*	.372**	-.140**	-.027	-.182**	.474*	—			
17. Prosoc.: teacher	.115*	-.191**	.108*	-.105*	.136**	-.118*	-.147**	.099	-.118*	.012	-.167**	.125*	-.108	.109*	.015	-.185**	—		
18. Aggres.: teacher	-.103*	.208**	-.078	.164**	-.047	.028	.297**	-.090	.156**	.009	.165**	-.183**	.084	.003	.329**	.373**	-.571**	—	
19. Prosoc.: parent	.075	-.145**	.112*	-.109*	.031	-.111*	-.118*	.059	-.139**	-.061	-.080	.101	-.052	-.053	.089	-.162**	.512**	-.490**	—
20. Aggress.: parent	.142**	.034	.133*	.056	.202**	-.124*	.213**	.138**	.148**	.170**	-.071	-.079	-.001	.323**	.421**	.246**	-.300**	.748**	-.341**

Note. * $p < .05$; ** $p < .01$.

Table S4

Goodness-of-Fit Results for the Tests of Measurement Invariance Conducted Across Countries

Models	χ^2	df	CFI	TLI	RMSEA (90% CI)	CM	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA
Profile Indicators											
1. Configural	4398.731*	3338	.938	.934	.042 (.038, .045)	—	—	—	—	—	—
2. Weak (loadings)	4440.043*	3390	.938	.936	.041 (.038, .044)	1	54.45	52	.000	+.002	-.001
3. Strong (intercepts)	4611.584*	3571	.939	.939	.040, .036, .043)	2	236.019*	181	+.001	+.003	-.001
4. Strict (uniquenesses)	4744.255*	3631	.935	.936	.041 (.037, .044)	3	207.747*	60	-.004	-.003	+.001
5.Correlated uniquenesses	4757.413*	3644	.935	.936	.041 (.037, .044)	4	22.380	13	.000	.000	.000
Outcomes											
1. Configural	3037.960*	2049	.921	.913	.050 (.046, .053)	—	—	—	—	—	—
2. Weak (loadings)	3102.927*	2090	.919	.912	.050 (.046, .053)	1	119.416*	41	-.002	-.001	.000
3. Strong (intercepts)	3292.122*	2227	.915	.914	.050 (.046, .053)	2	316.692*	137	-.004	+.002	.000
4. Strict (uniquenesses)	3407.956*	2274	.909	.910	.051 (.047, .054)	3	206.422*	47	-.006	-.004	+.001
5.Correlated uniquenesses	3442.134*	2309	.909	.911	.050 (.047, .054)	4	64.263*	35	.000	+.001	-.001

Note. *$p < .01$; χ^2: WLSMV chi-square; df: Degrees of freedom; CFI: Comparative fit index; TLI: Tucker-Lewis index; RMSEA: Root mean square error of approximation; 90% CI: RMSEA 90% confidence interval; CM: Comparison model; Δ: Change in model fit relative to the comparison model

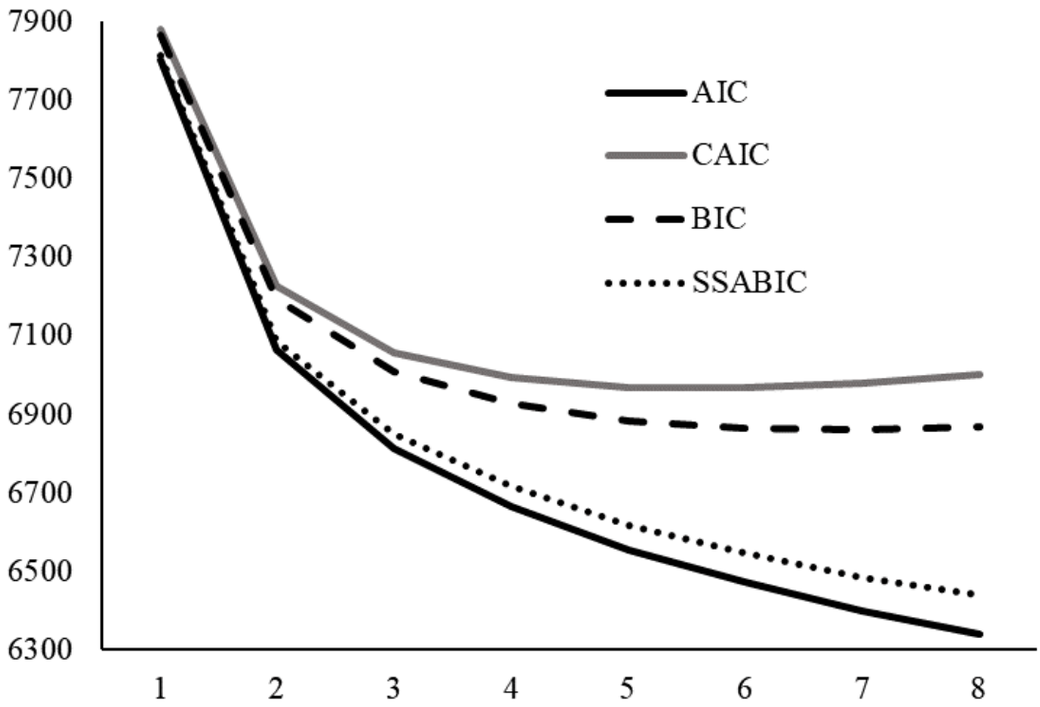

Figure S1. Elbow Plot of the Information Criteria for the Latent Profile Analyses.
Note. AIC: Akaike Information Criterion; BIC: Bayesian Information Criterion; CAIC: Consistent AIC; SSABIC: Sample-Size-Adjusted BIC.

Table S5

Exact Within-Profile Means, Variances and 95% Confidence Intervals [95% CI] from the Retained Four-Profile Solution

	Socially Isolated	Socially Integrated	Socially Rejected	Socially Connected
	Mean [95% CI]	Mean [95% CI]	Mean [95% CI]	Mean [95% CI]
Warmth: teacher	-.425 [-1.647, .797]	.430 [.055, .804]	-.746 [-.971, -.520]	1.690 [1.175, 2.205]
Warmth: parent	-.496 [-1.222, .230]	.311 [.010, .612]	-.497 [-.969, -.024]	1.404 [.831, 1.976]
Peer relationships	-.621 [-.933, -.309]	.411 [.022, .800]	-.577 [-.829, -.325]	1.532 [1.195, 1.869]
School belongingness	-.340 [-1.351, .670]	.461 [.093, .830]	-.869 [-1.658, -.080]	1.557 [1.359, 1.755]
Conflict: teacher	.240 [-1.334, 1.815]	-.463 [-.683, -.243]	.791 [.213, 1.370]	-.956 [-1.310, -.601]
Conflict: parent	.166 [-.857, 1.189]	-.292 [-.465, -.118]	.521 [.090, .952]	-.530 [-.916, -.144]
Loneliness	.281 [-.683, 1.245]	-.358 [-.598, -.119]	.633 [.145, 1.121]	-.877 [-.1193, -.561]
Victimization	.066 [-.387, .518]	-.228 [-.396, -.061]	.435 [-.441, 1.310]	.165 [-.567, .897]
	Variance [95% CI]	Variance [95% CI]	Variance [95% CI]	Variance [95% CI]
Warmth: teacher	.125 [-.655, .905]	.335 [.232, .438]	.653 [-.470, 1.777]	.179 [-.036, .394]
Warmth: parent	.103 [-.228, .434]	.589 [.406, .772]	.842 [-.788, 2.473]	.134 [-.253, .520]
Peer relationships	.167 [.063, .272]	.436 [.300, .573]	.816 [-.922, 2.554]	.131 [-.016, .277]
School belongingness	.113 [-.314, .540]	.327 [.236, .418]	.515 [-.138, 1.169]	.043 [.005, .080]
Conflict: teacher	.190 [-.173, .552]	.478 [.289, .667]	.756 [-.737, 2.250]	.587 [.301, .873]
Conflict: parent	.202 [-.298, .701]	.639 [.442, .836]	.799 [-.491, 2.088]	1.154 [.337, 1.970]
Loneliness	.315 [.030, .600]	.502 [.326, .679]	.592 [.090, 1.093]	.396 [.243, .548]
Victimization	.498 [.169, 827]	.618 [.489, .748]	.782 [.476, 1.088]	1.260 [.673, .1847]

Note. CI: confidence interval; Profile indicators are factor scores estimated with $M = 0$ and $SD = 1$.

APPENDIX B

Online Supplements for
School Experiences and Anxiety Trajectories among Youth with Intellectual Disabilities

Table S1

Goodness-of-Fit Results from Time Specific Measurement Models

Models	χ^2	df	CFI	TLI	RMSEA (90% CI)
Global Anxiety					
Time 1	356.485**	249	.983	.976	.035 (.027, .043)
Time 2	382.550**	249	.970	.958	.047 (.038, .057)
Time 3	336.541**	249	.984	.977	.040 (.028, .051)
Academic Achievement					
Time 1	14.164**	4	.999	.997	.096 (.045, .152)
Time 2	25.785**	4	.995	.989	.194 (.127, .268)
Time 3	4.917	4	1.000	1.000	.040 (.000, .136)
Victimization and School Safety Climate					
Time 1	469.160**	188	.970	.967	.064 (.057, .072)
Time 2	288.267**	188	.975	.972	.047 (.036, .058)
Time 3	393.109**	188	.965	.961	.072 (.062, .082)
Other Facets of the School Climate					
Time 1	530.507**	246	.982	.973	.056 (.050, .063)
Time 2	455.910**	246	.984	.976	.060 (.051, .068)
Time 3	487.022**	246	.979	.968	.068 (.059, .077)

Note. *$p < .01$; χ^2: WLSMV chi-square; df: Degrees of freedom; CFI: Comparative fit index; TLI: Tucker-Lewis index; RMSEA: Root mean square error of approximation; 90% CI: RMSEA 90% confidence interval; CM: Comparison model; Δ: Change in model fit relative to the comparison model

Table S2

Goodness-of-Fit Results from the Longitudinal Tests of Measurement Invariance across Time 1-3

Models	χ^2	df	CFI	TLI	RMSEA (90% CI)	CM	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA
Global Anxiety											
1. Configural	3055.637*	2805	.982	.979	.016 (.011-.020)	—	—	—	—	—	—
2. Weak	3219.530*	2989	.983	.982	.015 (.010-.019)	1	204.875	184	+.001	+.003	-.001
3. Strong	3365.074*	3143	.984	.983	.014 (.009-.018)	2	154.578	154	+.001	+.001	-.001
4. Strict	3408.993*	3197	.984	.984	.014 (.008-.018)	3	60.891	54	.000	+.001	.000
5. Variance-covariance	3462.562*	3217	.982	.982	.015 (.010-.018)	4	35.29	20	-.002	-.002	+.001
6. Latent Means	3530.387*	3225	.977	.977	.016 (.012-.020)	5	35.649*	8	-.005	-.005	+.001
Academic Achievement											
1. Configural	155.869*	69	.995	.992	.062 (.049, .075)	—	—	—	—	—	—
2. Weak	163.970*	77	.995	.993	.059 (.046, .071)	7	2.786	8	.000	+.001	-.003
3. Strong	186.025*	105	.995	.995	.049 (.037, .060)	8	22.813	28	.000	+.002	-.010
4. Strict	203.143*	115	.995	.995	.048 (.037, .059)	9	23.943*	10	.000	.000	-.001
5. Correlated Uniquenesses	206.378*	117	.995	.995	.048 (.037, .059)	10	4.277	2	.000	.000	.000
6. Variance-covariance	217.149*	119	.994	.995	.050 (.039, .061)	11	8.569	2	-.001	.000	+.002
7. Latent Means	190.609*	121	.996	.997	.041 (.030, .053)	12	0.041	2	+.002	+.002	-.009
Victimization and School Safety Climate											
1. Configural	2124.945*	1812	.976	.975	.022 (.017, .025)	—	—	—	—	—	—
2. Weak	2160.695*	1850	.977	.975	.021 (.017, .025)	14	36.131	38	+.001	.000	-.001
3. Strong	2308.862*	2006	.977	.978	.020 (.016, .024)	15	175.197	156	.000	+.003	-.001
4. Strict	2366.256*	2048	.976	.977	.021 (.016, .024)	16	75.095*	42	-.001	-.001	+.001
5. Variance-covariance	2410.616*	2054	.973	.974	.022 (.018, .025)	17	18.260*	6	-.003	-.003	+.001
6. Latent Means	2513.431*	2058	.966	.967	.025 (.021, .028)	18	33.452*	4	-.007	-.007	+.003
Other Facets of the School Climate											
1. Configural	3427.568*	2953	.985	.983	.021 (.017, .024)	—	—	—	—	—	—
2. Weak	3680.742*	3183	.985	.983	.021 (.017, .023)	20	341.339*	230	.000	.000	.000
3. Strong	3799.440*	3339	.986	.985	.019 (.016, .022)	21	113.025	156	+.001	+.002	-.002
4. Strict	3910.906*	3395	.984	.984	.020 (.017, .023)	22	118.206*	56	-.002	-.001	+.001
5. Correlated Uniquenesses	3917.126*	3399	.984	.983	.020 (.017, .023)	23	13.831*	4	.000	-.001	.000
6. Variance-covariance	3942.436*	3429	.984	.984	.020 (.017, .023)	24	56.723*	30	.000	+.001	.000
7. Latent Means	4199.781*	3549	.980	.980	.022 (.019, .025)	25	8.279	120	-.004	-.004	+.002

Note. *$p < .01$; χ^2: WLSMV chi-square; df: Degrees of freedom; CFI: Comparative fit index; TLI: Tucker-Lewis index; RMSEA: Root mean square error of approximation; 90% CI: RMSEA 90% confidence interval; CM: Comparison model; Δ: Change in model fit relative to the comparison model.

Table S3

Standardized Results from the Longitudinal Variance-Covariance Invariant Global Anxiety Model

	Worries (λ)	Fears (λ)	PS (λ)	Global (λ)	δ
Item 1	.390**	-.088*	-.032	.622**	.452**
Item 2	.501**	.135**	.120**	.380**	.571**
Item 3	.551**	.038	.022	.502**	.443**
Item 4	.599**	-.04	-.032	.581**	.300**
Item 5	.458**	-.085**	.106**	.668**	.326**
Item 6	.475**	-.021	.237**	.563**	.400**
Item 7	.313**	-.041	-.076	.676**	.437**
Item 8	.365**	-.013	-.167**	.650**	.416**
Item 9	-.340**	-.046	-.126*	.200**	.827**
Item 10	.421**	.034	.171**	.498**	.544**
Item 11	.000	.525**	.012	.549**	.423**
Item 12	.063	.441**	.077	.551**	.493**
Item 13	-.052	.373**	-.081	.659**	.418**
Item 14	-.166**	.352**	-.107	.491**	.596**
Item 15	-.008	.409**	.213**	.465**	.571**
Item 16	-.069	.180**	.110*	.618**	.569**
Item 17	-.047	-.046	-.151**	.792**	.346**
Item 18	-.032	-.014	-.108**	.816**	.321**
Item 19	-.075**	.074	.025	.850**	.265**
Item 20	.024	.126	.311**	.632**	.488**
Item 21	.134**	.038	.467**	.622**	.376**
Item 22	.080**	.033	.46**	.656**	.351**
Item 23	.121**	-.054	.404**	.560**	.506**
Item 24	-.045	-.015	.234**	.720**	.425**
Item 25	-.047	.016	.205**	.622**	.568**
Item 26	.071	-.058	.302**	.687**	.429**
Item 27	.064*	.084*	.336**	.733**	.339**
ω	.747	.568	.680	.954	

Latent Correlations	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Worries (T1)	—										
2. Fears (T1)	.000	—									
3. PS (T1)	.000	.000	—								
4. Global (T1)	.000	.000	.000	—							
5. Worries (T2)	.320**	-.240*	-.004	-.060	—						
6. Fears (T2)	.169*	.494**	-.141	-.012	.000	—					

7. PS (T2)	.176*	-.238	.682**	-.037	.000	.000	—				
8. Global (T2)	.046	-.054	.050	.601**	.000	.000	.000	—			
9. Worries (T3)	.323**	-.200	.116	.051	.494**	.099	.269**	.009	—		
10. Fears (T3)	.071	.502**	.104	-.008	-.149	.841**	.043	.051	.000	—	
11. PS (T3)	.054	-.012	.625**	-.293**	.139	-.005	.596**	-.106	.000	.000	—
12. Global (T3)	.066	-.021	.064	.570**	-.130	-.236*	.140	.696**	.000	.000	.000

Note. *$p < .05$; **$p < .01$; PS: Physiological Symptoms; λ: Factor loading; δ: Item uniqueness; ω = Omega coefficient of composite reliability; T1: Time 1; T2: Time 2; T3: Time 3.

Table S4

Standardized Results from the Longitudinal Variance-Covariance Invariant CFA Models for Achievement, Victimization, and School Safety Climate

	Academic Achievement (λ)	Victimization (λ)	School Safety Climate (λ)	δ
Item 1	.905**			.181**
Item 2	.926**			.143**
Item 3	.907**			.177**
Item 4	.918**			.157**
Item 5	.968**			.062**
Item 1		.740**		.453**
Item 2		.719**		.482**
Item 3		.818**		.330**
Item 4		.804**		.354**
Item 5		.799**		.362**
Item 6		.825**		.320**
Item 7		.828**		.314**
Item 8		.808**		.347**
Item 9		.823**		.322**
Item 10		.805**		.351**
Item 11		.853**		.272**
Item 12		.785**		.384**
Item 13		.850**		.277**
Item 14		.733**		.463**
Item 15		.811**		.342**
Item 16		.866**		.250**
Item 17		.854**		.270**
Item 18			.730**	.467**
Item 19			.793**	.372**
Item 20			.687**	.528**
Item 21			.719**	.483**
ω	.967	.970	.823	

Latent Correlations	1.	2.	3.	4.	5.	6.	7.	8.
1. Academic Achievement (T1)	—							
2. Academic Achievement (T2)	.695**	—						
3. Academic Achievement (T3)	.695**	.897**	—					
4. Victimization (T1)	—	—	—	—				
5. School Safety Climate (T1)	—	—	—	-.541**	—			
6. Victimization (T2)	—	—	—	.633**	-.278**	—		
7. School Safety Climate (T2)	—	—	—	.369**	-.456**	.541**	—	
8. Victimization (T3)	—	—	—	.511**	-.283**	.554**	.367**	—
9. School Safety Climate (T3)	—	—	—	.393**	-.414**	.465**	.435**	.541**

Note. *$p < .05$; **$p < .01$; λ: Factor loading; δ: Item uniqueness; ω = Omega coefficient of composite reliability; T1: Time 1; T2: Time 2; T3: Time 3.

Table S5

Standardized Factor Loadings and Uniquenesses from the Longitudinal Variance-Covariance Invariant Model for School Bonding, Relational, Justice, and Educational Climates

	School Bonding (λ)	Between-Students Relational (λ)	Teacher-Student Relational (λ)	Justice (λ)	Educational (λ)	δ
Item 1	.773**	-.035	.093*	.058	-.019	.321**
Item 2	.867**	.016	-.051	.043	.002	.243**
Item 3	.793**	.146**	-.013	.077	-.268**	.407**
Item 4	.904**	-.056*	.031	-.067**	.085*	.172**
Item 5	.036	.766**	.061	.065*	-.058	.312**
Item 6	.021	.649**	-.002	.020	.199**	.345**
Item 7	.000	.853**	-.039	.044	.035	.240**
Item 8	-.003	.553**	.190**	-.010	.168**	.343**
Item 9	.073*	.758**	.065	.045	-.015	.254**
Item 10	.126**	.174**	.537**	.035	.118**	.253**
Item 11	.096*	.061	.480**	.156**	.171**	.314**
Item 12	.126**	.077*	.520**	.067	.136**	.349**
Item 13	.014	.086**	.766**	.080**	.039	.170**
Item 14	.114**	.061*	.532**	.046	.253**	.217**
Item 15	.088**	.121**	.695**	.080**	.010	.205**
Item 16	.000	.170**	.099*	.703**	-.131*	.408**
Item 17	.117**	.028	-.041	.548**	.146*	.487**
Item 18	-.047	.151**	-.055	.687**	.018	.463**
Item 19	.078*	.134**	-.057	.620**	.077	.415**
Item 20	.018	-.170**	.025	.703**	.122*	.456**
Item 21	-.028	-.149**	.026	.806**	.002	.445**
Item 22	-.022	.219**	.025	-.046	.699**	.322**
Item 23	.080*	.257**	.034	-.091**	.644**	.286**
Item 24	-.050	.001	.026	.133**	.729**	.331**
Item 25	.089*	-.024	.061	-.020	.764**	.302**
Item 26	.051	-.080*	.029	-.009	.840**	.297**
Item 27	.032	-.070	.020	.180**	.674**	.357**
Item 28	.085*	-.020	.076	.186**	.684**	.326**
ω	.907	.896	.892	.861	.919	

Note. *$p < .05$; **$p < .01$; λ: Factor loading; δ: Item uniqueness; ω = Omega coefficient of composite reliability; T1: Time 1; T2: Time 2; T3: Time 3.

Table S6

Latent Factor Correlations from the Longitudinal Variance-Covariance Invariant for School Bonding, Relational, Justice, and Educational Climates

Latent Correlations	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. Bonding (T1)	—													
2. Between-Students Rel. (T1)	.591**	—												
3. Teacher-Student Rel. (T1)	.566**	.674**	—											
4. Justice (T1)	.452**	.503**	.540**	—										
5. Educational (T1)	.587**	.609**	.709**	.706**	—									
6. Bonding (T2)	.586**	.438**	.350**	.302**	.332**	—								
7. Between-Students Rel. (T2)	.563**	.512**	.356**	.321**	.332**	.591**	—							
8. Teacher-Student Rel. (T2)	.556**	.475**	.472**	.325**	.343**	.566**	.674**	—						
9. Justice (T2)	.337**	.186*	.211**	.381**	.283**	.452**	.503**	.540**	—					
10. Educational (T2)	.391**	.269**	.235**	.261**	.426**	.587**	.609**	.709**	.706**	—				
11. Bonding (T3)	.531**	.396**	.381**	.153*	.369**	.733**	.571**	.539**	.363**	.463**	—			
12. Between-Students Rel. (T3)	.441**	.583**	.469**	.165*	.313**	.433**	.702**	,528**	.302**	.466**	.591**	—		
13. Teacher-Student Rel. (T3)	.464**	.508**	.436**	.222**	.439**	.528**	.530**	.651**	.327**	.479**	.566**	.674**	—	
14. Justice (T3)	.325**	.195*	.190*	.283**	.360**	.376**	.206**	.284**	.432**	.443**	.452**	.503**	.540**	—
15. Educational (T3)	.438**	.393**	.378**	.237**	.555**	.515**	.385**	.436**	.434**	.682**	.587**	.609**	.709**	.706**

Note. *$p < .05$; **$p < .01$; T1: Time 1; T2: Time 2; T3: Time 3.

Table S7

Parameter Estimates from the Predictor Latent Curve Models

	Academic Achievement			Victimization			Safety			Bonding		
Growth Parameters												
	Intercept		Slope	Intercept		Slope	Intercept		Slope	Intercept		Slope
Mean	-.031(.069)		.025(.022)	.222**(.048)		-.145**(.026)	-.129**(.048)		.096**(.030)	.023(.049)		-.059*(.026)
Variance	.595**(.071)		.040**(.009)	.610**(.081)		.039(.040)	.452**(.089)		.011(.048)	.685**(.087)		.107**(.038)
Standardized Correlations between Intercept and Linear slope factors												
	.189(.115)			-.476**(.127)			-.298(.359)			-.248*(.123)		
Standardized Residuals												
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
	.259**	.063**	.011**	.255**	.299**	.394**	.456**	.424**	.461**	.237**	.253**	.016
	(.054)	(.017)	(.001)	(.075)	(.305)	(.105)	(.102)	(.049)	(.127)	(.076)	(.032)	(.077)
	Between-Students Rel.			Teacher-Student Rel.			Justice			Educational		
Growth Parameters												
	Intercept		Slope	Intercept		Slope	Intercept		Slope	Intercept		Slope
Mean	-.048(.047)		.036(.026)	.010(.047)		.003(.034)	.015(.048)		-.001(.035)	.002(.047)		-.030(.029)
Variance	.431**(.079)		.019(.015)	.409**(.099)		.073(.064)	.402**(.109)		.074(.069)	.295**(.097)		.084**(.016)
Standardized Correlations between Intercept and Linear slope factors												
	.704(.611)			.124(.433)			-.158(.324)			.886(.466)		
Standardized Residuals												
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
	.530**	.310**	.138**	.522**	.381**	.203	.540**	.478**	.406**	.661**	.386**	.006
	(.084)	(.045)	(.049)	(.117)	(.047)	(.128)	(.120)	(.059)	(.154)	(.108)	(.042)	(.055)

Note. *$p < .05$; **$p < .01$. Standard error of the coefficients are reported in parentheses.

Table S8

Time Invariant Factor Scores (with a mean of 0 and a SD of 1) Correlations

	1	2	3	4	5	6	7	8	9	10	11	12
1. Global Anxiety (T1)												
2. Worries (T1)	.082											
3. Fears (T1)	.125*	-.125*										
4. PS (T1)	.157**	-.053	-.029									
5. Academic Achievement (T1)	-.134	-.013	-.047	.092								
6. Victimization (T1)	.411**	.137*	.036	.148**	-.134							
7. Safety (T1)	-.336**	-.075	.005	-.059	.098	-.585**						
8. Bonding (T1)	-.116*	-.067	.08	.022	-.056	-.156**	.243**					
9. Between-Students Rel. (T1)	-.123*	-.119*	.083	.021	.072	-.223**	.287**	.671**				
10. Teacher-Student Rel. (T1)	-.028	-.076	.089	.128*	.022	-.166**	.246**	.622**	.775**			
11. Justice (T1)	.004	-.021	.046	.077	-.020	-.105*	.209**	.564**	.617**	.628**		
12. Educational (T1)	-.107*	.026	.042	.126*	.145	-.126*	.240**	.640**	.682**	.790**	.780**	
13. Global Anxiety (T2)	.674**	.110	-.079	.148*	.106	.270**	-.266**	-.154*	-.134*	-.019	-.040	-.089
14. Worries (T2)	-.053	.475**	-.360**	.001	.008	.036	-.045	-.106	-.098	-.03	-.074	.051
15. Fears (T2)	.014	.157*	.700**	-.148*	.102	-.024	.056	.098	.087	.084	-.012	.086
16. PS (T2)	.011	.232**	-.322**	.825**	.201*	.104	-.059	-.048	-.003	.089	-.012	.106
17. Academic Achievement (T2)	-.067	.074	-.068	.041	.797**	-.186*	.071	-.042	.116	.043	.036	.189*
18. Victimization (T2)	.390**	.196**	-.079	.088	-.126	.692**	-.376**	-.280**	-.216**	-.125	-.149*	-.162*
19. Safety (T2)	-.370**	-.171**	.086	-.039	.110	-.450**	.563**	.291**	.314**	.217**	.275**	.331**
20. Bonding (T2)	-.177**	-.234**	.069	.080	-.127	-.113	.191**	.664**	.480**	.406**	.357**	.375**
21. Between-Students Rel. (T2)	-.180**	-.189**	.101	-.029	-.193*	-.173**	.248**	.603**	.527**	.388**	.353**	.340**
22. Teacher-Student Rel. (T2)	-.126	-.149*	.047	.113	-.084	-.137*	.236**	.613**	.512**	.513**	.354**	.367**
23. Justice (T2)	-.085	-.065	.031	.188**	-.171	-.083	.196**	.382**	.198**	.242**	.439**	.323**
24. Educational (T2)	-.186**	-.09	.022	.172**	-.063	-.035	.166*	.454**	.303**	.292**	.304**	.462**
25. Global Anxiety (T3)	.601**	.115	-.065	.164*	-.019	.359**	-.355**	-.179**	-.181**	-.107	-.061	-.156*
26. Worries (T3)	.078	.471**	-.289**	.128	.08	.129	-.032	-.157*	-.156*	-.084	-.150*	-.011
27. Fears (T3)	.031	.072	.751**	.073	.092	.058	-.012	.040	.052	.059	-.054	.049
28. PS (T3)	-.285**	.042	-.111	.757**	.044	-.118	.085	.003	-.005	.066	-.008	.119
29. Academic Achievement (T3)	-.073	.123	-.078	.054	.757**	-.156	.070	-.047	.093	.021	.032	.176*
30. Victimization (T3)	.359**	.189**	-.062	.111	-.074	.585**	-.400**	-.258**	-.251**	-.168*	-.093	-.171*
31. Safety (T3)	-.367**	-.121	.114	-.082	-.005	-.463**	.516**	.320**	.309**	.164*	.179*	.258**
32. Bonding (T3)	-.243**	-.105	.09	.047	-.059	-.210**	.232**	.607**	.433**	.428**	.185**	.394**
33. Between-Students Rel. (T3)	-.187**	-.111	.062	-.007	-.018	-.183**	.236**	.496**	.624**	.520**	.213**	.351**
34. Teacher-Student Rel. (T3)	-.180*	-.088	.013	.113	.085	-.151*	.252**	.521**	.549**	.486**	.276**	.482**
35. Justice (T3)	-.126	.033	-.034	.142*	.145	-.049	.127	.370**	.246**	.235**	.372**	.448**
36. Educational (T3)	-.244**	-.029	-.032	.183*	.175	-.097	.180*	.467**	.429**	.409**	.298**	.611**

Note: * $p < .05$; ** $p < .01$; α: alpha coefficient of scale score reliability; ω: omega coefficient of model-based composite reliability (identical across time waves due to the complete invariance of the measurement models); PS: Physiological Symptoms; T1: Time 1; T2: Time 2; T3: Time 3.

Table S8 (Continued 1)

	13	14	15	16	17	18	19	20	21	22	23	24
14. Worries (T2)	.058											
15. Fears (T2)	.006	-.040										
16. PS (T2)	.141*	.072	-.116									
17. Academic Achievement (T2)	.110	.051	.133	.176								
18. Victimization (T2)	.427**	.195**	-.037	.089	-.165							
19. Safety (T2)	-.402**	-.105	-.007	-.096	.148	-.638**						
20. Bonding (T2)	-.202**	-.159*	.016	.026	-.057	-.224**	.283**					
21. Between-Students Rel. (T2)	-.260**	-.092	.047	-.056	-.091	-.267**	.344**	.675**				
22. Teacher-Student Rel. (T2)	-.136*	-.099	.041	.036	-.048	-.213**	.225**	.709**	.747**			
23. Justice (T2)	-.072	.049	-.032	.070	-.130	-.140*	.241**	.513**	.555**	.585**		
24. Educational (T2)	-.166*	.006	.005	.095	-.039	-.160*	.255**	.684**	.660**	.747**	.752**	
25. Global Anxiety (T3)	.745**	-.076	-.244**	.268**	-.001	.361**	-.339**	-.204**	-.244**	-.198**	-.104	-.192**
26. Worries (T3)	.101	.631**	-.021	.354**	.162	.186**	-.138	-.161*	-.164*	-.144*	-.060	-.054
27. Fears (T3)	.058	-.232**	.903**	.019	.115	-.012	-.041	.019	.010	.006	-.027	-.002
28. PS (T3)	-.059	.157*	-.038	.766**	.060	-.100	.096	.073	.028	.131	.203**	.205**
29. Academic Achievement (T3)	.147	.081	.136	.183	.947**	-.136	.110	-.068	-.062	-.013	-.073	.001
30. Victimization (T3)	.364**	.162*	-.115	.178*	-.08	.633**	-.447**	-.289**	-.365**	-.328**	-.250**	-.288**
31. Safety (T3)	-.364**	-.209**	.157*	-.145	-.005	-.558**	.548**	.330**	.307**	.335**	.279**	.316**
32. Bonding (T3)	-.235**	-.062	.096	.079	.018	-.361**	.355**	.794**	.640**	.625**	.417**	.546**
33. Between-Students Rel. (T3)	-.228**	-.030	.065	.061	.031	-.309**	.313**	.510**	.753**	.595**	.368**	.542**
34. Teacher-Student Rel. (T3)	-.206**	.017	.041	.095	.132	-.297**	.327**	.606**	.578**	.691**	.375**	.566**
35. Justice (T3)	-.197**	.047	-.023	.146*	.169	-.217**	.265**	.415**	.252**	.330**	.516**	.520**
36. Educational (T3)	-.203**	.068	.018	.191**	.185*	-.276**	.317**	.548**	.408**	.467**	.469**	.714**

Note: * $p < .05$; ** $p < .01$; α: alpha coefficient of scale score reliability; ω: omega coefficient of model-based composite reliability (identical across time waves due to the complete invariance of the measurement models); PS: Physiological Symptoms; T1: Time 1; T2: Time 2; T3: Time 3.

Table S8 (Continued 2)

	25	26	27	28	29	30	31	32	33	34	35
26. Worries (T3)	.203**										
27. Fears (T3)	.015	-.052									
28. PS (T3)	.042	.118	.034								
29. Academic Achievement (T3)	.011	.206*	.109	.08							
30. Victimization (T3)	.534**	.224**	.004	.032	-.071						
31. Safety (T3)	-.479**	-.235**	.100	-.005	-.022	-.681**					
32. Bonding (T3)	-.253**	-.041	.057	.130	.042	-.320**	.384**				
33. Between-Students Rel. (T3)	-.215**	-.051	.031	.081	.074	-.309**	.289**	.631**			
34. Teacher-Student Rel. (T3)	-.232**	.009	.002	.167*	.191*	-.297**	.313**	.646**	.755**		
35. Justice (T3)	-.168*	.088	-.015	.163*	.226*	-.169*	.227**	.455**	.543**	.682**	
36. Educational (T3)	-.208**	.067	.018	.226**	.226*	-.263**	.328**	.617**	.663**	.808**	.823**

Note: * $p < .05$; ** $p < .01$; α: alpha coefficient of scale score reliability; ω: omega coefficient of model-based composite reliability (identical across time waves due to the complete invariance of the measurement models); PS: Physiological Symptoms; T1: Time 1; T2: Time 2; T3: Time 3.

Table S9

Goodness-of-Fit Results from the Longitudinal Tests of Measurement Invariance across Countries at Time 1

Models	χ^2	df	CFI	TLI	RMSEA (90% CI)	CM	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	ΔRMSEA
Global Anxiety											
1. Configural	679.888*	498	.967	.954	.046 (.037, .054)	—	—	—	—	—	—
2. Weak	736.275*	590	.974	.969	.038 (.028, .046)	1	106.701*	92	+.007	+.015	-.008
3. Strong	842.957*	667	.968	.967	.039 (.030, .047)	2	121.400*	77	-.006	-.002	+.001
4. Strict	866.989*	694	.969	.968	.038 (.029, .046)	3	40.562	27	+.001	+.001	-.001
5. Variance-covariance	834.435*	704	.977	.977	.032 (.022, .041)	4	21.061	10	+.008	+.009	-.006
6. Latent Means	988.926*	708	.949	.950	.048 (.041, .055)	5	45.852*	4	-.028	-.027	-.016
Academic Achievement											
1. Configural	30.318*	8	.998	.994	.142 (.090, .197)	—	—	—	—	—	—
2. Weak	36.078*	12	.997	.996	.120 (.076, .166)	7	6.836	4	-.001	+.002	-.022
3. Strong	45.413	26	.998	.998	.073 (.035, .108)	8	15.507	14	+.001	+.002	-.047
4. Strict	50.154	31	.998	.999	.067 (.029, .100)	9	6.688	5	.000	+.001	-.006
5. Correlated Uniquenesses	51.770	32	.998	.999	.067 (.030, .099)	10	1.944	1	.000	.000	.000
6. Variance-covariance	71.583*	33	.996	.998	.092 (.063, .121)	11	7.253*	1	-.002	-.001	+.025
7. Latent Means	135.742*	34	.989	.994	.147 (.122, .173)	12	18.480*	1	-.007	-.004	+.055
Victimization and School Safety Climate											
1. Configural	690.746*	376	.966	.962	.068 (.060, .076)	—	—	—	—	—	—
2. Weak	706.746*	395	.966	.964	.066 (.058, .074)	14	22.917	19	.000	+.002	-.002
3. Strong	731.951*	468	.971	.974	.056 (.048, .063)	15	77.828	73	+.005	+.010	-.010
4. Strict	757.283*	489	.971	.975	.055 (.047, .063)	16	45.407*	21	.000	+.001	-.001
5. Variance-covariance	659.191*	492	.982	.984	.043 (.034, .052)	17	4.491	3	+.011	+.009	-.012
6. Latent Means	759.543*	494	.971	.975	.054 (.047, .062)	18	20.055*	2	-.009	-.009	+.011
Other Facets of the School Climate											
1. Configural	830.962*	492	.975	.962	.061 (.054, .069)	—	—	—	—	—	—
2. Weak	982.586*	607	.973	.966	.058 (.051, .065)	20	246.452*	115	-.002	+.004	-.003
3. Strong	1005.062*	676	.976	.973	.052 (.045, .058)	21	78.848	69	+.003	+.007	-.006
4. Strict	1117.879*	704	.970	.968	.057 (.050, .063)	22	130.754*	28	-.006	-.005	+.005
5. Correlated Uniquenesses	1125.249*	706	.969	.967	.057 (.051, .063)	23	11.998*	2	-.001	-.001	.000
6. Variance-covariance	1064.713*	721	.975	.974	.051 (.044, .057)	24	73.751*	15	+.006	+.007	-.006
7. Latent Means	1335.391*	726	.956	.954	.068 (.062, .073)	25	119.852	5	-.019	-.020	+.017

Note. *$p < .01$; χ^2: WLSMV chi-square; df: Degrees of freedom; CFI: Comparative fit index; TLI: Tucker-Lewis index; RMSEA: Root mean square error of approximation; 90% CI: RMSEA 90% confidence interval; CM: Comparison model; Δ: Change in model fit relative to the comparison model.