Social Interaction Profiles Among Youth with Intellectual Disabilities: Associations with Indicators of Psychosocial Adjustment

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Abstract
This study investigates the nature of the social interaction profiles observed among youth with intellectual disabilities (ID), defined while considering their relationships with their parents, peers, and teachers, as well as the implication of these profiles for 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.

Compliance with Ethical Standards
Disclosure of Potential Conflicts of Interest:
- The authors have no relevant financial or non-financial interests to disclose.
- The authors have no conflicts of interest to declare that are relevant to the content of this article.
- All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.
- The authors have no financial or proprietary interests in any material discussed in this article

Research Involving Human Participants or Animals:
- Authorization to conduct the study was obtained from the research ethics committees of the fifth, seventh, and eight authors' institutions

Informed Consent:
- All participants and their parents provided voluntary and informed consent following procedures outlined in the Method section.

1. Introduction

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, 2019; Maïano et al., 2016; Tipton et al., 2013; Tipton-Fisler et al., 2018). In turn, these social interactions 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 reinforce 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 (belongingness 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).

1.1 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).

1.2 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, 2019; Teague et al., 2018) relative to their typically developing peers. To our knowledge, only two similar studies have been realized 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.

1.3 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.

1.4 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, TSR warmth, peer relationships, and school belonging, and lower levels of PCR conflict, TSR 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).

2. Method
2.1 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).

2.2 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.

2.3 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).

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*

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[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).

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.

3. Analysis
3.1 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).

3.2 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).

3.3 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).

4. Results

4.1 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].

4.2 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 where 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).

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[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).

4.3 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*).

4.4 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*).

5. 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.

5.1 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 belongingness), 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 "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, 2019; 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.

5.2. 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

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[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.

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.

5.3 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).

5.4 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).

6. Conclusion

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 follows 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 environment 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.

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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 Coeff. (SE)	OR	Profile 1 vs Profile 3 Coeff. (SE)	OR	Profile 1 vs Profile 4 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 Coeff. (SE)	OR	Profile 2 vs Profile 4 Coeff. (SE)	OR	Profile 3 vs Profile 4 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 list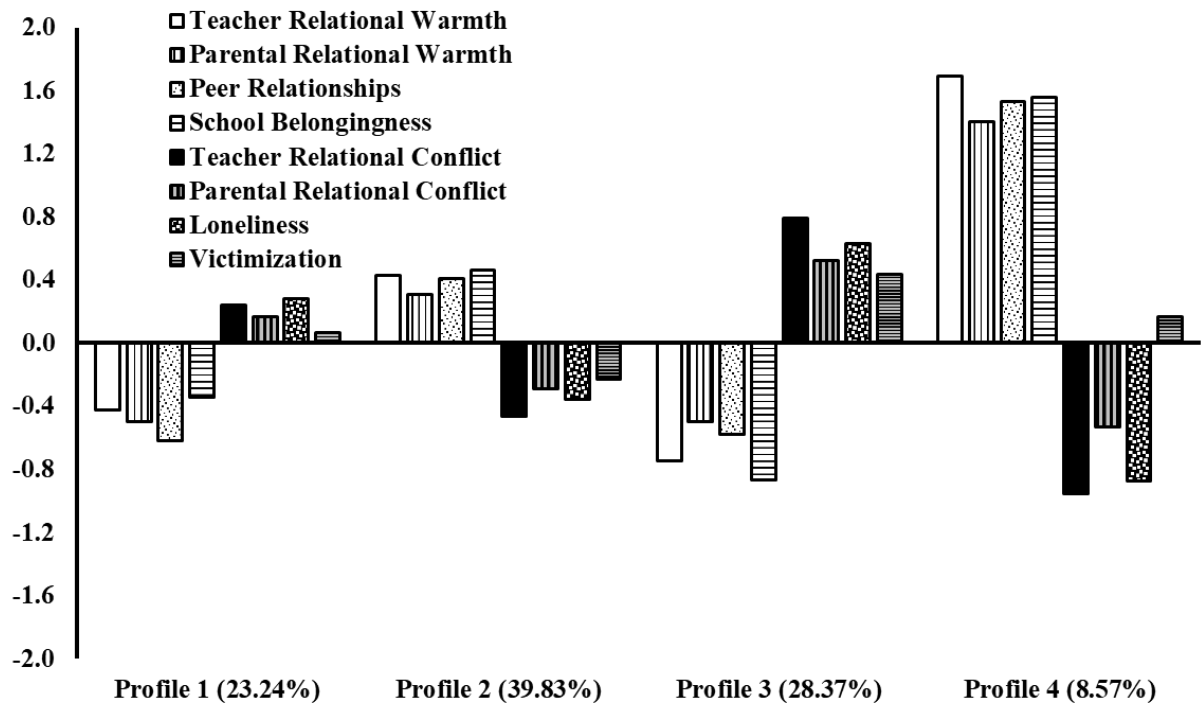ed profile; Profile 1: Socially Isolated; Profile 2: Socially Integrated; Profile 3: Socially Rejected; Profile 4: Socially Connected; Sex was coded as 0 = female and 1 = male; ID Level was coded as 0 = mild and 1 = moderate; Country was coded as 0 = Canada and 1 = Australia; Comorbidity was coded as 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 $SD = 1$.

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
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

	WT (λ)	CT (λ)	WP (λ)	CF (λ)	PR (λ)	L (λ)	VI (λ)	SB (λ)	δ
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
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
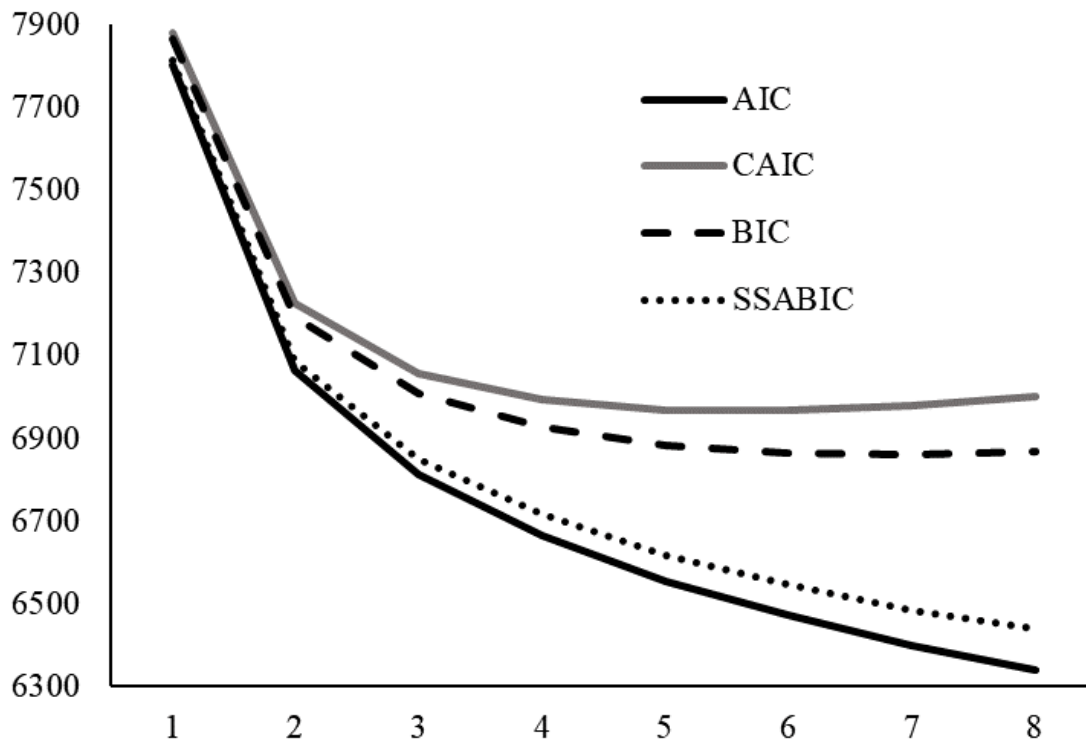
Figure S1. Elbow Plot of the Information Criteria for the Latent Profile Analyses.
Note. AIC: Akaike Information Criterion; BIC: Bayesian Information Criterion; CAIC: Consistent AIC; SSABIC: Sample-Size-Adjusted BIC.

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 $SD = 1$.