# Longitudinal Associations Between Relationship Quality and Depression Among Youth with Intellectual Disabilities: A Latent Change Perspective

**Céleste Dubé**, Substantive-Methodological Synergy Research Laboratory, Department of Psychology, Concordia University, Montreal, Canada

**Alexandre J.S. Morin**, Substantive-Methodological Synergy Research Laboratory, Department of Psychology, Concordia University, Montreal, Canada

**Elizabeth Olivier**, Département de psychopédagogie et d'andragogie, Transnational Health Research Institute, Université de Montréal, Montréal, Canada

**István Tóth-Király**, Substantive-Methodological Synergy Research Laboratory, Department of Psychology, Concordia University, Canada

**Danielle Tracey**, School of Education, Western Sydney University, Sydney, Australia

**Rhonda G. Craven**, Institute for Positive Psychology and Education, Australian Catholic University, Sydney, Australia

**Christophe Maïano**, Cyberpsychology Laboratory, Department of Psychoeducation and Psychology, Université du Québec en Outaouais (UQO|Campus de Saint-Jérôme), Saint-Jérome, Canada

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**Corresponding author:**
Alexandre J.S. Morin,
Department of Psychology, Concordia University, Canada,
7141 Sherbrooke W, Montreal, QC, Canada, H4B 1R6
alexandre.morin@concordia.ca

## Abstract

This study investigates associations between initial levels and change in the quality of the relationships youth with intellectual disabilities (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; $β_{conflict}$=-.608).

**Keywords**: Student-teacher relationship (STR); parent-child relationship (PCR); depression; psychological wellbeing; intellectual disability; special education needs; inclusive education

**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, sixth and seventh authors' institutions

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

# 1. Introduction

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 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, 2019; 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's 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 are unable to 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 address these limitations by relying on a longitudinal research design to investigate the associations between 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.

## 1.1. 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 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 consequences of controlling parenting behaviors.

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 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 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).

## 1.2. PCR-STR and Depression: Theoretical Perspectives

Depressive symptoms encompass negative affect and sadness, hopelessness, 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 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 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 these distortions may include perceiving hostility or rejection from others when none was intended (e.g., Beck, 1987). In adolescence, these youth are described as more self-critical, displaying greater dependency on others (Bowlby, 1980) and demonstrating 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 their early relationships (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 negative self-fulfilling prophecy (Bowlby, 1973, 1980). Yet, each new relationship also 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 students characterized by insecure attachment patterns, they act as alternative positive attachment figures and may thus help students activate more positive attachment systems (Obsuth et al., 2017).

### 1.3. 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 are all cross-sectional, and focus 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 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.

### 1.4. 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 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 experiences, 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 traits-correlated methods (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 (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 perspective of self-consistency and self-enhancement theories. Self-enhancement theory (Jones, 1964) notes that people 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 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 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).

### 1.5. The Present Study

The primary goal of this study is 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 expect exposure to global levels of warmth and conflict to be respectively associated with a decrease and with 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 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 level (e.g., Schwab & Rossmann, 2020).

### 2. Method

### 2.1 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.

### 2.2 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 Weschler (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 Weschler 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 Weschler 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 maximised, 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 assistants 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 and were 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) to one member of the research team.

## 2.3 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: $\alpha_{T1}$ =.724, $\alpha_{T2}$ =.770; Australia: $\alpha_{T1}$ =.843, $\alpha_{T2}$ =.791), six items measuring parental warmth (e.g., "I have a good relationship with my parents"; Canada: $\alpha_{T1}$ =.808, $\alpha_{T2}$ =.746; Australia: $\alpha_{T1}$ =.872, $\alpha_{T2}$ =.882), seven items measuring teacher conflict (e.g., "I don't really like my teacher"; Canada: $\alpha_{T1}$ =.796, $\alpha_{T2}$ =.805; Australia: $\alpha_{T1}$ =.862, $\alpha_{T2}$ =.831) and seven items measuring parental conflict (e.g., "I often argue with my parents"; Canada: $\alpha_{T1}$ =.739, $\alpha_{T2}$ =.808; Australia: $\alpha_{T1}$ =.671, $\alpha_{T2}$ =.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 (2021) 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"; $\alpha_{T1}$ =.875, $\alpha_{T2}$ =.752 in Canada and $\alpha_{T1}$ =.890, $\alpha_{T2}$ =.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.

## 3. Analysis

### 3.1 Preliminary Analyses

 ***3.1.1. Estimation***. Preliminary analyses were conducted using Mplus 8.4's (Muthén & Muthén, 2019) robust weighted 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 than maximum likelihood alternatives (Freund et al., 2013). All models were estimated using the full information available in the sample (Enders, 2010), using the missing data algorithms 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%).

 ***3.1.2. 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 where 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 of identical items used in 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 loadings and response thresholds); (4) strict invariance (i.e., invariance of loadings, thresholds, and item uniquenesses); (5) correlated uniqueness invariance; (6) latent variance-covariance invariance; and (7) latent means invariance.

 ***3.1.3. 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 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.

### 3.2 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 or time points. Latent change models disaggregated repeated measures (of 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 realized to explore 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.

## 4. Results

### 4.1 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 teacher items had generally weaker loadings on the global factors than parent items, which is consistent with the nature of the CT-C(M-1) models in which teacher items are used to separately assess two sets of factors (the global factors from what they share with parent 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.

**4.2 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, this model explained 59.2% of the variance of changes in depressive symptoms over time.

**4.3 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[1]. These supplementary analyses suggest that initial levels of relational warmth discrepancies tended to result in increases in depressive symptoms among girls ($\beta$ =.161, $p < .01$) and youth with mild levels of ID ($\beta = .165$, $p < .05$), but in decreases in depressive symptoms among boys ($\beta$ = -229, $p < .01$) and youth with moderate levels of ID ($\beta$ = -.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 moderate levels of ID. The opposite was true for exposure to higher levels of warmth at school than at home.

**5. 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.

**5.1. 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 helps 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

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

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, 2019; 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 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 peers, 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.

**5.2. 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 helping 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 as school than at home.

**5.3. 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 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 relationship in the lives of adolescents: 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 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 coefficient 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 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 is associated with changes in depression, it is also likely that changes in depression could themselves be accompanied by changes in relationships. Future research, relying on a more intensive longitudinal designs, will be required to investigate the directionality and causal ordering of these associations.

**6. Conclusion**

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 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 seeking), 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 important for future research to consider other types of social relationships (e.g., peers), as well as whether and how our results would generalize to other types of psychological difficulties (e.g., anxiety, externalizing behaviors, etc.).

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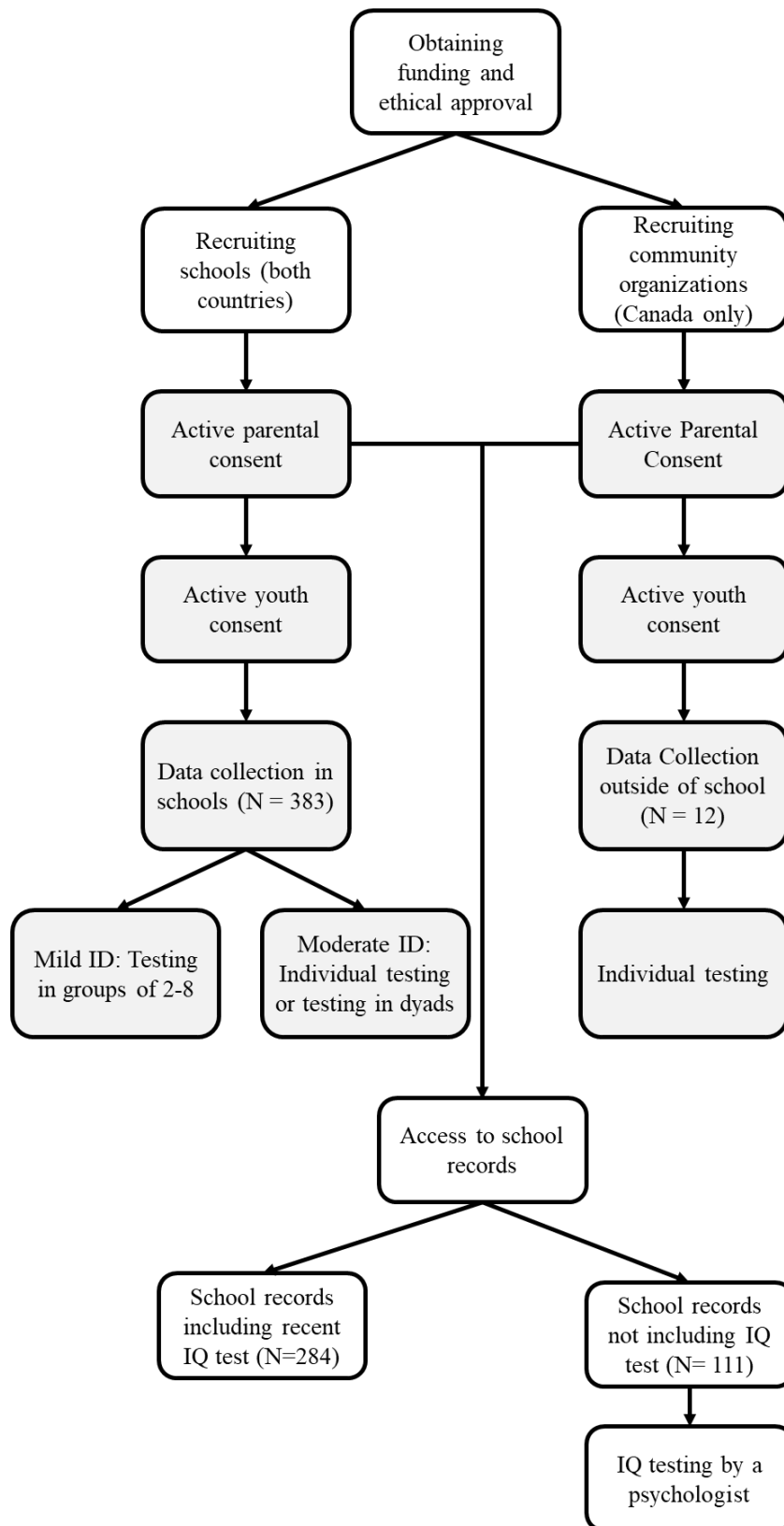
**Figure 1**

*Summary of the Study Procedures*

*Note*. Grayscale boxes refer to procedures that were repeated in the second year of the Study.
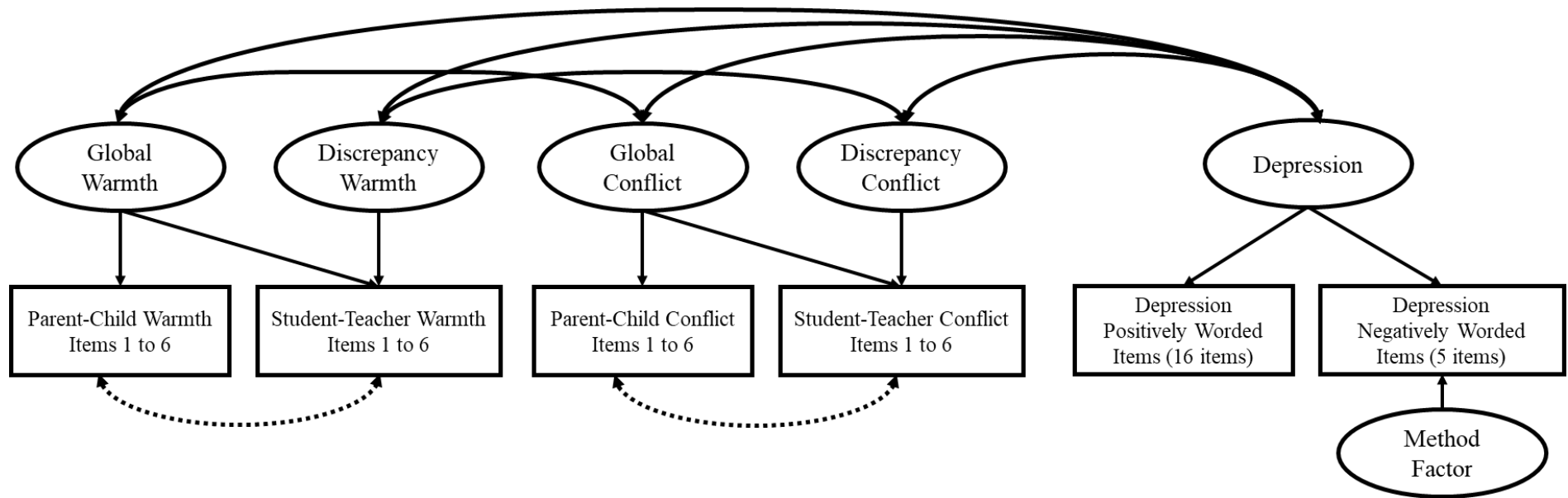
**Figure 2**

*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 parent and teacher items.
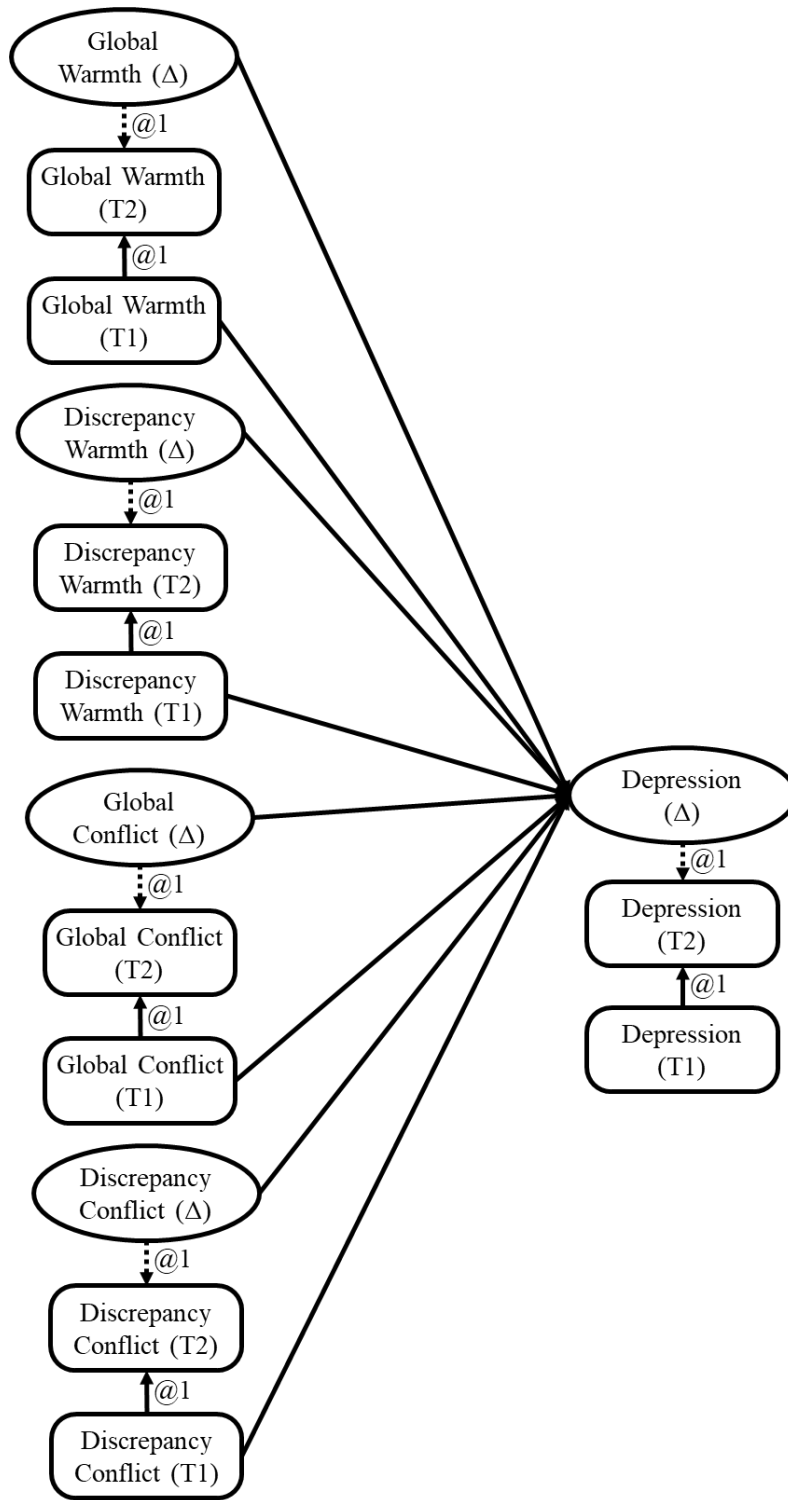
**Figure 3**

*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 | $\chi^2$ | df | CFI | TLI | RMSEA (90% CI) | CM | $\Delta\chi^2$ | $\Delta$df | $\Delta$CFI | $\Delta$TLI | $\Delta$RMSEA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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; $\chi^2$: 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; $\Delta$: 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:**