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Parent–child problem solving in families of children with or without intellectual disability

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Abstract

Objective—To examine differences in child social competence and parent–child interactions involving children with intellectual disability (ID) or typical development (TD) during a Parent–Child Problem-Solving Task.

Design—Mothers and their 9-year-old children (n = 122) participated in a problem-solving task in which they discussed and tried to resolve an issue they disagreed about. The interactions were coded on child and mother problem solving and affect behaviours, as well as the dyad's problem resolution.

Results—Children with ID (n = 35) were rated lower on expression/negotiation skills and higher on resistance to the task than children with TD (n = 87). Mothers in the ID group (vs. TD group) were more likely to direct the conversation. However, there were no group differences on maternal feeling acknowledgement, engagement, warmth or antagonism. The ID dyads were less likely to come to a resolution and to compromise in doing so than the TD dyads. These group differences were not attributable to differences in children's behaviour problems.

Conclusions—Children with ID and their mothers had more difficulty resolving problems, and this increased difficulty was not explained by greater behaviour problems. Additionally, with the exception of directiveness, mothers of children with ID displayed similar behaviours and affect towards their children during problem solving as mothers of children with TD. Results suggest that the Parent–Child Problem-Solving Task is a useful way to assess social skills and associated parental behaviours in middle childhood beyond self-report. Implications for future research and intervention are discussed.

Keywords

child; intellectual disability; parenting; social skills

Introduction

Children with intellectual disabilities (ID) are at greater risk for poor social competence than their typically developing (TD) peers (Guralnick 1999). Middle childhood is a period of extensive social development (Lalonde & Chandler 2002), so children with ID may be

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particularly at risk for deficits in social competence during this time. Areas of difficulty for these children include skills such as conflict resolution, perspective taking, emotional regulation and social problem solving (Herman & Shantz 1983; Guralnick 1999; Fenning *et al*. 2011). These types of social skills are particularly important as children develop into middle childhood, when their interactions with parents and peers often become more complex, involving discussion, problem solving and conflict resolution (Klimes-Dougan & Zeman 2007).

Despite these identified social deficits in children with ID, little is known about how children with ID operate in naturalistic social problem-solving situations during middle childhood and how parenting may contribute to the development of their skills (Fenning *et al*. 2011). In this study we used an observational parent–child problem-solving task to examine differences in social competence and associated parental behaviours for children with or without ID.

Child social competence and parenting

Studies of parenting children with ID suggest that not only do parents of children with ID display different parenting behaviours, but also that different behaviours may be optimal for the social development of this group of children. Parent direction of their child's behaviour in particular has shown these kinds of differences. For example, parents of children with ID or with developmental delays have been found to display higher levels of directiveness with their children (Herman & Shantz 1983; Marfo 1992), and directiveness was more predictive of social competence for young children with delays (e.g. Landry *et al*. 2000). Similarly, parental scaffolding has been found to be more predictive of social competence for children with ID than those with TD (Baker *et al*. 2007; Guralnick *et al*. 2008). Although parent direction is an important area of study to determine predictors of social competence for children with ID, most studies on this topic have examined only young children. More research is needed on the increasingly complex nature of social competence and the parent–child relationship as children with ID reach middle childhood.

Children with ID display higher levels of behaviour problems than TD children (e.g. Baker *et al*. 2002), and these differences in behaviour problems sometimes account for differences in parenting, as parents are accommodating or reacting to the behaviour problems rather than the ID *per se*. This seems to be particularly true with parenting stress, where higher levels of stress in parents of young children with ID have been found to be completely accounted for by the higher levels of child behaviour problems (Hauser-Cram *et al*. 2001; Baker *et al*. 2002). Thus, when examining group differences in parenting or child behaviours, it is important to determine whether these differences are simply due to behaviour problems or to other aspects of ID.

Measuring social competence

Social competence in middle childhood is often studied through questionnaires from parents or teachers, to provide their perceptions of the child's social skills and/or social acceptance by their peers (Gresham & Elliott 1990; Merrell *et al*. 2002). However, these ratings may be influenced by the parents' or teacher's positive or negative biases regarding the child.

Additionally, these self-report measures are limited in their capacity to capture dynamic social processes that are also related to a child's social competence. In order to assess critical interactional processes related to social competence, it is necessary to consider additional forms of assessment. One is observation of parent–child interactions and coding for particular social behaviours of the parent, child and dyad.

Family researchers have used observational measures of parent–child interactions, but often the characteristics assessed are broad in nature. The Parent–Child Interaction Rating Scale (PCIRS), a global coding system of naturalistic parent–child interactions with specific parent and child codes, has proven reliable and yielded meaningful findings in studies of young children (Belsky *et al.* 1995; Baker & Crnic 2005; Fenning *et al.* 2007). The focus of the PCIRS is on the parents' affect, sensitivity and engagement during activities with the child. Findings from studies using the PCIRS reveal group differences in parenting, e.g. that parents of young children with ID display less positive and more negative affect with their children than parents of children with TD (Fenning *et al.* 2007; Green & Baker 2011). Green & Baker (2011) also found that the social skills of children with ID benefit less from parent expression of mild negative emotion compared to children with TD. These findings are based on observations of naturalistic family activities in the home.

However, as children age and develop, it becomes more challenging to capture parent–child social interactions through these types of naturalistic observations. Additionally, the PCIRS codes are not designed to target specific child social competence behaviours. Thus, there is a need for alternative approaches to examine these processes in older children. For example, in a study of 8-year-old children with and without ID, Fenning *et al.* (2011) videotaped parent–child conversations about emotions and coded for children's internal state understanding, perspective taking and problem-solving skills. Compared to children with TD, the children with ID demonstrated deficits in these skills related to social-emotional functioning. However, this task was not focused on addressing a particular dyadic problem area in the parent–child relationship, an area that may yield additional insights about child social competence and parenting.

The *Parent–Child Problem-Solving Task* is a method for studying child social problem solving and associated parental behaviour during middle childhood. This task provides a way to examine the processes of social interaction between parents and children as they pertain to conflict resolution, a critical social issue at the developmental stage of middle childhood. Parents and children are asked to discuss a mutually identified area of disagreement and try to come up with a resolution in this time-limited task of 5 to 10 min. The task requires youth to apply problem-solving skills in a social context, incorporating skills such as taking the perspective of another person and compromising. Although the brevity of the task may limit the types of behaviours observed, the paradigm offers a controlled way to examine how the youth and parent discuss a disagreement relevant to their lives. The information gathered is likely to enrich what can be collected from questionnaires alone.

Variations of the Parent–Child Problem-Solving Task and of coding systems have been used with different populations, including children with ID, attention deficit hyperactivity

disorder (ADHD) and typical development (Buhrmester *et al*. 1992; Costigan *et al*. 1997; Edwards *et al*. 2001; Black 2002). For example, findings from studies of children and adolescents with and without ADHD showed that the children with ADHD and their parents exhibited more coercion and negative behaviour (Buhrmester *et al*. 1992; Edwards *et al*. 2001). In the only study found that used this type of task with children with ID, Costigan *et al*. (1997) examined family adaptation to the child. All family members participated in a conflict discussion, and particular attention was focused on how parents and siblings accommodated the child with ID. The authors found support for a resilient-disruption hypothesis, in which families are both disrupted by and resilient to the challenges of raising a child with a disability.

Current study

We aimed to extend findings from Costigan *et al*. (1997) suggesting that parent–child problem resolution tasks yield meaningful information about parent–child social dynamics that cannot be captured through self-report measures or naturalistic observations alone. The central aim was to assess child social competence in a standardised problem-solving context, as well as to examine parental factors that might impact child social competence. In particular, we were interested in the extent to which parents directed the conversation and how this level of directiveness related to the emotional climate of the discussion and the child's social competence in each group. We also were interested in examining how the parent acknowledged and responded to the child's expression of feelings and ideas and how the child was able to express his or her ideas and negotiate/compromise with the parent. Past studies have examined these factors, but not typically with the primary objective of measuring child social problem solving and parental contributions to these processes.

Parent directiveness has been operationalised as behaviour management mainly in the form of verbal commands that limit a child's choices, and has generally been studied with parents of young TD children in parent–child interaction tasks (Costigan *et al*. 1997; Wade *et al*. 2008). In the current study, directiveness was defined as the extent to which the parent controls the discussion and how much opportunity the parent provides for the child to contribute to the conversation. This type of directiveness was thought to relate better to parent–child relationships in middle childhood as opposed to the directiveness coded in previous studies, which has generally been parents' directing of their children's activities (e.g. Landry *et al*. 2000).

Feeling and idea acknowledgement by the parent has been examined in a variety of ways, mainly with adolescent populations (Pinquart & Silbereisen 2002; Smetana *et al*. 2002; Campione-Barr & Smetana 2004). In a problem-solving task similar to the one in the current study, Smetana *et al*. (2002) rated mothers' level of validation/support of their teen. This factor included four variables: mother is understanding, mother validates teen's perspective, mother pressures child to agree and mother is authoritarian. Using structural equation modelling, they found that better observer-rated mother–adolescent communication was associated with lower levels of adolescent behaviour problems. In the current study, feeling and idea acknowledgement was hypothesised to be an important domain where parents may

facilitate children's ability to think and express their thoughts about the problem, potentially fostering greater child warmth and less resistance.

A child's ability to *negotiate and compromise* with a parent is a critical area of child social competence. Ducharme *et al*. (2002) examined negotiation/ compromise in parent–child dyads using daily diaries completed by adolescent girls. Negotiation/ compromise was only coded when a conflict was identified by the adolescent in the diary. Participants defined as dismissive reported using more disengagement in resolving conflict with parents. In a parent–child problem-solving task, Costigan *et al*. (1997) analysed active problem solving by the child, defined as the child's attempts to solve the problem. However, these authors did not report actions involved in the problem-solving attempts, which may indicate different levels of skill. The current study focused on how well the child could express his or her position and engage in negotiation and compromise with the mother. These behaviours were conceptualised as important indicators of a child's social competence in this type of interaction, viewed as separate from, but related to, the dyad's ability to come to a resolution for the problem.

Research questions/hypotheses

We addressed three questions concerning child social competence and maternal parenting behaviours that may foster social competence in middle childhood: (1) Do child behaviours during a problem-solving discussion significantly differ between ID and TD groups? We expected that children with ID would exhibit lower capacities for expressing their point of view and engaging in negotiation/compromise with their mothers than children with TD. We also expected that children with ID would exhibit higher levels of resistance and antagonism than their TD peers. Finally, we believed that dyads with children with ID would be less likely to reach a problem resolution than dyads with TD children. (2) Do parenting behaviours significantly differ between the two groups? We expected that parents of children with ID would engage in higher levels of directiveness compared with parents of TD children. We also explored the question of whether higher levels of directiveness related to differences in the emotional climate of the discussion for children with ID compared to those with TD. (3) Do group differences remain significant once child behaviour problems have been accounted for?

Methods

Participants

Participants were 122 families participating in a longitudinal study of young children, with samples drawn from Southern California ($n = 84$) and Central Pennsylvania ($n = 38$). This 'Collaborative Family Study' has been based at three universities: Penn State University; University of California, Los Angeles; and University of California, Riverside. The present sample was comprised of families with complete data from mothers on the key measures at child age 9 years. Children were classified as intellectually disabled (ID, $n = 35$) or typically developing (TD, $n = 87$).

Families had been recruited into the longitudinal study when the target child was 3 years old. Children in the TD group were recruited primarily through pre-schools and day-care programmes. Children in the ID group were recruited through community agencies that provide services for people with ID; in California, practically all families with young children with ID register for services with these local agencies. School and agency personnel mailed brochures describing the study to families who met selection criteria, and interested parents phoned the research centre. Families were assessed annually at child ages 3 through 9 years.

At age 9, children were administered the Wechsler Intelligence Scale for Children (WISC-IV; Wechsler 2003) and the Vineland Adaptive Behavior Scales (VABS; Sparrow *et al.* 2005). Based on the WISC-IV and the VABS, children were classified as intellectually delayed (IQ and VABS scores of 84 or lower) or typically developing (IQ 85 or higher). A further IQ breakdown of the ID group by DSM-IV criteria (American Psychiatric Association 2000) was borderline (IQ 71–84, $n = 14$) and mild ID (IQ 50–70, $n = 21$). There were no significant differences in demographic characteristics between the ID and borderline groups. Additionally, there were no differences between the ID and borderline groups on any of the codes assessed in the Parent–Child Problem-Solving Task or reported behaviour problems. Thus, because the ID and borderline groups did not differ on any study variables of interest, these two groups were combined in subsequent analyses in order to increase statistical power and are referred to as the ID group. Children with IQ levels below 50 ($n = 6$) were removed from the analyses to increase confidence that participants fully understood the directions of the task.

Table 1 shows demographics by ID and TD group. Overall, the sample included slightly more boys (54%) than girls. The majority of the child participants were Caucasian (65%), and 73% of families earned $50 000 or more annually. Maternal education differed significantly between status groups, with mothers of children with ID having just over a year less of school. This variable was controlled for in one analysis where it related significantly to the outcome variable (parent feeling acknowledgement).

Procedures

All procedures were approved by the institutional review boards of the three participating universities. Measures of the child's developmental level and all other data examined were collected at an annual lab assessment conducted at child age 9 years. Demographic information was obtained in an interview with the mother. A measure of child behaviour problems was part of a packet of measures completed by mothers and teachers. Mother–child problem-solving interactions at child age 9 were videotaped and coded using the Parent–Child Problem-Solving Task. In this study, the parent in the task with the child was always the mother.

Measures

Parent–Child Problem-Solving Task—While variations of the parent–child problem-solving task have been used in previous research (e.g. Buhrmester *et al.* 1992), we modified the procedures and developed a coding system for the present study. Our task was an

observational measure conducted in the lab visit at child age 9 years. Parents are given a form listing 12 typical areas of child/parent disagreement at that age (e.g. amount of time child spends on the phone/Internet, child's chores, child's bedtime), and the parent rates the level of disagreement with his or her child in each area. The top three areas of disagreement are given to the child in a separate room, and the child picks the one he or she feels they argue about the most. The child and parent are then brought into the same room and asked to discuss the identified area of disagreement and try to come up with a resolution. The maximum time for the task was 10 min, and the pair was asked not to stop before 5 min.

Following a thorough literature review of parent–child observational tasks and reviewing pilot videotapes, the senior author and four undergraduate-level coders developed the coding system for the 9-year-old sample. The coding system was theoretically driven by hypotheses about the differences in parenting and social competence among children with and without ID in middle childhood (i.e. parents of children with ID expected to be more directive than parents of children with TD). The coding system incorporated both codes related specifically to social problem solving and codes related to affect. We established 10 task codes, including three parent problem-solving codes, two child problem-solving codes, two parent affect codes, two child affect codes and one dyadic affect code. The 10 task codes were rated on 5-point ordinal scales (see Table 2 for a description of task codes and the scales used for scoring). We also established a problem resolution code with four possible outcomes: '0' was rated if there was no problem resolution by the end of the task, '1' was rated if the parent independently came up with the resolution to the problem and the child agreed, '2' was rated if the child independently came up with the resolution and the parent agreed and '3' was rated if the parent and child both contributed to the solution in a compromise.

A manual was developed with detailed descriptions for each code and anchors to assist raters in the coding process. The codes were assessed in a global, holistic way, and raters were instructed to base their ratings on the full length of the interaction. However, for the reciprocal warmth code, coders were instructed to track the number of times a parent or child acted warmly and the other person responded with warmth. The pair received a '1' if it never occurred, a '2' if it occurred one time, a '3' if it occurred two or three times, a '4' if it occurred four times and a '5' if it occurred more than four times. Because reciprocal warmth could be difficult to assess and tended to have a low base rate, tracking specific instances when it occurred helped increase consensus among coders.

Once the coding system was developed, the four coders were divided into two coding teams. The use of coding teams was designed to help decrease subjective bias from one coding member on codes that required more nuanced analysis. The pairs met weekly and watched videos together. The coders were instructed to first code the session independently without discussing their ratings with each other. They then shared their ratings, to identify and discuss any discrepancies. Coding pairs were encouraged to view the videotape again together to resolve any discrepancies and determine final consensus codes. Concurrently, the master coder (N. W.) reviewed and coded the same videotapes. Once a number of videos were coded (at least 10), intra-class correlation coefficient reliabilities were conducted between each pair's consensus codes and the master coder's codes to identify codes that had low reliability. At weekly meetings, the master coder reviewed discrepancies between her

ratings and the ratings of the coding teams and discussed ways to strengthen consensus, often watching video together and clarifying descriptions in the manual. Coding pairs needed to achieve a 0.70 or above intra-class correlation coefficient reliability with the master coder before their consensus codes were considered reliable. Once they achieved this level across all codes, the pairs continued to score the videotapes together. The master coder continued to score videos periodically and check that any discrepancies were not larger than 1 point. Up until the point reliability was achieved, the master coder's codes were used for the analyses.

Child Behavior Checklist (CBCL; Achenbach & Rescorla 2001)—The CBCL is a widely used and well-standardised parent rating scale for behaviour problems of children aged 6–18 years. The 113-item measure asks parents to rate how frequently their child engages in a range of problematic behaviours on a scale of 0 (none), 1 (some) or 2 (usually). We used a total *T*-score (M = 50; SD = 10) from the mother report; this indicates a child's problems relative to others of the same gender. The alpha for the mothers' total score in this sample was 0.97.

Results

Parent–Child Problem-Solving Task

Table 3 shows correlations among the task codes for the combined sample. Problem resolution was not included in this analysis as it was not rated on an ordinal scale. We further ran correlations separately for the TD and ID samples, and found high similarity in the relationships among the coding scores. The child 'expression of ideas and negotiation' scores were related significantly ($P = 0.01$ or less) with every other code except child antagonism. Parent feeling/idea acknowledgement, while modestly related to child expression/negotiation ($r = 0.22$), was more highly related to the codes for warmth (mother, $r = 0.60$ and reciprocal, $r = 0.39$). Parent directiveness was significantly ($P = 0.01$ or less) negatively related to child expression/ negotiation and child/reciprocal warmth code, indicating that higher levels of child social competence and warmth were associated with lower levels of directiveness by the mother in the interaction. The warmth codes (child, parent, reciprocal) were highly intercorrelated (ranging from $r = 0.57$ to 0.79), suggesting that the reciprocal code alone might suffice in future studies due to the high level of overlap.

Status group differences on codes

Table 4 shows status group differences on the 10 codes that were rated on a 5-point ordinal scale. For the four child-specific codes, there were two significant differences in the mean levels of ratings by coders. As hypothesised, children in the ID group were rated significantly lower on levels of expression/negotiation and higher on resistance to the task compared with their TD peers. Children with ID or TD did not differ in warmth or antagonism.

Among the five specific codes rated for maternal behaviour, there was only one significant difference in the mean levels of ratings. As hypothesised, mothers in the ID group were rated significantly higher on levels of directiveness, indicating they tended to be more dominating

in the conversation with their child compared with the TD group mothers. Mothers of children with ID or TD did not differ in feeling and idea acknowledgement, engagement, warmth or antagonism; moreover, the dyads did not differ on the reciprocal warmth code.

As the problem resolution code was not rated on an ordinal scale, it was analysed separately using χ^2-analyses. The ID and TD dyads were compared on the outcome of the problem solving – whether the discussion led to a solution and, if so, whether the solution was a compromise between parent and child. Using continuity-corrected χ^2-analyses, significantly fewer ID dyads (71%) reached a solution than did TD dyads (90%), $\chi^2(1) = 5.0$, $P = 0.03$. For those dyads where a solution was reached, fewer ID dyads (40%) compromised than did TD dyads (65%), $\chi^2(1) = 4.06$, $P = 0.04$. Where compromise was not met, in practically all cases the resolution was proposed by mother.

To examine the relationship between problem-solving task codes and the problem resolution code further, we created a three-level variable of outcome success (0 = no solution; 1 = solution but no compromise; 2 = solution with compromise). Univariate correlations between the problem-solving task codes and this outcome variable were conducted, and seven of the 10 codes related to outcome at $P < 0.01$. We entered these seven code scores into a linear regression on the outcome success variable in Model 1, and added ID/TD status in Model 2. In Model 2, two codes accounted for 46% of the variance in outcome success: child expression/ negotiation ($\beta = 0.43$, $P < 0.001$) and mother engagement ($\beta = 0.22$, $P = 0.003$). No other code, nor status group, approached significance.

Regressions were also conducted for the TD and ID groups separately. In the ID group, four problem-solving codes correlated significantly with outcome success; these accounted for 59% of the variance, with child expression/negotiation ($\beta = 0.49$; $P = 0.004$) and parent engagement ($\beta = 0.47$, $P = 0.001$) entering significantly. In the TD group, five codes correlated significantly with outcome success ($P < 0.01$); these accounted for 34% of the variance, but only child expression/ negotiation ($\beta = 0.47$, $P < 0.001$) entered significantly. Thus, outcome quality, especially in the ID group, was related both to the child's expression/ negotiation and to the mother's engagement in the task.

Accounting for child behaviour problems

For the three codes where significant status differences were found (child expression/ negotiation, child resistance and mother directiveness), we conducted linear regression analyses to determine whether the status group difference would remain after accounting for mother-reported child behaviour problems. Table 5 shows these analyses. In each regression, status was entered in Model 1, and status and behaviour problems' ratings were added in Model 2. As seen in Table 5, for child expression/ negotiation and mother directiveness status remained significant when the behaviour problems score was entered into the model and the behaviour problems score did not approach significance for either. For child resistance, with both scores (behaviour problems and status) in the model, neither reached significance. Thus, it appears that the significant ID–TD group differences in these codes were due to cognitive status rather than to the child's degree of behaviour problems.

Discussion

The Parent–Child Problem-Solving Task, an observational social problem-solving measure with a new adapted coding system, was used to examine child social competence and associated maternal behaviours in a sample of 9-year-old children with and without ID. As hypothesised, children with ID exhibited lower levels of expression/negotiation and higher levels of resistance than their TD peers. Additionally, mothers were more directive with ID than with TD group children.

Interestingly, the behaviours of the children, mothers and dyads in the two groups did not significantly differ on the other behavioural codes. This suggests that while there were some important differences in task behaviours between children with and without ID and their mothers, they also tended to be more similar than different in affective areas such as child warmth and antagonism, mother engagement and feeling acknowledgement, and reciprocal warmth. These similarities, particularly in maternal behaviours, may be partially explained by the nature of this task. Given that this is only a 5-min sample of parent–child interaction, mothers may be able to better regulate their behaviours for this short period of time than their 9-year-old children. Thus, the behaviours exhibited by the children may reflect more typical behaviours than the mothers' behaviours. It is possible that a longer task would capture larger differences in maternal behaviours between the two groups.

There is an alternative explanation for the outcomes found in the task if one considers the codes under the broad domains of cognitive-related and emotion-related. The status groups differed, as one would expect, on behaviours related to cognitive ability (child expression/negotiation, mother directiveness, parent–child problem solutions). However, they did not differ on emotion-related codes (child, parent and reciprocal warmth, child and parent antagonism, parent engagement and feeling acknowledgement). Despite higher levels of child resistance and lower levels of child social competence in children with ID, their mothers did not differ from mothers of more cognitively competent children on emotion expression in the interaction. This suggests a model of parental resilience whereby mothers of children with ID have adapted to their children's level of functioning and thus respond emotionally similarly to parents of children with TD while at the same time considering their child's special needs in tackling cognitive tasks. This is in line with research by Costigan *et al.* (1997), who used a similar task and found evidence that parents and siblings accommodate to the needs of children with ID. They too found that mothers of children with ID were more directive than their TD counterparts. However, directiveness in this context is viewed as the objective behaviour of leading the conversation, without assigning any positive or negative connotation. For children with ID a higher level of directiveness may be helpful in the development of social competence.

Successful problem-solving outcomes – whether a solution was reached and whether it involved compromise between parent and child – were reached significantly more often in the TD dyads than the ID dyads. It was encouraging that seven of the 10 observational codes of the problem-solving process related at $P < 0.01$ to outcome success, supporting the internal validity of the codes. Regression analyses in the combined sample and then within each status group indicated that a third to over half of the variance was accounted for by the

task codes, with child expression/negotiation and mother engagement (combined and ID) or just child expression/negotiation (TD sample) entering significantly.

Finally, we examined whether significant domain differences found between the ID and TD groups might be accounted for by child behaviour problems. In previous studies with this sample the ID group had higher parent reported stress and lower-quality teacher-reported relationships with the children. Yet child behaviour problems, rather than cognitive limitations, were found to explain these parent and teacher status group differences, which were no longer apparent after accounting for behaviour problems (Baker *et al.* 2003; Blacher *et al.* 2009). It was not ID status *per se* but the heightened levels of behaviour problems in this group that were contributing to higher parental stress and lower-quality relationships with teachers. The present finding contrasts with these, as differences in observed child expression/negotiation, child resistance and maternal directiveness appeared to be driven by child cognitive status but not by child behaviour problems. This suggests that in the case of social interaction dynamics, at least within the family, the differences and impairments exhibited by TD and ID groups may be related to the child's developmental level.

Using the Parent–Child Problem-Solving Task allows us to capture parent–child social dynamics in a way that expands upon traditional questionnaires and self-reports. Observation offers a unique window into understanding better the parent–child relationship, and a critical task is finding the most fruitful ways to design observational measures. As young children enter into middle childhood and adolescence, naturalistic observations in the home become more difficult and less valid, as the child may be unavailable (e.g. in her room doing homework, out with her peers) or not interacting (e.g. watching TV). Structured lab assessments (vs. naturalistic observations) become more critical in order to examine parent and child behaviours that may not occur spontaneously within a limited observation period. Observational measures in lab tasks have been used successfully in other related domains, such as emotion discourse, a means of communicating information about attitudes, display rules and socio-emotional expectations (Fenning *et al.* 2011). The current task provides an interactive way to measure social problem-solving skills in children and associated parental behaviours, demonstrating a few key differences (and more similarities) between children with and without ID.

This particular type of coding system, focused on global ratings of behaviour, has both advantages and drawbacks. Global codes offer the benefit of taking into account a variety of different behaviours, including subtle ones not easily tracked, when determining a rating. Although counting specific incidents of behaviours may be helpful for some objective observations, global codes lend themselves to capturing an overall impression in a relational context. This can be particularly important when assessing whether particular parenting behaviours are developmentally sensitive as the same number of behaviours may have different meanings in different contexts. Similarly, the same count of child behaviours may have different meanings depending on the developmental level of the child. For this reason, findings based on global codes are more generalisable to clinical settings, as clinicians rarely form impressions by counting behaviours. However, global codes may also be prone to more rater subjectivity and bias. We attempted to mitigate this increased bias by using coding teams and developing a detailed manual.

An important question to consider is whether the results found in this study would be stable over time, particularly given the brevity of the task. Future studies could use a similar paradigm, but use a re-test design in the same day or a week apart, and ask the parent and child to discuss a different area of disagreement in their relationship. This type of design would help establish whether these results are dyad-specific or problem-specific. As mentioned, it may also be easier for parents to read the demands of the situation and behave pro-socially for a brief period. If the task were given repeatedly, it may reveal more about a parent's behavioural tendencies that one brief task cannot capture.

The current study provides promising early evidence for the internal validity of the Parent–Child Problem-Solving Task as a way to capture dynamic parent–child social processes. We cannot speak to the social validity of the decisions arrived at by the dyads – whether the problem resolutions carry over to actual family life. Future studies could examine whether this task may have some external therapeutic value as well, by assessing whether the solutions arrived at are subsequently implemented at home. If so, efforts to help parent–child dyads communicate and resolve problems effectively may be a particularly worthy target of intervention.

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Table 1

Demographic information by cognitive status group

	TD (n = 87)	ID (n = 35)	t/χ^2
Child variables			
Gender (% boys)	52.9%	57.1%	$\chi^2 = 0.05$
Race (% Caucasian)	66.7%	60%	$\chi^2 = 0.24$
WISC-IV score: mean (SD)	110.3 (12.2)	65.6 (10.9)	$t = 18.86^{**}$
CBCL t-score total: mean (SD)	50.6 (10.8)	59.3 (9.8)	$t = 4.12^{**}$
Family variables			
Maternal race (% Caucasian)	74.7%	62.9%	$\chi^2 = 1.18$
Maternal education[†]	16.1 (2.5)	14.8 (2.2)	$t = 2.73^{*}$
Maternal employment[‡]	70.9%	57.1%	$\chi^2 = 1.56$
Family income (% $50 K+)	76.7%	62.9%	$\chi^2 = 1.77$

$^{*}P < 0.01$,

$^{**}P < 0.001$.

[†]Mean (SD) grade completed.

[‡]% employed outside home.

TD, typical development; ID, intellectual disability; WISC-IV, Wechsler Intelligence Scale for Children; CBCL, Child Behavior Checklist.

Table 2

Codes and brief descriptions

Code	Description
Problem-solving codes	
Directiveness	Degree to which parent controls flow of conversation
	1 Parent is not at all directive
	2 Parent is minimally directive
	3 Parent and child have equal roles in directing conversation
	4 Parent mostly directs conversation
	5 Parent directs conversation almost entirely
Engagement (parent towards child)	Degree to which parent is active in participating in the task, staying on topic and discussing the identified issue with child
	1 Very disengaged/detached from task
	2 Minimally engaged in task
	3 Moderately engaged in task
	4 Very engaged in task
	5 Extremely engaged in task
Resistance/avoidance (child towards task)	Degree to which child changes/avoids subject, exhibits disengaged behaviour (e.g. looking away, getting up) and/or exhibits resistant behaviour (e.g. showing indifference to task)
	1 Child not at all resistant
	2 Child minimally resistant
	3 Child moderately resistant
	4 Child very resistant
	5 Child predominantly resistant
Child expression of ideas and negotiation	Degree of taking into account the other member's perspective, willingness to be flexible in content of solution, ability to express oneself clearly, ability to see one's contribution to problem
	1 No willingness to express oneself/negotiate
	2 Minimal willingness to express oneself/negotiate
	3 Moderate willingness to express oneself/negotiate
	4 Very willing to express oneself/negotiate
	5 Predominantly willing to express oneself/negotiate
Feeling/idea acknowledgement (mother towards child)	Degree to which parent validates child's feelings/ideas, encourages child to express feelings/ideas, highlighting the constructive points from child's suggestions (validation should be in response to something child says rather than simply praise for child in general)
	1 Parent does not at all validate child
	2 Parent is minimally validating of child
	3 Parent is moderately validating of child
	4 Parent is very validating of child
	5 Parent is predominantly validating of child
Affect codes	
Mother warmth	Degree of affection (verbal and non-verbal), including smiling, eye contact, expressive tone, physical contact, seems to enjoy being with child

Code	Description
	1 Parent exhibits no warmth towards child
	2 Parent is minimally warm towards child
	3 Parent is moderately warm towards child
	4 Parent is very warm towards child
	5 Parent is predominantly warm towards child
Child warmth	Degree of affection (verbal and non-verbal), including smiling, eye contact, expressive tone, physical contact, seems to enjoy being with parent
	1 Child exhibits no warmth towards parent
	2 Child is minimally warm towards parent
	3 Child is moderately warm towards parent
	4 Child is very warm towards parent
	5 Child is predominantly warm towards parent
Reciprocal warmth	Degree of reciprocity in warmth between mother and child (e.g. when one member of dyad acts warmly, does other member respond with same level of warmth?); measure of how in sync dyad is related to expressions of warmth
	1 No reciprocal warmth
	2 Minimal degree of reciprocal warmth
	3 Moderate degree of reciprocal warmth
	4 Very warm between dyad
	5 Predominantly warm between dyad
Mother antagonism	Degree of negativity in content and tone, including belittling child, blaming child, expressions of anger, pointing out flaws in critical way
	1 Parent exhibits no antagonism towards child
	2 Parent is minimally antagonistic towards child
	3 Parent is moderately antagonistic towards child
	4 Parent is very antagonistic towards child
	5 Parent is predominantly antagonistic towards child
Child antagonism	Degree of negativity in content and tone, including blaming mother, rejecting tone or posture, making negative/ sarcastic comments
	1 Child exhibits no antagonism towards parent
	2 Child is minimally antagonistic towards parent
	3 Child is moderately antagonistic towards parent
	4 Child is very antagonistic towards parent
	5 Child is predominantly antagonistic towards parent

Table 3

Correlations between task codes for combined group (n = 122)

	Problem-solving codes					Affect codes				
Code	**PD**	**PE**	**CR**	**CSC**	**PF**	**MW**	**CW**	**RW**	**MA**	**CA**
PD	1	−0.08	0.19*	−0.41***	−0.14	−0.13	−0.28**	−0.28**	0.03	0.10
PE			−0.18*	0.18*	0.30**	0.28**	0.17	0.23*	−0.25**	−0.04
CR				−0.58***	0.04	−0.09	−0.50***	−0.31**	0.19*	0.38***
CSC					0.22*	0.21*	0.50***	0.50***	−0.28**	−0.18
PF						0.60***	0.29**	0.39***	−0.39***	0.03
MW							0.57***	0.68***	−0.51***	0.05
CW								0.79***	−0.25**	−0.19*
RW									−0.35***	−0.06
MA										0.09
CA										1

*P < 0.05,

**P < 0.01,

***P < 0.001.

Codes: PD, parental directiveness; PE, parental engagement; CR, child resistance/avoidance; CSC, child social competence (expression of ideas and negotiation); PF, parent feeling/idea acknowledgement; MW, maternal warmth; CW, child warmth; RW, reciprocal warmth; MA, maternal antagonism; CA, child antagonism.

Table 4

Status group differences on task codes

Problem-solving task code	ID (SD)	TD (SD)	*t*/*F*	*P*
Child resistance	2.60 (1.44)	2.07 (1.13)	**2.17**	**0.03**
Child expression/negotiation	2.46 (0.82)	3.45 (0.96)	**5.37**	**<0.001**
Child warmth	2.86 (0.91)	3.03 (0.96)	0.94	0.35
Child antagonism	1.91 (1.17)	2.02 (1.06)	0.50	0.62
Reciprocal warmth	2.51 (1.04)	2.71 (1.06)	0.97	0.33
Mother directiveness	3.97 (0.62)	3.54 (0.66)	**3.40**	**0.001**
Mother feeling/idea acknowledgement†	2.89 (0.99)	3.07 (0.90)	0.16	0.69
Mother engagement	4.14 (1.00)	4.20 (0.82)	0.30	0.77
Mother warmth	3.37 (1.00)	3.38 (1.0)	0.04	0.97
Mother antagonism	1.77 (1.09)	1.71 (0.75)	0.34	0.73

Bold results $P < 0.05$.

†Maternal education entered as covariate for mother feeling/idea acknowledgement (*F*-value reported).

TD, typical development; ID, intellectual disability.

Table 5

Regression analyses with child behaviour problems and ID–TD group status (Models 1 and 2)[†]

Variable	*B*	SE *B*	*β*
Dependent variable: child resistance			
Status at age 9	**0.51**	**0.25**	**0.19***
Status at age 9	0.43	0.26	0.16
Mother reported total CBCL (age 9)	0.01	0.01	0.08
Dependent variable: child expression/negotiation			
Status at age 9	**−1.0**	**0.19**	**−0.45*****
Status at age 9	**−0.90**	**0.20**	**−0.40*****
Mother reported total CBCL (age 9)	−0.01	0.01	−0.13
Dependent variable: mother directiveness			
Status at age 9	**0.43**	**0.13**	**0.29****
Status at age 9	**0.52**	**0.14**	**0.35*****
Mother reported total CBCL (age 9)	−0.01	0.01	−0.16

* $P < 0.05$,

** $P < 0.01$,

*** $P < 0.001$, bold results $P < 0.05$.

[†]Model 1 (the first row of each dependent variable) is status entered on its own; Model 2 (the second and third rows of each dependent variable) is the final model with status and behaviour problems entered together.

TD, typical development; ID, intellectual disability; CBCL, Child Behavior Checklist.