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Behavior Problems among Children of Mothers with Mild Intellectual Disability: The Role of Maternal Sensitivity, Trauma History, and Intelligence

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Abstract: Children of parents with intellectual disability (ID) are at risk of behavior problems, but few studies have systematically examined contributions from caregiving behavior and contextual factors. This cross-sectional matched comparison study examined whether the children display elevated behavior problems, and analyzed contributions from maternal sensitivity and maternal experiences of abuse, trauma and maltreatment (ATM). The roles of maternal and child intelligence were also examined. Participants were 26 mothers with mild ID and their children (mean age = 79 months; 58% boys), and 26 socioeconomically matched comparison dyads. Child behavior problems were assessed with maternal ratings, maternal sensitivity with structured observations, and maternal experiences of ATM with semi-structured interviews. Maternal intelligence was measured with a subtest from Wechsler Adult Intelligence Scales (WAIS-III), and child intelligence with the IQ-screen in Leiter-R. Children of mothers with ID had higher ratings on psychosomatic, anger, hyperactivity, and total problems, but not on anxiety. Sensitivity was negatively associated with anger, hyperactivity, and total child behavior problems. Maternal ATM was positively linked to child anger problems. Maternal intelligence was unrelated to child behavior problems, but low child intelligence marginally predicted behavior problems. Inclusion and equity for parents with ID and their children require that clinical practice boost sensitivity, especially among parents who have experienced ATM.

Keywords: intellectual disability; parenting; caregiver sensitivity; child behavior problems; abuse; trauma and maltreatment



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1. Introduction

Parents with intellectual disability (ID) and their children constitute a joint high-risk group: the parents are at risk of caregiving difficulties, the children for behavior problems, and the families for child out-of-home placements [1,2]. At the same time, families headed by parents with ID are heterogeneous; a substantial proportion of the parents provide good-enough care for their children, many of whom develop favorably [3]. Key questions, therefore, pertain to discerning which parents and children need supportive interventions, and for which aspects of caregiving and child development. Yet, most research on the children's development has been based on associations between parental ID and child development, and there is thus scarce research in relation to actual caregiving behavior [3]. There is, moreover, a need for further research on the role of contextually based risk-factors beyond parental ID per se, for the caregiving of parents with ID and their children's development [4]. The present study was designed with these knowledge gaps in mind.

1.1. Parents with Intellectual Disability and Their Children: A Joint High-Risk Group Surrounded by Negative Attitudes and in Need of Support

Parenting in the context of ID has long been discouraged, and persons with ID, particularly women, were long subjected to societally organized sterilization practices [5]. Parental rights have now been established in the UN Convention on the right of Persons with Disabilities (UNCRPD; 2006). Yet, skepticism prevails, with negative attitudes centered on concerns regarding the quality of care provided by parents with ID [6]. More specifically, there are widespread beliefs that parental ID in and of itself results in an inability to provide sufficient childcare [7]. Accordingly, parental ID increases the likelihood of child out-of-home placements, even when controlling for case-specific factors [1].

Parents with ID and their children do constitute high-risk families in need of support. The parents are at risk of caregiving difficulties, including insufficient childcare skills and limited knowledge about child development [2,8]. The children are also at risk of developmental delays and behavior problems [3]. Moreover, the families are at elevated risk for care assessments and, as noted, for child out-of-home placements, most commonly due to concerns about neglect and the parents' interactional skills [9]. In fact, it has been estimated that 30–50 percent of children to a parent with ID are placed in out-of-home care, and that approximately 20 percent of all children who are removed by child protection services have parents with intellectual or cognitive impairments [1,10]. This pattern of findings, together with insufficient access to evidence-based interventions, has likely contributed to the current pessimism regarding these parents' and children's prospects.

Nonetheless, we reiterate that families headed by parents with ID are heterogeneous. A substantial proportion of the parents provide good-enough care, and a good-enough home-environment, for their children [11]. Many of these parents are also receptive to caregiving interventions, when adapted to their cognitive needs [2,12,13]. Further, the children exhibit significant variation in developmental outcomes [3]. The critical question is thus not whether the parents can be competent caregivers who support their children's development; it is about discerning which parents and children need additional support, and with which aspects of caregiving and child development. A key question, therefore, concerns distinct aspects of caregiving that may be challenging and predictive of child development [14]. Another important question concerns contextual factors that influence caregiving behavior and child development [4,15].

1.2. Parents with Intellectual Disability, Child Development, and the Scarcity of Direct Research on the Contribution of Caregiving Behavior

Research on the development of children to parents with ID, and potential contributions of caregiving, can be divided into direct and indirect studies [16]. Systematic direct studies, including observations of caregiving behavior, are scarce. This is not surprising given the well-attested difficulties to do such research with these vulnerable families, particularly quantitative research. Reasons include, but are not limited to, the low percentage of people diagnosed with ID, of whom mainly those with mild ID become parents; the high proportion of families separated due to child out-of-home placements; that families must often be recruited through professionals, who may act as gate keepers; and that the parents may decline participation for a number of reasons (for a discussion, see [3]).

Not surprisingly, then, early observational research of caregiving had various limitations, including very small sample sizes, brief and unrepresentative observations of parent-child interactions, and absent or insufficient comparison groups [8,15,16]. Yet, this pioneering research indicated that parents with ID may interact less with their children, be less sensitive, use less praise and reinforcement, and issue more commands. While the designs often precluded examination of associations with child development, links were found between the quality of the home environment (including parental involvement and responsiveness) and children's cognitive development [17].

Subsequent observational research has largely been done in the context of caregiving interventions and, while paramount for evidence-based support, have rarely examined

effects on the children [2,12,13]. Indeed, Collings and Llewellyn [3] have argued that there has been a preoccupation with caregiving interventions, and that child outcomes have been a secondary interest. Exceptions include studies by Feldman et al. [18–20], who found that training of parents' interactional skills, such as imitating child vocalizations, had a positive impact on children's use of language.

Direct research on caregiving in relation to children's socioemotional development has been particularly scarce. Feldman and Walton-Allen [21] found that child behavior problems were common, more so than among similarly impoverished comparison children, and predicted by the quality of the home environment. Yet, later research has failed to replicate this association [14]. There is thus a need for direct research examining caregiving in relation to child development, particularly socioemotional development.

1.3. Parents with Intellectual Disability, Child Development and Indirect Research Emphasizing the Contribution of Contextual Factors

Most research on the development of children to parents with ID, and the potential influence of caregiving, has been indirect, based on associations between parental ID and children's developmental outcomes. Collings and Llewellyn [3] only found 26 studies concerning child development, 11 of which had a primary focus on child outcomes, and the vast majority were indirect. Many of these studies found that the children are at elevated risk for developmental delays and disabilities [20,22–24]. However, the child outcomes studied often pertained to highly genetically heritable phenomena (e.g., autism, intellectual disability). While informative concerning developmental prospects, it is invalid to infer effects of caregiving from indirect designs, particularly when such child outcomes are studied. Indeed, controlling for genetically based vulnerabilities has been found to erase most deviations from age-norms [14].

Collings and Llewellyn [3] also highlighted that a notable portion of the studies were based on case files from child protection or service agencies; only six studies used community samples. Such sampling strategies may skew the results toward families who experience difficulties and need support, which in turn may be due to factors beyond the parents' ID. Indeed, scholars have long observed that families headed by parents with ID tend to be disadvantaged, and have called for research on contextual risk-factors [8,15,16]. Such factors include, but are not limited to: socioeconomic adversity [25]; teenage parenthood, single parenthood and partners with behavioral or emotional problems [26]; and social isolation and limited social support [27]. Not surprisingly, parenting stress is very common [28], sometimes even at clinical levels [29].

A recent approach to addressing the importance of contextual risk-factors for the children's development is population-based studies, enabling large samples and control for contextual factors. Prior to controlling for contextual factors, such studies have tended to find that children of parents with ID are at elevated risk for suboptimal development (e.g., injuries, hyperactivity, externalizing problems, mental illness, developmental delays, peer problems). Yet, findings have been inconsistent following control for socioeconomic factors; while some have found elevated risk for adverse outcomes even after such controls [30,31], other studies have found that pertinent controls erase group differences [32,33]. Importantly, these studies have used preexisting, notably heterogeneous samples and operationalizations, making it difficult to synthesize findings. Nonetheless, Schuengel et al. [34] concluded that contextual factors account for a substantial proportion of the risks for the children. While obviously important, the population-based studies have not included observational measures of caregiving and are thus, still, indirect.

Feldman [35] has developed a contextual model of caregiving for parents with ID, the components of which have been supported in many studies [4]. A key component is parental experiences of abuse, trauma and maltreatment (ATM), which are robustly linked to suboptimal caregiving and child development in the general population [36,37]. Regarding parents with ID and their children, McGaw et al. [26,38] found that the parents were at elevated risk of ATM, and that such experiences were better than the parents'

intelligence in predicting whether social services had registered concern. Similarly, Feldman et al. [39] found that childhood experiences of ATM among parents with ID predicted child leaning and developmental difficulties. Recently, a systematic review found that a majority of parents with ID had experienced ATM, and that such experiences were linked to caregiving-related variables [40]. However, very few studies had examined links to child development, and those which had yielded inconsistent results, indicating a need for additional research.

1.4. The Current Project and Study

The current study is part of a larger project. Motivated by the knowledge gaps described above, the project aims to further knowledge on caregiving behavior among mothers with ID, their children's development, and influential factors. To this end, the project includes direct observations of maternal sensitivity—the ability to notice, interpret and respond to child signals timely and appropriately—a key caregiving behavior linked to many aspects of child development among other populations [41]. Moreover, the project includes examination of a contextually based influential factor in the form of maternal experiences of abuse, trauma and maltreatment (ATM). Finally, since previous direct research has been critiqued for insufficient comparison groups, the project includes a socioeconomically matched comparison group. Previous studies from the project have examined maternal sensitivity in relation to maternal experiences of ATM [42,43]. Mothers with ID showed notable within-group variation in sensitivity, but were significantly lower than the comparison mothers. However, the mothers with ID had also experienced markedly more ATM; in fact, a majority had experienced physical and sexual abuse, and a large minority emotional abuse and neglect. Crucially, maternal experiences of ATM predicted low maternal sensitivity. Yet, children's psychosocial adaptation, and factors influencing adaptation, remains to be examined.

The aim of the present study was to further knowledge on the development of children to mothers with mild ID and influential factors. The study was, as reviewed above, motivated by a scarcity of direct research on caregiving behavior in relation to child developmental outcomes [3], and a need for further research on contributions from contextual factors [4]. To this end, the study examined contributions from maternal sensitivity and maternal experiences of ATM. The roles of maternal and child intelligence were also examined. We asked the following, specific research questions:

1. Do children to mothers with mild ID show higher levels of behavior problems than socioeconomically matched comparison children?
2. Are behavior problems among children to mothers with mild ID predicted by maternal sensitivity, maternal ATM, and maternal and child intelligence?

Concerning the first research question, we hypothesized that children of mothers with ID would be rated higher in behavior problems. This hypothesis was based on previous direct and indirect research, which has indicated elevated risks for these children [3,21]. As regards the second research question, we hypothesized that caregiver sensitivity would be associated with child behavior problems. This hypothesis was based on consistent links between maternal sensitivity and various aspects of child development among other populations [41]. Moreover, we hypothesized that maternal experiences of ATM would be linked to child behavior problems. This hypothesis was based on links between maternal ATM, caregiving behavior and child development among parents and children from the general population [36,37], and links between maternal ATM and caregiving-related factors among parents with ID [40]. Finally, we treated it as an open question whether maternal and child intelligence would be linked to child behavior problems, since previous research has been inconsistent [3,26,38].

2. Method

2.1. Participants

Twenty-six mothers with mild ID were recruited via professionals who support parents with cognitive difficulties, in the central regions of Sweden, following approval from the Regional Ethical Committee at Uppsala University. The professionals gave verbal and (adapted) written information and, if mothers were interested in participating, forwarded their contact information to the researchers, who gave further information.

Four inclusion criteria were used: (1) maternal mild ID; (2) a child between 5–8 years of age who; (3) lived with the mother (at least 50%); and (4) both mother and child speaking Swedish. Autism in mother or child was an exclusion criterion. Three dyads only participated in the first of two visits, leaving 23 dyads with complete data.

Comparison mothers with normal range IQ were recruited through a matching process that included child age (± 6 months), child sex, and family demographics (average income, social allowances, health status, unemployment rate, population, and quantity of immigrants in the residential area). For each mother with ID and her child, the area surrounding Uppsala that corresponded most closely was used for the comparison dyad. Eligible comparison mothers were first contacted by post, and then by phone, if they did not decline contact by returning a pre-stamped envelope. One comparison dyad participated only in the first visit, leaving 25 dyads with complete data.

The only significant group difference in demographic data was a lower percentage of mothers with ID living with a partner (31% vs. 81%), a finding which is in line with prior research [21]. Descriptive data is presented in Table 1. For more details, see [42].

Table 1. Sample characteristics, predictor variables and between group tests.

	ID Group ($n = 23-26$)		Comparison Group ($n = 25-26$)		<i>t</i>
	<i>M</i> (<i>SD</i>)	Min–Max	<i>M</i> (<i>SD</i>)	Min–Max	
Maternal Age (Years)	34.2 (5.9)	25–44	34.1 (5.4)	21–47	0.05
Child Age (Months)	79.0 (14.8)	60–103	78.7 (14.9)	61–106	0.06
Maternal Income ^a	11.7 (5.4)	1–24	14.6 (9.3)	2–47	−1.38 ⁺
Maternal Intelligence ^b	6.2 (1.9)	3–10	12.6 (2.5)	9–17	−9.90 ***
Child Intelligence	97.4 (13.0)	74–127	107.9 (13.8)	87–135	−2.71 **
Maternal Sensitivity	4.3 (0.81)	2–5.5	5.6 (0.61)	4.3–6.6	−6.19 ***
Maternal ATM	2.9 (1.9)	0–8	1.0 (1.8)	0–6	3.57 ***

^a Monthly income plus subsidies, in Swedish kronor (SEK, thousands), ^b Scale points, adjusted for maternal age, ⁺ $p < 0.10$, ^{**} $p < 0.01$, ^{***} $p < 0.001$. ID = intellectual disability. Note: Data previously reported in [42,43].

2.2. Procedures

Data were collected on two occasions, each lasting two to three hours. The first was a home visit by two members of the research team with experience from habilitation care and research. This occasion only included the mothers, and covered background information, maternal experiences of abuse, trauma and maltreatment, and child behavior problems. Some mothers preferred to meet at a neutral place (e.g., a habilitation center). The second occasion, a laboratory visit for both mother and child, began with observation of sensitivity and continued with tasks for maternal and child intelligence.

Mothers were repeatedly informed that participation was voluntary and anonymous, that they could terminate at any time without any consequences, and that we would only use the data for research. Informed consent was obtained for each task. Instructions and questions were given in simple and concrete language, to facilitate understanding, and pilot tested with three women not included in the study. For more details, see [42].

2.3. Measures

Child Behavior Problems. Mothers rated child behavior problems, in interview format, using a questionnaire developed by Hagekull and Bohlin [44]. This questionnaire was chosen due to its brevity, wide range of problems, and successful interview-based adminis-

tration in previous research with Swedish mothers. The response alternative “I don’t know” was added to the original’s “yes” and “no”, to guard against forced choice responding and to stimulate discussion if participants had difficulties understanding. The questionnaire includes 13 questions, 11 of which concern psychosomatic problems (e.g., sleeping problems), anxiety problems, hyperactivity, and anger problems. The final two questions are about general difficultness and were only used for an index of total problems. For each question, the mothers rated if they thought the child had exhibited the problem (1) during the last two weeks and (2) previously, and if another person who knew the child well thought the child had exhibited the problem (3) during the last two weeks and (4) previously.

Maternal Sensitivity. Mothers were observed interacting with their children during a 20 min semi-structured session that was video-recorded and subsequently coded by two coders, blind to all other data, using an age-modified version of Ainsworth’s 9-point sensitivity scale [45]. The session included four 5 min situations designed to become increasingly challenging. In the first situation—free play with toys—mothers and children were given age-appropriate toys and told to play as they would at home. At the end, the mothers were instructed to tell their children to put the toys back in the boxes. In the second situation—free play without toys—the mothers were instructed to play freely with their children without toys. In the third situation—cooperation—the mothers and children were given an etch-a-sketch and instructed to draw a house or a boat together, according to a pre-drawn model, using one wheel each. In the fourth situation—competing attention—the mothers were given a questionnaire while their children were given an overly challenging toy, so that the children would seek their mothers’ attention.

Maternal History of Abuse, Trauma, and Maltreatment. Maternal experiences of abuse, trauma and maltreatment (ATM) were assessed with a semi-structured interview that was recorded with a non-obtrusive voice-recorder and transcribed, before being coded by two coders. The interview was constructed for this project (see [42]), inspired by the Adult Attachment Interview (AAI) [46], the Early Trauma Interview (ETI) [47], and the Colorado Adolescent Rearing Inventory (CARI) [48]. The interview includes 30 open-ended questions asking about concrete events, and affirmative responses are followed by standardized probes to provide a detailed description of the event (e.g., age, perpetrator[s], frequency) and perceived effects (e.g., feelings at the time, effects on later development). The approach was chosen to facilitate understanding and responding, and to enable later coding using conservative (AAI-based) criteria. The interview yields data concerning maltreatment (e.g., neglect, emotional abuse), physical abuse (e.g., being hit, kicked), sexual abuse (e.g., being raped), and other overwhelmingly frightening experiences (e.g., traumatic losses of attachment figures, witnessing serious violence).

Maternal and Child Intelligence. Maternal fluid intelligence was examined with the block design subtest from Wechsler Adult Intelligence Scales (WAIS-III) [49]. The task is primarily visuo-spatial/perceptual, and thus suitable for mothers with intellectual disability, who may have language problems. The task also has high reliability and validity (e.g., high inter-correlation with full IQ scores) [49]. Child intelligence was measured using the Swedish version of the IQ-screen in Leiter-R [50]. Leiter is nonverbal and considered useful for children with potential developmental delays.

2.4. Data Preparation and Statistical Analyses

Mothers generally conveyed that child behavior problems, when present, had been present for a long time, and there were indeed fairly strong correlations between current and previous problems ($r_s = 0.47\text{--}0.84$, all $p_s < 0.05$). We therefore created summary scores by averaging current and previous problems for each respective type of behavior problem. Mothers’ own and others’ perceptions (e.g., parents, teachers) were also strongly correlated ($r_s = 0.66\text{--}0.92$, all $p_s < 0.001$) and we therefore averaged these ratings. This yielded summary indices on the four dimensions (psychosomatic, anxiety, hyperactivity, and anger) and a total score. Internal consistency was acceptable to excellent for the respective dimensions ($\alpha = 0.75\text{--}0.91$) and item analysis did not suggest that any dimension could be

improved by excluding any item. Inter-rater agreement for maternal sensitivity (20 dyads) was good (intraclass r s for absolute agreement 0.78–0.97), and discrepancies resolved through discussion. An aggregated total sensitivity score was created for each dyad based on the four episodes ($\alpha = 0.84$). For more details, see [43]. The interviews concerning ATM were initially coded for prevalence and frequency of each type of ATM, with separate scores for attachment figures (caregivers) and others. Intra-class correlations were good (0.87 to 0.92) and disagreements resolved through discussion. For more details, see [42]. However, only total ATM was used herein, since we did not have specific hypotheses concerning distinct aspects of ATM in relation to child behavior problems, and since we wanted to minimize the number of statistical analyses.

Between-group differences in child behavior problems (research question 1) were examined with independent-samples t -tests, complemented with effect sizes (Cohen's d). The small study groups restricted options for statistical analyses, particularly as regards prediction of behavior problems among children to mothers with ID (research question 2). Rather than attempting more complex analyses, which may be underpowered, we examined bivariate associations between child behavior problems and the predictor variables (e.g., maternal sensitivity). We then complemented these analyses with partial correlations, to enable control for factors of relevance for the research questions, and to further illuminate the roles of key study variables. There were, for instance, between-group differences in child intelligence. Since such differences may be due to genetically based vulnerabilities, we controlled for child intelligence to examine whether between-group differences in child behavior problems would remain. Moreover, we controlled for maternal sensitivity to further illuminate its role in the between-group differences in child behavior problems. Due to the small sample size, robust measures (Bootstrapping, 1000 samples, BCa) were used in all analyses.

3. Results

3.1. Preliminary Analyses

Associations between child behavior problems and background variables were examined to evaluate if any such factor should be controlled for. There were no associations between child behavior problems and background variables (child sex, child age, maternal income), neither in the full sample nor among children to mothers with ID. These background variables were therefore dropped from further analysis. The only significant associations between types of child behavior problems were between psychosomatic problems and anxiety problems ($r = 0.36, p < 0.01$), and between hyperactivity and anger problems ($r = 0.49, p < 0.001$).

3.2. Between-Group Differences in Child Behavior Problems

As displayed in Table 2, there were significant between-group differences in psychosomatic problems, hyperactivity, anger problems, and total problems. In all instances, children to mothers with ID were rated higher, and effect sizes were medium for the specific types of problems and strong for total problems. There were no significant differences on anxiety problems, but children to mothers with ID were descriptively higher.

Table 2. Tests of between-group differences in behavior problems between children to mothers with mild intellectual disability ($n = 26$) and matched-comparison children ($n = 26$).

	ID Group		Comparison Group		t	d
	M (SD)	Min–Max	M (SD)	Min–Max		
Psychosomatic Problems	0.29 (0.20)	0.04–0.79	0.17 (0.12)	0–0.57	2.60 *	0.72
Anxiety Problems	0.34 (0.41)	0–1	0.17 (0.31)	0–1	1.62	0.45
Hyperactivity Problems	0.40 (0.37)	0–1	0.20 (0.33)	0–1	2.13 *	0.59
Anger Problems	0.34 (0.36)	0–1	0.11 (0.25)	0–1	2.74 *	0.76
Total Problems	0.31 (0.19)	0.04–0.71	0.16 (0.09)	0.04–0.37	3.68 **	1.02

* $p < 0.05$, ** $p < 0.01$.

To explore the potential contributions of maternal sensitivity and maternal ATM beyond group-status, we examined partial correlations between group-status (maternal ID-status scored 1; comparison group scored 2) and child behavior problems, controlling for maternal sensitivity and ATM in separate analyses. When controlling for maternal sensitivity, there were no significant associations between group-status and child behavior problems ($r_s = -0.18$ – 0.12 , all $p_s > 0.10$). When controlling for maternal ATM, there were significant associations between group-status on the one hand and psychosomatic problems ($r = -0.30$, $p < 0.05$) and total behavior problems ($r = -0.37$, $p < 0.01$) on the other.

To explore the potential contribution of child intelligence, we also examined partial correlations between group-status and child behavior problems controlling for child intelligence. There was a significant association between having a mother with ID and psychosomatic problems ($r = -0.32$, $p < 0.05$) and total behavior problems ($r = -0.34$, $p < 0.05$).

3.3. Within-Group Associations between Child Behavior Problems and Other Study Variables

Table 3 displays associations between study variables among mothers with ID and their children. Maternal sensitivity was associated with total problems, hyperactivity, and anger problems. Maternal experiences of ATM were also associated with child anger problems. Maternal intelligence was not associated with any child behavior problem, but there was a marginally significant negative association between child intelligence and child anger problems. Partial correlations were thus examined, controlling for child intelligence. The associations between maternal sensitivity and child hyperactivity ($r = -0.47$, $p < 0.05$), anger problems ($r = -0.64$, $p < 0.01$), and total behavior problems ($r = -0.49$, $p < 0.05$), remained significant, as did the association between maternal experiences of ATM and child anger problems ($r = 0.58$, $p < 0.05$).

Table 3. Within-group bivariate associations between child behavior problems, among children to mothers with intellectual disability, and study variables ($n = 23$ – 26).

	Child Behavior Problems				
	Psychosomatic	Anxiety	Hyperactivity	Anger	Total
Maternal Sensitivity	−0.19	−0.20	−0.51 *	−0.68 ***	−0.52 **
Maternal ATM	−0.00	0.03	0.32	0.55 **	0.23
Maternal Intelligence	−0.27	−0.14	0.09	0.21	−0.17
Child Intelligence	0.05	−0.30	−0.29	−0.40 +	−0.21

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

In a final analysis, we examined partial correlations between maternal sensitivity and child anger problems, controlling for maternal experiences of ATM. There was still a significant association between sensitivity and child anger problems ($r = -0.59$, $p < 0.01$).

4. Discussion

The present study sought to further knowledge on the development of children to mothers with mild ID. More specifically, the study was motivated by a scarcity of research on caregiving in relation to child developmental outcomes [3], and a need for further research on contributions from contextual factors [4]. To this end, the study examined contributions from maternal sensitivity and maternal experiences of abuse, trauma and maltreatment (ATM), and it included a socioeconomically matched comparison-group. The roles of maternal and child intelligence were also examined. Children of mothers with ID were rated higher in behavior problems. Furthermore, most forms of child behavior problems within this group were predicted by low maternal sensitivity, and child anger problems were also predicted by maternal experiences of ATM. These findings corroborate research suggesting elevated risk of suboptimal development for children of parents with ID. Further, our results attest to the importance of maternal sensitivity for child development

in this context. Moreover, the contribution of maternal experiences of ATM to child anger problems highlight the importance of the mothers' own developmental contexts.

4.1. Elevated Risk for Child Behavior Problems

The children of mothers with mild ID studied here were at an elevated risk for behavior problems. Anxiety problems were the only dimension for which they were not, and ratings of such problems—which are not immediately visible—have proven difficult [51]. The finding that these children are at elevated risk for various problems is not unique [3]. However, our study nonetheless adds to extant research in important ways. First, the study included a comparison group matched on child sex, age, and socioeconomic status. That the children of mothers with ID were higher in behavior problems suggests that the risk for suboptimal development is not solely attributable to socioeconomic adversity [30,34]. In addition, to the extent that child intelligence can be used as a proxy for genetically based vulnerabilities, our results suggest that the developmental risk of children to mothers with ID depends, at least in part, on factors beyond such vulnerabilities.

4.2. Maternal Sensitivity May Contribute to Child Development

Low maternal sensitivity was not only significantly associated with child behavior problems; the associations observed were also large. Moreover, controlling for maternal sensitivity erased all differences in child behavior problems between the children of mothers with ID and the children in the comparison group. These findings suggest that low maternal sensitivity may have contributed to the children's development of behavior problems. While decades of research have emphasized the importance of caregiver sensitivity for child development [41], there has hitherto been scarce research on the caregiving of parents with ID in relation to child development [3,8,15,16]. Thus, our findings contribute knowledge about families headed by parents with ID, and suggest that sensitivity should be a focal point of caregiving interventions. Indeed, concerns about sensitivity is often at the center of care assessments concerning these parents [9].

A variety of evidence-based interventions for sensitivity has been developed, some of which should be suitable for parents with ID. Interventions using video-feedback have proven effective for parents from the general population [52], but adaptations for parents with ID have thus far not yielded positive effects [53]. Parents with ID often have difficulties with generalization of knowledge, and caregiving interventions therefore tend to be home-based, with training of concrete skills in the environment where they are to be used [2,12,13]. This suggests that the Attachment and Biobehavioral Cath-up (ABC) [54] may be fruitful. The ABC was developed for parents at risk of maltreating their children, is home-based, focuses on concrete skills, and uses positive reinforcement. There is currently no research on the ABC for parents with ID, but positive findings with other at-risk parents suggest that it should be evaluated for use among parents with ID. Attesting to the importance of such research, it has been argued that the current pessimism concerning parents with ID, which manifests in an exceptionally high risk of child out-of-home placements, may in part stem from a lack of accessible caregiving interventions [10].

While low maternal sensitivity emerged as a risk-factor for child behavior problems, it is important to point out that there was significant variation among the mothers with ID in sensitivity, with some mothers rated high. Further, the negative association between maternal sensitivity and child behavior problems should also be interpreted as indicating that some of these mothers, through their comparatively high levels of sensitivity, likely buffered their children against the development of behavior problems.

4.3. Maternal Experiences of Abuse, Trauma and Maltreatment Predict Child Behavior Problems

Maternal experiences of ATM were linked to child anger problems, and the higher levels of anger problems observed among children to mothers with ID disappeared when we controlled for maternal experiences of ATM. This finding is in line with research on other populations, which has established robust links among such experiences, caregiving

problems, and child externalizing problems [36,55]. The finding also converges with and extends research on parents with ID that has documented links between ATM on the one hand and caregiving-relevant variables on the other, though such research has rarely examined whether the links extend to child development [40].

Ultimately, our findings lend credence to contextual models of caregiving for parents with ID, which emphasize that caregiving and child development must be viewed in context [4,35]. Indeed, scholars have long emphasized the need to examine these parents' caregiving, and their children's development, in relation to factors beyond parental ID *per se* [8,15]. The link between maternal experiences of ATM and child anger problems has several implications for work in supporting these families. First, it suggests the importance of preventive work that minimizes the risk that persons with ID are subjected to ATM. Second, it emphasizes the importance of identification; professionals should routinely screen for experiences of ATM among parents with ID. Third, our findings suggest that trauma-focused treatment may be warranted for many parents with ID. Various such methods have indicated positive effects for persons with ID [56]. Future research should therefore examine whether trauma-focused treatments for parents with ID have positive effects on their caregiving, and on their children's development.

5. Strengths and Limitations

The study had strengths that should be mentioned. First, the matched comparison group is a strength since previous direct research has been critiqued for insufficient comparison groups [3,8,15,16]. Second, the study groups, while still fairly small, are larger than in most previous research using observations. A third strength is the stringent inclusion of only parents with mild ID, since previous research has used wide inclusion criteria, also featuring parents with moderate or borderline ID, a history of special education, or cognitive impairment as perceived by professionals. While there are rationales for other approaches (e.g., a wider range on measures), it can be difficult to discern to what extent resultant findings pertain to parents with mild ID. A fourth strength is the use of a well-validated measure of maternal sensitivity, and the careful, in-depth interview concerning maternal experiences of ATM, since previous research has been critiqued for brief and unrepresentative observations of caregiving behavior and ATM [15,40]. A fifth strength is the use of a mixed methods approach including observations, interviews, and ratings.

The study also had limitations that should be acknowledged. First, we employed a cross-sectional design, which leads to uncertainty about process direction, not least regarding the links between maternal sensitivity and child behavior problems. Certainly, child disabilities and behavior problems can make it more difficult for a parent to be sensitive [57], and parents and children exert bidirectional effects on one another [58]. Second, the study was limited to children between five and eight years of age, and the findings can therefore not be generalized beyond that range. Third, child behavior problems were measured solely through maternal ratings, and it would have been desirable to also have independent ratings of observers who see the children in other contexts (e.g., [pre]school). Fourth, the questionnaire for child behavior problems is brief and does not have cut-offs concerning atypical development. Our findings are thus in need of replication and extension, and we advise future research to use well-validated measures with pertinent cut-offs, such as the strengths and difficulties questionnaire (SDQ) [59]. Fifth, the study may, similar to most previous research, be skewed towards parents with difficulties, since we recruited clinically diagnosed participants through professionals [3]. This is particularly relevant for maternal experiences of ATM. At the same time, persons diagnosed with ID are entitled to support in Sweden, and professional contacts are often maintained whether there are acute problems or not. Long-term contacts are also recommended because it can make it easier for these parents to accept voluntary parenting support if deemed needed. In fact, no parent was embroiled in care assessments, and few were recruited via social workers providing caregiving support. This speaks against the sample having an unrepresentative problem load. Sixth, the small sample restricted the options for statistical analyses and our

analyses are thus fairly crude. Given the difficulties of conducting direct, observational research with these vulnerable families, we recommend collaborative efforts between labs to enable larger samples and more sophisticated analyses.

6. Conclusions

The present study adds knowledge about the development of children to parents with ID, and the role of caregiving behavior and contextual factors. We reported three key findings. First, children of parents with ID were at elevated risk for behavior problems. Second, the risk for child behavior problems was contingent on maternal sensitivity. Third, the risk of child anger problems was contingent on maternal exposure to ATM. Jointly, the findings emphasize that inclusion and equity for these parents, and for their children, require development of, and access to, supportive interventions. To this end, our findings emphasize the importance of trauma-focused therapy, and interventions that boost caregiver sensitivity. At the same time, we hasten to emphasize that some of the mothers with ID showed adequate sensitivity, and that the association between caregiver sensitivity and child development likewise indicates that some of the mothers likely buffered their children against behavior problems.

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