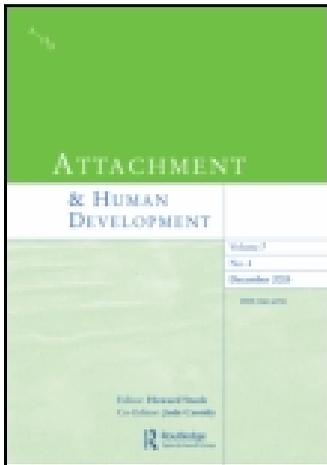


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Pehr Granqvist^a, Tommie Forslund^b, Mari Fransson^b, Lydia Springer^c & Lene Lindberg^d

^a Department of Psychology, Stockholm University, Sweden

^b Department of Psychology, Uppsala University, Sweden

^c SUF Kunskapscentrum, Uppsala, Sweden

^d Department of Public Health Sciences, Karolinska Institute, Sweden

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Mothers with intellectual disability, their experiences of maltreatment, and their children's attachment representations: a small-group matched comparison study

Pehr Granqvist^{a*}, Tommie Forslund^b, Mari Fransson^b, Lydia Springer^c and Lene Lindberg^d

^aDepartment of Psychology, Stockholm University, Sweden; ^bDepartment of Psychology, Uppsala University, Sweden; ^cSUF Kunskapscentrum, Uppsala, Sweden; ^dDepartment of Public Health Sciences, Karolinska Institute, Sweden

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Maternal intellectual disability (ID) is regarded a risk factor in child development, but there is no scientific evidence on maternal ID in relation to children's attachment. Using a matched comparison design, a small group ($n = 23$) of mothers diagnosed with ID was studied to help fill this gap. Besides maternal ID, we examined the role of abuse/trauma/maltreatment (ATM) in the mothers' biographies, along with potential confounds. Comparison group mothers ($n = 25$) had normal variations in intelligence and matched mothers with ID on residential area, income, child age, and sex. History of maternal ATM was assessed using a semi-structured interview and was found to be significantly more likely in the ID group mothers' experience than the comparison group mothers. Children's (M age = 77 months) attachment representations were assessed with the Separation Anxiety Test. Among children of mothers with ID, a substantial minority (35%) had a secure and the vast majority (>80%) an organized attachment representation. Mothers with ID who had suffered elevated ATM were significantly more likely to have children who were scored high on disorganization and insecurity. We discuss possible implications of our findings for societal considerations regarding parenting and child attachment in the context of parental ID status.

Keywords: attachment; intellectual disability; abuse/trauma/maltreatment; risk factor; matched comparison

Maternal intellectual disability (ID) is well-established in research as a general risk factor in child development (e.g., Booth & Booth, 1996; Gillberg & Geijer-Karlsson, 1983). However, compared with other risk factors, such as parental poverty or other functional impairments, mothering in the context of ID has been more actively and consistently discouraged. As part of the eugenics movement and its concern with the genetic integrity of the population, women viewed as "feeble-minded" were routinely subjected to involuntary sterilization practices in many countries, especially during the first half of the twentieth century (e.g., Broberg & Roll-Hansen, 2005). With socio-political rather than genetic justifications, similar practices lasted decades after most other encroachments of the eugenics movement had been abandoned, especially in the Scandinavian welfare states, in which such practices continued into the mid 1970s (Runcis, 1998). Although involuntary sterilization is no longer common practice, parenting in the context of ID is still discouraged, due to its status as a risk factor in child development (e.g., Llewellyn, 1990) or, more specifically, because of concerns related to the quality of care provided by

*Corresponding author. Email: pehr.granqvist@psychology.su.se

mothers with ID. Accordingly, a significant proportion of Swedish professionals deem it inappropriate for women with ID to become pregnant (Höglund, Lindgren, & Larsson, 2013), and a substantial proportion of mothers with ID ultimately lose child custody (Llewellyn, McConnell, & Ferronato, 2003; Morch, Skar, & Andersgard, 1997). Although disputable on empirical grounds in cases of mild parental ID, the mother's low intelligence quotient (IQ) is typically emphasized as the key risk factor for recurrent caregiving problems (Booth, Booth, & McConnell, 2005).

Relatedly, and regardless of parental ID status, concerns about children's attachment have started to be emphasized in many legal custody procedures, sometimes reflecting serious misconceptions regarding attachment (Main, Hesse, & Hesse, 2011). However, to the best of our knowledge, there is no scientific evidence available to clarify whether maternal ID is a risk factor in relation to child attachment.

Parental abuse/trauma/maltreatment, caregiving, and child attachment

Abuse, trauma, and maltreatment (ATM) have untoward effects on caregiving (e.g., George & Solomon, 2008; Lyons-Ruth & Block, 1996; Pryce, 1995). Parents who have suffered ATM may have problems maintaining parent-child boundaries, and tend to be excessively permissive, harsh, or abusive towards their children (e.g., Banyard, 1997; DiLillo & Damashek, 2003). Consequently, parental history of ATM is also a risk factor in their offspring's development in humans (e.g., Cicchetti & Toth, 2006) and other primates (Harlow & Zimmerman, 1959).

Partially through its effects on caregiving, parental history of ATM is also predictive of child attachment problems (e.g., disorganization and insecurity; Hesse & Main, 2006). Attachment refers to the emotional bond that develops between virtually all children and their primary caregivers in childhood due to its evolutionary function of protection as survival of a child is typically promoted by staying in proximity to its caregiver (Bowlby, 1982/1969). The caregiver's characteristic caregiving behaviors affect the nature of the child's mental representations (or internal working models) of self and others, which are reflected in the quality of the child's attachment (de Wolff & van IJzendoorn, 1997).

Attachment quality can be described in terms of two categorical distinctions. First, attachment can be secure (i.e., the attachment figure is viewed as a reliable provider of care) or insecure (i.e., avoidant or resistant; Ainsworth, Blehar, Waters, & Wall, 1978). Second, attachment can be described as organized or disorganized (e.g., Hesse & Main, 2006). In the latter case, the child's attachment strategies are believed to break down in the face of stress and fear (Hesse & Main, 2006). Disorganized attachment often develops through a history of abuse or maltreatment, through other forms of frightening or frightened behaviors on the part of caregivers, or from sufficiently accumulated environmental risk exposure (Cyr, Euser, Bakermans-Kranenburg, & van IJzendoorn, 2010; Hesse & Main, 2006). Later in development, disorganized attachment may be identified in fearfulness (e.g., imagined death or potentially fatal injury), refusal to respond, and/or disorganized thought processes/behaviors (e.g., nonsense language) when children are shown pictures and asked questions about how fictional agemates may react following separation from their parents (Kaplan, 1987; Main, Kaplan, & Cassidy, 1985). Not surprisingly then, disorganized attachment is a risk factor and secure attachment a protective factor in socio-emotional development (e.g., in relation to problem behaviors, psychopathology, and peer competence; e.g., Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley, & Roisman, 2010; Groh, Roisman, van IJzendoorn, Bakermans-Kranenburg, & Fearon, 2012, 2014; van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999).

Maternal Intellectual Disability (ID), caregiving, and history of abuse/trauma/maltreatment

Although direct observational research on the actual caregiving of mothers with ID is scant, extant studies have suggested that ID parents' caregiving is often substandard. For example, mothers with ID have typically been found to be less sensitive to their children's signals and to display less direct interactive behaviors but also more direct (commanding) instructions when interacting with their children, compared with mothers from the general population (e.g., Dowdney & Skuse, 1993; Tymchuk, 1992).

In line with maternal ID as a risk factor for deficient care, children of mothers with ID have been found to show delays across several developmental domains (e.g., McConnell, Llewellyn, Mayes, Russo, & Honey, 2003). Similarly, psychopathology is overrepresented among these children (e.g., McGaw, Shaw, & Beckley, 2007). However, whether child developmental problems are caused by experiences of deficient care is often disputable; other factors (e.g., shared genes, organic pathology) are often viable alternative explanations (cf. McConnell et al., 2003). In addition, it is an open question whether maternal ID per se or some external but associated risk factor (e.g., abuse/trauma/maltreatment or ATM) explains the comparatively deficient care that may be provided by many mothers with ID.

In particular, then, one risk factor for deficient caregiving that has been found highly overrepresented among these mothers is a history of ATM. Several studies have indicated that a high percentage of children with ID are subjected to ATM and that a large majority of mothers with ID have experienced ATM at some point in their lives (e.g., McConnell et al., 2003; McGaw et al., 2007; Seagull & Scheurer, 1986; Stalker & McArthur, 2012; Sullivan & Knutson, 2000). For example, McGaw et al. (2007) found that 80% of these mothers reported some traumatic event during their upbringing, including physical abuse (45%), sexual abuse (40%), emotional abuse (60%), emotional neglect (51%), physical neglect (31%), and more than one of those forms of ATM (55%).

Thus, having experienced ATM is a possible alternative explanation (to low IQ) for the deficient caregiving provided by many mothers with ID. This alternative explanation has been supported by findings indicating that among mothers with mild ID, a history of ATM is a solid predictor of high vs. low risk parenting status, whereas variation in maternal IQ is not (McGaw et al., 2007; McGaw, Scully, & Pritchard, 2010).

Methodological problems and missing pieces

Previous research on mothers with ID and their children has suffered from serious methodological limitations, some of which are understandable in view of the practical difficulties involved in conducting research with this population. First, most studies have used small study samples of mothers with ID and/or their children, without including comparison groups of parents/children with normal IQ. Among extant studies that have included comparison groups, most have used groups from the general (normal) population. This is problematic when considering that research on mothers with ID is often conducted to gain knowledge that may inform social policies regarding parenting in the context of ID status, not least related to child custody, and when considering that mothers with ID differ from mothers in the general population on many parameters external to ID. For example, besides a history of ATM, mothers with ID are often poor and single parents, who have grown up in foster care, or else in poverty with parents who suffer from substance abuse or psychopathology (e.g., Llewellyn, 1990). Any fair comparison

that addresses the role of maternal ID for parenting or child outcomes should be performed with a comparison group from the most disadvantaged segments of the population. Naturally, it is difficult to find such a comparison group, especially one that does not have higher rates of psychiatric or drug-related problems than mothers with ID.

Second, and relatedly, most research on mothers with ID has failed to disentangle effects on child outcomes that are integral to maternal ID versus those that reflect external risk factors. A history of ATM is an external risk factor that clearly warrants further scrutiny.

Third, although a history of ATM appears overrepresented among mothers with ID, its estimated prevalence might be inflated. A common denominator in studies reporting very high prevalence is the use of self-report questionnaires, such as the Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998). Not only may questionnaires in general be suboptimal for ID populations, but ATM questionnaires often sample abusive/neglectful behaviors liberally. For example, the CTQ includes items such as “Parents were drunk or high” and reversals of “Felt loved” and “Family felt close”. Low/moderate agreement with any item suffices for abuse/neglect status, making prevalence estimates of 70–80% among mothers with ID less remarkable. Thus, more precise interview-based prevalence estimates are needed to address the role of ATM among mothers with ID.

Finally, though many developmental psychologists view children’s attachment representations as a worthwhile caregiving-related outcome to investigate, no research on children’s attachment in the context of maternal ID has been published in the worldwide scientific literature. This knowledge gap is especially remarkable when considering the risk that misconceptions about attachment-related problems in children of mothers with ID, as in other children, might figure as a concern behind their custody placements (cf. Main et al., 2011). However, some studies have examined attachment representations among individuals with ID (see Schuengel & Janssen, 2006; Schuengel, de Schipper, Sterkenburg, & Kef, 2013). Although the proportion of secure attachment is typically lower and that of disorganized attachment higher in this group than in the general population, a substantial proportion of ID individuals, especially those who have encountered sensitive caregiving, do develop secure attachment representations (Schuengel et al., 2013), which should theoretically be transmitted also to their offspring.

The present study

The study was designed to explore the attachment representations of children with mothers with ID, while improving on some of the methodological shortcomings of prior related research. We included a matched comparison group of children in the same age with mothers without ID. Besides maternal ID, we examined the role of carefully estimated history of ATM in the mothers’ own biographies for understanding variations in their children’s attachment security and disorganization. Finally, we addressed the role of potential confounds of maternal ID status and child attachment (maternal/child intelligence, child sex, and father absence).

We asked four specific research questions. First, what is the distribution of attachment and levels of security and disorganization among children with mothers with ID, and do any of these children develop secure attachment representations? Second, do these distributions/levels differ from those among children in the comparison group? Third, as suggested in previous research, have ID-group mothers encountered elevated levels of ATM in their own histories, and more than mothers in the matched comparison group? Finally, are variations in maternal ATM related to child security and disorganization,

within the ID group and the comparison group? In answering these questions, we analyzed whether findings remained intact when the influence of potential confounds of maternal ID status and child attachment was statistically controlled.

Method

Participants and matching

The study sample contained two sub-samples, mothers with ID and their children (ID group) and a matched group of mothers with normal variations in IQ and their children (Comparison group). Recruitment of the ID group was carried out continuously from 2007 to 2011. Professionals working with mothers with ID in the central regions of Sweden were first contacted by the research team. Examples of professionals contacted included staff at habilitation centers and case workers of the Swedish act concerning support and service for persons with certain functional impairments. These professionals informed mothers with ID about the study and requested their consent to be contacted by the research team for possible participation. Consenting mothers were contacted (usually by phone) by the research team, were given additional information about the study, and, if they met the eligibility criteria (see below), were then invited to participate. If the mother was still unsure about what the study was about, she was offered a face-to-face meeting in order to assure that she received adequate information about what research participation would entail. In some of these, the mothers' contact person at the habilitation center was also present.

Three eligibility criteria were employed in the ID group: the mothers (1) had been diagnosed with mild intellectual disability (IQ range typically 55–70 plus adaptive difficulties), (2) they had children aged 5–8 years living at home with the mothers (currently and for at least 50% of the time), and (3) both the mothers and their children spoke Swedish. Diagnosis of autistic disorder in mother or child was used as an exclusion criterion, as autism may be an important additional risk factor for caregiving.

This recruitment procedure yielded a final group of mothers with mild ID (described below) whose living conditions compared well with available demographics for adults diagnosed with ID (whether parents or not) in the relevant county and Swedish population at large (cf. Starke, 2005; Umb-Carlsson & Sonnander, 2005). For example, just as for adults with ID in general, the vast majority of our ID-group mothers were born into families with very low socio-economic status and were on daily activities (rather than employments) themselves, with very low income (often in the form of a disability pension). Also, as in ID populations in general, many of our ID-group mothers lived without a stable partner, had restricted quality social networks, and yet were dwelling in ordinary residential areas in the community. Thus, apart from only containing mothers with mild ID, our ID-group mothers is reasonably demographically representative of diagnosed adults with ID in the Swedish population.

Recruitment of the comparison group was done in 2010–2011, according to a matching procedure. Comparison mothers were given study information via postal mail. Mothers who had not returned a prestamped envelope declining to participate were phoned approximately one week later. Additional information about the study was provided and, if they met the eligibility criteria (below), the mothers were invited to participate.

Regarding the matching procedure, official demographic information (average income, health figures, number of jobseekers, population size, number of immigrants)

was initially collected on the residential areas of the ID group families. For recruitment of the matched comparison group, the areas in and around Uppsala that most closely resembled the area occupied by a given ID group family was selected. Next, from this area, we selected mothers of children born the same year and with the same sex as the matching children of the ID group. To match the housing arrangements of ID-group mothers, comparison mothers were drawn primarily from addresses with rental apartments owned by the municipality. Comparison group mothers were selected from a register of mothers with children born in Uppsala county in the years 2002–2005. Information about maternal income and child age was collected through the national taxboard. In addition, as part of the data collection, the mothers were asked about their income and possible subsidies that may not have been revealed in the declared income figure. To make recruitment of the matched comparison group possible to achieve, we did not employ any additional matching criteria.

As described elsewhere in the literature, children of mothers with ID disproportionately grow up without their fathers in the household (e.g., Feldman, Legér, & Walton-Allen, 1997); consequently, maternal (rather than household) income was deemed the more appropriate matching variable. This was confirmed in the present study, with a higher percentage (69%) of children with mothers with ID compared to children in the comparison group (19%) growing up in father absent homes, $p < .001$.

Six eligibility criteria were employed in the comparison group: (1) these mother–child dyads lived in comparable (below) residential areas as the matching members of the ID group, (2) these mothers had comparable income to the matching mothers in the ID group, (3) these children lived at home with the mothers at least 50% of the time, and (4) had comparable (within \pm six months) age and (5) the same sex as the matching children in the ID group. Finally, (6) the mothers and children spoke Swedish.

A total of 26 mother–child dyads were included in both groups. However, three ID dyads and one comparison group dyad partook only in the first of two assessments (see below), resulting in missing data on child attachment in these four dyads. The data analyses to be reported were based on the 23 and 25 mother–child dyads in the ID and comparison groups, respectively, with complete data ($N = 48$). The ID group contained 13 (58%) boys and the comparison group contained 14 (56%) boys.

Procedures

To facilitate comprehensibility for all study participants, instructions were provided in very simple and concrete language throughout the study procedures. Apart from having members in the research team with extensive experience working with ID populations, a representative of the main Swedish organization for individuals with ID provided feedback on instructions. In addition, throughout the study we repeatedly ascertained that study participants had fully understood our instructions, and we repeatedly asked for informed consent.

The data collection took place during two days, closely adjacent in time, each occasion lasting two to three hours. On the first occasion, the mothers were individually visited at home by two members of the research team. If required for practical reasons or due to the mother not consenting to home visit, they were seen in the laboratory or at a place of the mother's choice, such as the mother's habilitation center. The main task on the first day consisted of a thorough interview, in which background information was collected and the mothers were asked about experiences of abuse, trauma, and maltreatment (see further about the iATM below). In this latter interview, we were especially

careful in attending to signals of participant discomfort. One of the research team members was the main interviewer, while the other member functioned as an assessor who took notes in the event that the sound recording would fail. On the second occasion, mother-child dyads visited our laboratory for a series of joint and individual tasks. Following the mother's departure to an adjacent room, where she was individually given a block design measure of intelligence (see further about WAIS below), the child was also individually given an intelligence screen test, followed by a semi-structured attachment interview (see further about Leiter and the SAT below).

Ethical advice was sought and obtained from the regional ethical research board at Uppsala University. Mothers' written consent was obtained multiple times on both study days. Information about anonymity and the confidential nature of the study was explained to the mothers. We explained that participation was fully voluntary and that as participants they would have the right to withdraw from participation at any point without any consequences. We also explained that the material would be used strictly for scientific purposes. Participating mothers and children were given gift cards worth a total of 500 Swedish kronor (US\$70).

Material and instruments

Child attachment

A semi-structured interview, the Separation Anxiety Test (SAT; Kaplan, 1987) was used to assess child attachment. A small unobtrusive MP3 player was used to record the interviews, which were then transcribed before coding. The separation interview pictures, drawn androgynously, were taken from the Swedish translation (Broberg, Wiberg, & Karlsson, 2000). The faces of separating child and parents were affectively neutral.

In the SAT, the participant is presented with six pictures of parent-child separations of varying severity (e.g., the parents go out in the evening and leave the child at home; the parents go away for two weeks and give the child a gift as they leave; the parents tell the child, who is in bed, goodnight and leave the room in the evening). The examiner describes what happens prior to each separation, and then follows up with questions about what the pictured child feels, why the child feels that way, and what the child will do. In addition, 15 follow-up probes about possible feelings are used in four of the situations.

We used both the categorical coding system and the continuous Emotional security scale. First, the SAT transcript was considered *secure-resourceful (B)* if the child (a) ascribed vulnerable feelings, such as sadness, anger, and distress to the pictured child, and also (b) was able to provide a constructive solution for what the pictured child would do in the majority of situations (e.g., persuading the parents not to leave, social or independent but constructive and detailed play).

Second, the transcript was judged *insecure/avoidant-inactive (A)* if the child gave responses to the "feel questions" implying distress in the pictured child but in the absence of constructive, detailed solutions to the "do questions" (e.g., "I don't know", "Nothing"). Third, the text was considered *insecure/ambivalent-aggressive (C)* if the pictured child displayed aggressive/passive aggressive behaviors against parents, contradictory solutions (e.g., hit parents, seek parental contact) or role-reversing behaviors (e.g., bring parents a gift).

Finally, the text was judged *insecure/disorganized-fearful (D)* if the child or pictured child seemed inexplicably afraid and unable to do anything about it. Indices of fear

included prolonged and repeated silences and whispering, linguistic disorganization (e.g., “yes-no-yes-no-yes-no”), and catastrophic fantasies in which the parents or child died. Disorganized classifications were also made based on a participating child’s out-of-control behavioral disorganization (e.g., hitting and being mean to the examiner). Secondary disorganized classifications (e.g., B/D) were used when clear signs of disorganization were present but at insufficient levels for a primary disorganized classification.

The SAT system, as adapted by Kaplan, has shown adequate developmental validity. SAT classifications have been found related to the same individuals’ strange situation classifications with mother in infancy, to display concurrent relations to observed reunion behavior in the 6th-year-reunion procedure, and to display prospective links to Adult Attachment Interview classifications in early adulthood (Grossmann et al., 2002; Jacobsen & Hofmann, 1997; Main & Cassidy, 1988; Main et al., 1985, 2005).

Besides using the SAT classifications, analyses were conducted with the continuous (1–9) emotional *Security* scale, where low scores denote marked insecurity and high scores denote marked security. Continuous security scores were used to retain all available variance, some of which is lost when relying only on the classifications. For the same reason, we constructed continuous *Disorganization scores*, where 0 = no D classification, 1 = secondary D classification, and 2 = primary D classification.

Interviews were coded by the first author, who was blind to all other data except participant sex. This main coder was personally trained by and achieved full reliability (>80%) with Dr. Nancy Kaplan across all four categories on more than 30 transcripts. For reliability purposes, 20 interviews were also coded by the second author, who had been trained by the first author with Dr. Kaplan’s permission, and achieved full reliability across 30 transcripts. Inter-observer agreement across the four main categories in the present sample was 85%, $K = .77$; intraclass correlations (based on single measures) on the continuous security and disorganization scores = .83 and .84. Disagreements were resolved through discussion.

History of maternal abuse, trauma, and maltreatment

Prevalence and frequency of abuse, trauma, and maltreatment in the mothers’ biographies were assessed with a semi-structured interview devised for this study: the interview for Abuse, Trauma, and Maltreatment (iATM; Granqvist, Forslund, Fransson, Springer, & Lindberg, 2006). This interview contains 30 specific, open-ended questions, inspired by three other widely used instruments: the Adult Attachment Interview [AAI], Main, Goldwyn, and Hesse, 2003; the Early Trauma Interview, Bremner, Vermetten, and Mazure, 2000; and the Colorado Adolescent Rearing Inventory, Crowley, Mikulich, Ehlers, Hall, and Whitmore, 2003. The main questions are grouped into three sections. The first section (12 questions) concerns experiences of neglect, gross mismanagement, emotional abuse, traumatic loss/separation, witnessing serious violence, and general traumas (e.g., “Did your parents/caregivers ever withdraw from you at length because they were, for example, too tired, depressed, drunk, or under the influence of drugs to manage?”). The second and third sections contain questions about physical abuse (10 questions; e.g., “Has it ever happened that you have been beaten so hard or so many times that it was lastingly painful or left marks on your body afterwards, whether you were beaten with hands or objects?”) and sexual abuse (six questions; e.g., “Has it ever happened that you have been forced to have sex with someone?”), respectively. Although we strived to obtain a comprehensive list of ATM events, no such list would be exhaustive. Therefore, the final questions captured other overwhelmingly frightening

experiences encountered and whether the interviewee regarded any of the events discussed as examples of abuse.

An affirmative response to any one of the main questions was followed by standardized probes to get a more detailed description of the event and the interviewee's feelings at the time, about the perpetrator(s), how frequently it happened, the age of the interviewee at the time of occurrence(s), and (in the case of sexual abuse) whether physical force or violence was involved (e.g., "Can you describe what happened in a bit more detail?", "Where did it happen?", "When did it happen/how old were you at the time?"). In order not to over-identify ATM, the interviews were coded according to conservative criteria so that if erring on any side, we would err on the cautious side of not assuming presence of ATM (cf. Main, Goldwyn, & Hesse's, 2003, criteria within the AAI coding system).

The interviews were first coded for prevalence and frequency of emotional abuse, physical abuse, sexual abuse, neglect, traumatic loss/separation, and witnessing serious violence (see Appendix 1 for a description of these categories). Frequency assignments were made using mutually exclusive categorization for any given behavior. For example, even if acts of sexual abuse had been performed using physical force, such an event was only coded as sexual (not physical) abuse. Also, any additional within-category frequency assignment required a new, temporally distinct situation. For example, a severe beating, consisting of two caregivers repeatedly hitting the child hard in the same situation, would only receive a frequency count of 1. Two acts within the same category of abuse but in distinct situations would receive a score of 2, even if performed by the same perpetrator (i.e., the father cut the child with a knife at 6 years of age and burned the child with a lighter at 8 years of age). Prevalence was coded as 1 when any frequency assignment of at least 1 had been made; otherwise prevalence was coded as 0.

Next, six summary variables were constructed for use in subsequent analyses. First, two summary variables were constructed for frequency and prevalence, respectively, of *abuse/trauma/maltreatment (ATM) by attachment figures*, containing events that were conducted by or occurred within a relationship with the interviewee's attachment figures (i.e., a caregiver). These variables were based on all the aforementioned sub-categories. Similarly, two summary variables were constructed for frequency and prevalence of *ATM by others* (e.g., other authority figures, partners, siblings, classmates). These variables were based on the abuse categories and witnessing serious violence. The distinction between ATM by attachment figures and others is theoretically motivated by our attachment outcome variables. Finally, to obtain overall ATM variables, two summary variables were created for frequency and prevalence of *Total ATM*, representing the sum of ATM by attachment figures and others. The total ATM variables were used to economically capture accumulated ATM (cf. accumulated risk; Cyr et al., 2010).

The interviews were transcribed and coded by the second author, using fictional participant numbers. For reliability purposes, 20 interviews were coded by the first author, who was blind to all other data. Interobserver agreement for prevalence of total ATM, ATM by attachment figures, and ATM by others, ranged from 85% to 95%, range of $K = .69 - .88$. Intraclass correlations (based on single measures) for the corresponding number of ATM events ranged from .87 to .92. Disagreements were resolved through discussion.

Intelligence

Maternal and child intelligence were assessed as potential covariates. *Maternal intelligence* was tested by means of the "block design" subtest from Wechsler Adult Intelligence

Scales (WAIS-III; Wechsler, 2003). In this task, participants put together blocks to depict patterns displayed by the test-leader in a stimulus book as fast and accurately as possible. The task measures visuo-spatial/perceptual intelligence, in contrast to verbal intelligence. The task has high reliability and convergent validity (e.g., high inter-correlation with full IQ scores on WAIS-III; Wechsler, 2003).

Child intelligence was assessed using the “IQ-screen” from Leiter-R, Swedish version (Roid & Miller, 1997). Leiter-R is a nonverbal instrument that is particularly useful for children with developmental delays. The IQ-screen consists of four subtests from the visual-logic battery (i.e., the “figure-ground”, “form completion”, “sequential order”, and “repeated patterns” tasks). The IQ screen has good reliability and convergent validity (e.g., high inter-correlation with full IQ scores on WISC-III; Roid & Miller, 1997).

Results

Matching and preliminary analyses

Background variables for the two study groups are displayed in Table 1. As can be seen in the table, the groups did not differ significantly on the matching variables of maternal income and child age. In addition, number of children in the household and maternal age were comparable. In contrast, and validating the ID vs. comparison group distinction, mothers with ID were substantially lower in intelligence than mothers in the comparison group ($d = -3.10$). Similarly, and not surprisingly given the heritability of intelligence, children in the maternal ID group also had lower intelligence than children in the comparison group ($d = -.76$).

We conducted a number of preliminary analyses to address whether child sex along with potential confounds of group status (maternal/child intelligence and father absence) were related to child attachment within each study group. To maximize statistical power while also keeping the number of analyses within reasonable limits, we utilized the continuous attachment security and disorganization scores, rather than the attachment categories, in these analyses.

First, differences between boys and girls were tested. In line with other findings from comparable age groups (e.g., Del Giudice, 2008), boys were scored as significantly higher on disorganization than girls, though specifically in the comparison group ($p < .05$). No other sex differences were observed; thus, sex was unrelated to attachment in the ID

Table 1. Sample background description and tests of differences.

	ID group		Comparison group		<i>t</i>
	<i>M</i> (<i>SD</i>)	Range	<i>M</i> (<i>SD</i>)	Range	
Maternal income ^a	11.66 (5.36)	1–24	14.56 (9.26)	2–47	1.38
Child age (months)	78.97 (14.77)	60–103	78.73 (14.92)	61–106	.06
Number of children ^b	2.19 (1.13)	1–5	2.27 (0.67)	1–3	.30
Maternal age (years)	34.15 (5.94)	25–44	34.08 (5.41)	21–47	.05
Maternal intelligence	22.57 (8.97)	8–41	50.20 (8.85)	30–63	10.77**
Child intelligence	97.35 (13.97)	74–127	107.88 (13.85)	87–135	2.96*

Note: * $p < .01$; ** $p < .0001$.

^a Declared monthly income plus reported subsidies in Swedish kronor (SEK), thousands.

^b Defined as number of children in the household.

group. Consequently, child sex was included as covariate in subsequent supplemental analyses on disorganization in the comparison group.

Second, and not surprisingly given the heritability of intelligence, child intelligence was significantly related to maternal intelligence in the total sample ($r = .32, p < .05$), though not within either study group. Further, maternal intelligence was unrelated to child attachment variables in both sub-samples (all $r_s < \pm .22, n.s.$). Similarly, child intelligence was unrelated to security in both sub-samples ($r_s < .26, n.s.$). However, child intelligence was related to disorganization in the comparison group ($r = -.41, p < .05$), although not in the ID group ($r = -.05, n.s.$). Consequently, child intelligence was included as a covariate in supplemental analyses of disorganization in the comparison group.

Finally, within the ID group, children from father absent homes were significantly lower in security ($p < .05$) but were not higher on disorganization ($n.s.$) than children from father present homes. No significant differences were observed within the comparison group. Consequently, father absence was included as a covariate in supplemental analyses of security in the ID group.

Mothers' Intellectual Disability (ID) and their children's attachment representations

The distribution of the children's attachment representations, using categorical data, in the two study groups is shown in Table 2. Roughly a third of children of mothers with ID had a secure attachment representation, and roughly a third had an avoidant classification. The final third was evenly divided between resistant and disorganized classifications. Thus, roughly one sixth of these children had a primary disorganized classification.

Table 2 reveals that while the ID group children appear somewhat less secure and more resistant than the comparison group, the cross-tabulation was not significant, $\chi^2(3) = 3.12, p = .37, Cramer's V = .25$. In addition, we tested group mean differences on the continuous security and disorganization scores, by means of t tests. Results from these analyses are depicted in Table 3.

Table 2. Attachment distribution among children with Intellectually Disabled (ID) mothers and mothers from the matched comparison (Comp) group.

	Secure	Avoidant	Resistant	Disorganized	Total
ID group	8 (35%)	7 (30%)	4 (17%)	4 (17%)	23 (100%)
Comp group	13 (52%)	8 (32%)	1 (4%)	3 (12%)	25 (100%)

Note: $\chi^2(3) = 3.12, p = .37$.

Table 3. Differences on continuous child attachment variables between children in the Maternal Intellectual Disability (ID; $n = 23$) and comparison (Comp; $n = 25$) groups plus results from t tests and effect sizes (d s) of differences in means.

	ID group		Comp group		t	d
	M	SD	M	SD		
Child attachment security	4.60	1.85	5.55	1.71	1.86+	-.53
Disorganization	.48	.79	.28	.68	<1	.27

Note: + $p < .10$; two-tailed.

Table 3 shows that children of mothers with ID had marginally lower scores on security, at a medium effect size level (Cohen, 1988). Notably however, children in both groups had a normative (4–6) mean score in security, with substantial variation around means (i.e., range from 1–9 in the ID group, 2–9 in the comparison group; see Table 3 for SDs). Disorganization means did not differ between groups.

Maternal Intellectual Disability (ID) and history of abuse/trauma/maltreatment

To explore the prevalence of abuse, maltreatment, and trauma (ATM) in ID-group mothers' biographies, the percentages of mothers with ID who had experienced ATM according to the different coding sub-categories were calculated. A slight majority of mothers with ID had experienced physical abuse (60%) and/or sexual abuse (58%) and a large minority had experienced emotional abuse (38%) and/or neglect (35%). Further, a minority of mothers with ID had experienced traumatic loss/separation (17%) and/or witnessed serious violence (15%). In sum, the prevalence of ATM among mothers with ID was very high. In fact, as can be seen in Table 4, more than 90% of mothers with ID had experienced some ATM; 74% had experienced at least two types of ATM.

Of mothers in the comparison group, proportions for specific types of ATM ranged from 4% for traumatic loss/separation and 8% for witnessing serious violence, via 12% for sexual abuse and 19% for both emotional abuse and/or neglect, to 28% for physical abuse. In sum, and as can be seen in Table 4, roughly a third of comparison mothers had experienced some ATM; 20% had experienced at least two types of ATM.

To keep the number of statistical analyses within reasonable limits, we did not test whether the prevalence (i.e., proportions) of ATM sub-categories differed between groups. However, we did test differential prevalence between groups on the three summary variables (ATM by attachment figures, ATM by others, and total ATM) by means of three (two-by-two) chi square analyses (Table 4, third column). The proportions were significantly different in all comparisons, with a particularly large difference on total ATM.

Next, we compared the mean number of ATM events between study groups (Table 4, columns on the right), by means of *t* tests. Mothers with ID had encountered a

Table 4. Prevalence and means on maternal abuse/maltreatment/trauma for mothers in the Maternal Intellectual Disability (ID; *n* = 23) and comparison (Comp; *n* = 25) groups, and results from significance tests of differences in proportions and means plus effect sizes.

	ID group	Comp group			ID group	Comp group		
	<i>f</i> (%)	<i>f</i> (%)	χ^2 ^a	<i>Cont.</i> <i>r</i> ^b	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>t</i>	<i>d</i>
ATM – attachment figures	17 (73)	8 (31)	8.43**	.55	1.31 (1.22)	.58 (1.06)	2.30*	.63
ATM – others	18 (76)	8 (31)	10.33**	.60	1.58 (1.36)	.46 (.95)	3.43***	.98
Total ATM ^c	21 (91)	8 (31)	17.62***	.73	2.88 (1.95)	1.04 (1.77)	3.57***	1.00

Note: **p* < .05; ***p* < .01; ****p* < .001; two-tailed.

^a Fisher exact = .000, .005, and .002 for Total ATM, ATM by attachment figures, and by others; ^b Contingency coefficient;

^c Abuse, Trauma, and Maltreatment.

significantly higher number of ATM events both by attachment figure(s) and others. The effect size for ATM by attachment figures was medium, the other two effect sizes were large.

Maternal history of abuse/trauma/maltreatment and children's attachment representations

Pearson correlations were computed to examine relations between history of maternal ATM and continuous child security and disorganization scores, separately in the two study groups. As the vast majority of mothers with ID had encountered some ATM, and in order to obtain sufficient variance, we used number of ATM events in these analyses rather than prevalence. Results are shown in Table 5.

Table 5 shows that for the maternal ID group, child security was inversely related to maternal history of ATM by attachment figures (marginally) and to total ATM. In contrast, child disorganization scores were positively linked to maternal history of ATM by attachment figures, to ATM by others (marginally), and to total ATM.

Results within the comparison group were consistently non-significant and descriptively weaker. In fact, four correlations (out of six) were marginally or significantly stronger in the maternal ID than in the comparison group (see Table 5), despite notably limited statistical power for these tests.

Supplementary analyses

We performed two sets of supplemental one-way ANCOVAs and partial correlations to test whether the significant and marginally significant findings on child security and disorganization from the primary tests of research questions remained intact when we included relevant covariates (i.e., child sex, child intelligence, father absence) from the preliminary analyses. To simplify analyses and maximize statistical power, these analyses were performed only on the continuous attachment variables. First, the marginally significant difference between the ID and comparison groups on child security dropped to non-significance following inclusion of the relevant covariates (i.e., child sex, father absence), $F(1, 44) = .12, n.s., \eta^2 = .003$.

Second, within the ID group, the links between maternal ATM and child security remained marginally significant for ATM by the mothers' attachment figures, *partial*

Table 5. Pearson product moment correlations between maternal abuse/trauma/maltreatment and child continuous attachment security and disorganization in the Maternal Intellectual Disability Group (ID; $n = 23$) and comparison group (Comp; $n = 25$) plus differences in correlations across the two study groups according to Fisher Z tests.

Maternal abuse/ trauma/maltreatment (ATM)	ID group		Comp group	
	Security	Disorganization	Security	Disorganization
ATM – attachment figures	-.38 + (a)	.53**a	.14(b)	-.13b
ATM – others	-.30	.39+	.04	-.02
Total ATM	-.45*(a)	.62**a	.08(b)	-.05b

Note: Corresponding correlations with different subscripts across study groups differ significantly according to Fisher Z tests (marginally significant differences are placed in parentheses).
+ $p < .10$; * $p < .05$; ** $p < .01$; two-tailed.

$r = -.37$, $p < .10$, and significant for total ATM, *partial* $r = -.42$, $p = .05$, when the relevant covariate (i.e., father absence) was partialled out. Notably, as child disorganization was unrelated to all confounds considered, the bivariate links between child disorganization and maternal ATM (reported in Table 5) may be interpreted as unique contributions from maternal ATM to child disorganization specifically within the ID group.

Discussion

Based on their recent review of attachment studies in intellectual disability (ID) populations, Schuengel et al. (2013, p. 34) concluded that: "If attachment behavior is problematic, the problem is in the attunement between individual and context, not only the individual". As demonstrated in this study, the importance of context extends to the children cared for by mothers with ID. The ID-group mothers had experienced highly elevated levels of abuse, trauma, and maltreatment (ATM). Moreover, among mothers with ID, ATM was a unique risk factor for child insecurity and disorganization, over and above the effects of the potential confounds considered (i.e., maternal/child intelligence, child sex, father absence).

An important set of "positive" findings in this study was that a large majority (>80%) of children with mothers with ID had a primary organized attachment representation, a substantial minority (35%) had a secure (including prototypically secure, "B3") representation, and their mean on the continuous security variable was in the normative range, though with substantial variation. These findings resonate with the literature on attachment among individuals with ID (Schuengel et al., 2013). Also, these findings lead us to question any automaticity that could be assumed for maternal ID as a risk factor per se for children's attachment (cf. Booth et al., 2005; Gillberg & Geijer-Karlsson, 1983). Conceivably, the emotional underpinnings of the most consistent predictor of child security, namely sensitive caregiving, are likely to have been strongly phylogenetically channeled and are unlikely to require normal levels of intelligence. Thus, normal parental intelligence is unlikely to be a *necessary* condition for child security.

Regarding developmental contexts, the results from this study converge with many studies showing a large overrepresentation of ATM in the life histories of individuals with ID. In the introduction, we noted the risk for inflated estimates of abuse and maltreatment in this population. For that reason, we employed detailed semi-structured interviews, which were coded by independent interview coders, using relatively conservative ATM criteria (cf. Main et al., 2003). Nevertheless, an overwhelming majority of mothers with ID had been subjected to ATM, and most to two or more sub-types. Moreover, ATM was likely to have been conducted both by attachment figures during childhood and by others later in life.

Our within-group analyses and tests of differences in correlations across study groups suggested that maternal history of ATM is a notable risk factor for child disorganization and insecurity especially for mothers with ID. We speculate that mothers with ID may have less resources (internally and/or externally, e.g., absent marital support) than mothers with normal intelligence to withstand and/or repair the debilitating effects of ATM, and especially ATM by attachment figures. Although ID-group mothers' experiences of ATM by others later in life were also trend-significantly related to child disorganization, ATM by these mothers' attachment figures early in life appeared to assert the descriptively most deleterious influence on child disorganization and insecurity. However, considering the high levels of ATM that were typically encountered by the ID-group mothers, the

resilience implied in the moderate to high prevalence of secure and organized attachment among their children is also noteworthy.

This study had both methodological strengths and limitations, with implications for future research. Regarding limitations, we have framed this as a small-group study in view of its relatively low number of participants. Thus, our results and conclusions should be interpreted cautiously, and might best be viewed as hypotheses generating. Also, the low sample size limited statistical power. Although many key findings were statistically fully significant, several small- and medium-sized effects failed to reach full significance.

Relatedly, the generalizability of our findings might be questioned. As our ID-group mothers had custody of their children, their representativeness for the population of mothers with ID might also be questioned in view of the finding that a substantial proportion of mothers with ID lose custody of their children (e.g., Llewellyn et al., 2003; Morch et al., 1997), implying that our ID-group mothers might be better than average in functioning. The spectrum of “mild” intellectual disability is large both with regard to the mental retardation as such and its associated functional impairment. On the other hand, as is typically the case in ID research, all mothers with ID studied had been diagnosed with ID and were enrolled with habilitation services, thus representing a “clinical” population with a potentially higher problem load than that of undiagnosed mothers with ID from the general population. In addition, their very high ATM prevalence, which compares with previous samples of high-risk ID-group mothers (McGaw et al., 2010; Seagull & Scheurer, 1986), suggests that our ID-group mothers were not a selected low-risk group. Whether they were for some reason nevertheless better than average in functioning and whether their children were therefore disproportionately secure and organized cannot be determined here. There is clearly a need for future research on this population to shed light on the representativeness of our findings.

To address representativeness, future studies with larger samples, including mothers with ID from the general population, should be conducted. To specifically counteract the possibility that forced child custody placement leads to unrepresentative samples at higher child ages, such studies might profitably be conducted on infants or toddlers (e.g., using the strange situation; Ainsworth et al., 1978). An additional advantage with such a set-up is that, unlike in the SAT, attachment would be relationship-specific. However, a caveat against behavioral attachment methods in disability samples is that disorganized attachment rates could be inflated, as disorganization is identified partly by behaviors (e.g., stereotypical and anomalous movements) that may be more common in ID samples due to neurological disturbance rather than a disorganization-producing interaction history (Main, personal communication, 2006; cf. Main et al., 2011; Schuengel et al., 2013).

Another limitation is the cross-sectional design utilized, which limits our ability to draw conclusions about process direction. Although it is nonsensical to suggest that child attachment causes maternal ID status, let alone maternal ATM, prospective studies could be informative regarding the roles of maternal attachment representations as well as maternal sensitivity and other aspects of caregiving in relation to child attachment. For example, do maternal disorganization/unresolved trauma and atypical caregiving predict disorganized attachment also among children of ID parents? The strong maternal ATM to child disorganization links observed in this study suggest that the former might be the case, but determining whether the mothers were in fact disorganized/unresolved with respect to abuse or loss would have required inclusion of the AAI. Notably also, accumulation of several environmental risk parameters appears to suffice in predisposing for child disorganization (Cyr et al., 2010). In addition, do maternal security and sensitivity predict child security? And is secure attachment a protective and disorganized

attachment a risk factor in the children's development? Affirmative answers to these questions would conform to research undertaken in other populations (e.g., de Wolff & van IJzendoorn, 1997; Fearon et al., 2010; Groh et al., 2012; van IJzendoorn et al., 1999).

Moreover, although a list of potential confounds of maternal ID status and child attachment were addressed (i.e., maternal/child intelligence, child sex, father absence), this list was by no means exhaustive, implying that other alternative explanations to our study findings cannot be ruled out. Also, after including potential confounds (especially father absence), some of our key findings in the total sample dropped to non-significance. Notably, however, this was typically not a major concern in the ID group. Nevertheless, we encourage future researchers to study the influence of additional potential confounds.

In addition, as the iATM was devised for this study, most of its psychometric properties are unknown. Thus, pertinent results should be interpreted cautiously. However, the reliability observed in this study was encouraging. Also, rather than using an established method, which would be far from ideal for an ID population, the iATM was devised to overcome the limitations of prior methods. As noted, our results also converged with other studies of ID populations. In sum, iATM is a promising tool, especially for ID populations.

Finally, regarding contextual considerations, we have emphasized maternal history of ATM as a risk factor in relation to children's attachment in the context of maternal ID status. Future studies should examine the influence of possible protective factors, such as surrogate attachments (e.g., with relatives and older siblings), social and marital support, and habilitation services. Given that most ID-group mothers were not currently living with the child's father, it is reasonable to assume that they typically experienced low levels of marital support. However, there is likely meaningful general variation in support networks within maternal ID samples, which warrants future investigation in relation to child attachment.

Notwithstanding these limitations, we reiterate that this preliminary study is the first systematic study in the worldwide literature on attachment in a population of children with ID parents. Further, unlike most other studies on parental ID and child outcomes, our study design was comparatively strong in that it included a matched comparison group and also ruled out the statistical effects associated with a number of potential confounds.

Although positive results for ID populations were obtained, this should not be used as a blindfold against other potential problems among parents with ID and their children. Adequate parenting, especially after the first years in a child's life, requires that one gets the many tasks associated with caring for a child – responsiveness and sensitivity, discipline, monitoring, planning, providing socially and intellectually adequate stimulation – to work in conjunction with other tasks, such as household work and chores. The integration of these tasks is a challenge for many parents, and most likely more so for ID parents, including those with more than mild ID (cf. Dowdney & Skuse, 1993). Thus, parenting and other aspects of child development besides attachment should continue to be investigated among ID parent-child dyads, and appropriate action should be taken when they are found wanting.

If these study findings prove replicable, they may have important implications for custody assessments and for prevention/intervention strategies. Regarding the former, our findings showing that most children of mothers with ID develop organized attachment representations, and that a substantial minority develop secure attachment, illustrate the importance that assessments continue to be made on a case by case basis, and in the absence of essentializing conceptions of parental ID *per se* as a serious risk factor in relation to child attachment. Rather, our findings point to the importance of the accumulation of risk factors (i.e., parental ID status + history of ATM; cf. Cyr et al., 2010). Regarding prevention, it is important for professionals working with children with ID to

help secure their childhoods by attending to their markedly increased risk for falling prey to ATM. This is not only important in itself but also to counteract the risk for elevated levels of disorganization and insecurity in their future children. Relatedly, regarding intervention, a history of ATM should be investigated by professionals working with parents with ID, and adequate therapeutic care should be offered to help these parents come to terms with their adverse life histories. A society bolstering professionals to offer this combination of strategies would be more humane than one which categorically discourages individuals with ID from becoming parents.

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Appendix 1. Categories of the interview for abuse, trauma, and maltreatment (Granqvist et al., 2006)

Emotional abuse was defined as repeated demeaning statements, psychological assaults, seriously controlling behaviors, threats to kill the interviewee, and threats to commit suicide, especially in relationships in which the interviewee was in a dependent position (e.g., with parent or spouse). Behaviors and statements indicating an intention to do psychological harm were central for inclusion. “Ordinary” forms of bullying at school or elsewhere, such as verbal harassment, were discounted, as were occasional instances of a parent saying inappropriate things to the interviewee. For verbal utterances to qualify, repeated, consciously hurtful, and seriously demeaning utterances were required.

Physical abuse was defined as potentially traumatizing acts of physical violence that were sufficiently severe to cause lingering marks and/or pain or to cause overwhelming fear of the physical situation (cf. Main et al., 2003). A parent’s temper tantrums, throwing dishes around, a sibling fight, and a parent’s physical punishment (such as spankings, a slap in the face, pulling of the hair) did not qualify for inclusion. A hard punch in the face, a severe beating, being cut with a knife did, of course, qualify. This conservative usage conforms with internationally validated abuse instruments (e.g., the AAI system).

Sexual abuse was defined as any sexual act performed by an adult against the interviewee at a minor age and any forced sexual act performed by agemates. Sexual acts by agemates were discounted unless lack of consent had been clearly expressed or the interviewee was in a dead faint (e.g., due to drug or alcohol intoxication). However, a parent or other authority figure seducing the child to engage in sexual acts or an agemate using threats of physical violence to get sex did qualify for inclusion.

Neglect was defined as marked absence of attention, responsiveness, and care by the adults who had the caregiving responsibilities for the interviewee as a child. Examples include prolonged inattention to the child’s physical or psychological needs (e.g., no interaction, absence of emotional contact, child has to take care of herself entirely), for instance due to parents sleeping all day because of drug abuse, parents not taking child to medical services though child needs acute medical attention, and parents going out for the evening, leaving child at home alone at too young an age. However, neglect was considered inapplicable if one caregiver still attended to the child’s needs.

Traumatic loss and separation was defined as the loss of a caregiver through death or repeated and prolonged separations from caregivers (e.g., a parent missing in war), before age 18. This category was not applied when parents had lost custody due to neglect, in which case neglect was the category utilized.

Witnessing serious violence was defined as directly witnessing (i.e., typically being personally present at the scene and seeing) serious acts of violence being executed (e.g., from father figure to mother). To qualify, serious bodily harm (e.g., heavy bleeding, puncture of organs) was required, typically with a potentially lethal outcome.