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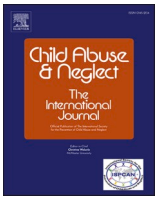

History of abuse and adolescent hostile-helpless attachment: The mediating role of mother-adolescent punitive interactions☆

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ABSTRACT

Background: Hostile-Helpless (HH) state of mind is a form of disorganised attachment that is strongly associated with prior experiences of abuse. However, how abuse experiences contribute toward HH states of mind in late adolescence is unknown. Punitive control in adolescent-mother dyads has been implicated in the development of HH states of mind and adolescent sex/gender may influence how punitive interactions contribute to HH mind states.
Objective: The present study aimed to explore how adolescent sex/gender and punitive control within adolescent-mother dyads are related to the links between HH states of mind and childhood abuse.
Participants and setting: A sample of 109 low-moderate income late adolescents (aged 18–23 years, 65 females, 44 males) and their mothers were assessed in a conflict-resolution paradigm.
Methods: Recordings of the interactions were coded using the Goal-Corrected Partnership in Adolescence Coding System for different aspects of attachment-based interactions including punitive control. Late-adolescent HH states of mind features were coded from Adult Attachment Interviews (AAI) and experiences of abuse were coded from adolescent self-reports and the AAI.
Results: Moderated mediation analysis revealed a significant indirect pathway from abuse to HH states of mind through punitive control in late adolescent females ($B = 0.06$, $SE_{Boot} = 0.04$, 95 % CI_{Boot} 0.01, 0.15), but not males ($B = -0.02$, $SE_{Boot} = 0.02$, 95 % CI_{Boot} − 0.07, 0.02).
Conclusions: The results indicate that there are sex/gender-specific pathways to developing HH states of mind. Hostile behavior within mother-daughter dyads therefore may play an important role in linking abuse experiences and contradictory attachment representations in late adolescent females.

1. Introduction

Hostile-Helpless (HH) state of mind is a form of disorganised attachment characterised by pervasive unintegrated views of attachment figures (Lyons-Ruth, Yellin, Melnick, & Atwood, 2003; Lyons-Ruth, Yellin, Melnick, & Atwood, 2005) and has been robustly linked to the severity of childhood abuse (Barone & Carone, 2020; Byun, Brumariu, & Lyons-Ruth, 2016; Finger, Byun,

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Melnick, & Lyons-Ruth, 2015). Expression of HH in late adolescence is associated with anxiety disorders, symptoms of borderline personality disorder (BPD) and antisocial personality disorder (ASPD) (Brumariu, Obsuth, & Lyons-Ruth, 2013; Finger et al., 2015) and the intergenerational transmission of disorganised attachment (Barone & Carone, 2020; Milot et al., 2014). Punitive control within adolescent-parent dyads refers to the use of hostile or devaluing behavior from the adolescent and/or parent to elicit control over the other, and it has been implicated in the development of HH states of mind (Khoury et al., 2020; Lyons-Ruth, Brumariu, Bureau, Hennighausen, & Holmes, 2015; Obsuth, Hennighausen, Brumariu, & Lyons-Ruth, 2014). Whilst sex/gender is relatively understudied within the attachment literature, sex/gender socialisation (Eagly, 2009) and the differential patterns of relational aggression among girls and boys (Perry, Leerkes, Dunbar, & Cavanaugh, 2017; Weymouth, Buehler, Zhou, & Henson, 2016) may offer some insights into how punitive control is perceived in adolescent-mother dyads. Consequently, adolescent sex/gender may help explain the way in which punitive control contributes toward contradictory attachment representations. The aim of the current study was to test whether punitive interactions represent a mechanism through which childhood abuse is linked to HH states of mind, and whether this is the case for females and males. The identification of factors that contribute toward HH would elucidate developmental pathways that lead to contradictory attachment representations and may help establish early interventions that prevent the development of HH states of mind, and the serious negative intergenerational outcomes associated with the pervasive unintegration of attachment representations.

1.1. Hostile-Helpless States of Mind

Attachment theory provides a developmental framework to understand how early interactions with a caregiver have enduring consequences across the lifespan (Bowlby, 1969–1982). Disorganised attachment in late adolescence and early adulthood is characterised by impaired socio-cognitive functioning and identity development, as well as disturbances in the ability to detect and appropriately respond to threat (Beeney et al., 2017). The unresolved states of mind category in the adult attachment interview (AAI) are regularly used to classify disorganised attachment (Main & Goldwyn, 1998). However, researchers have questioned whether the unresolved state of mind coding system can accurately capture disorganised attachment representations in high-risk populations because it requires the explicit discussions of loss or abuse experiences (Lyons-Ruth et al., 2005a). Thus, if no specific event of abuse or death is identified by the participant, they cannot be classified as expressing unresolved states of mind. Consequently, disorganised attachment classifications may be underrepresented in high-risk samples due to the omission of prior loss or abuse during the AAI. Indeed, unresolved states of mind were lower than expected in a sample of mothers who had been abused and among adolescents who had been classified disorganised in infancy (Lyons-Ruth et al., 2003; Weinfield, Whaley, & Egeland, 2004). Given the limitations of the traditional AAI criteria, Lyons-Ruth et al. (1995, 2005a) developed and validated the coding system HH states of mind for the AAI. Unlike unresolved states of mind, coding of HH occurs throughout the entire interview and thus is not contingent on the participant describing specific experiences of abuse or loss. As such, HH may better capture contradictory attachment representations in low-socioeconomic households where child abuse and neglect are disproportionally high (Lefebvre, Fallon, Van Wert, & Filippelli, 2017), or adolescent samples where individuals may not disclose experiences of abuse due to feelings of shame, fear of repercussions (Alaggia, Collin-Vézina, & Lateef, 2019) or in an effort to protect their caregivers.

The characterization of HH states of mind has its origins in clinical and theoretical accounts of splitting, a psychopathological phenomenon in which traumatic experiences result in the pervasive mental segregation of attachment representations (Lyons-Ruth et al., 2005a). Subsequently, HH coding criteria assess the extent to which an individual holds contradictory representations of attachment figures, expressing extremely negative and positive views about a primary caregiver, usually accompanied by strong identifications with the caregiver and pervasive devaluations of the self. Notably, these disparities in mental representations of the attachment figure during the interview are not acknowledged or explained by the participant (Lyons-Ruth et al., 2005a). The segregation of disparate emotional evaluations of the caregiver implies that whilst the participant is conscious of the caregiver's behaviors, they are unable to successfully integrate these representations into their working model of attachment relationships. Previous work supports the validity of the HH states of mind coding system (Byun et al., 2016; Finger et al., 2015) and found that HH states of mind explained an additional 12 % variance in disorganised attachment representations that was not captured by the coding of unresolved states of mind (Lyons-Ruth et al., 2005a).

The expression of HH states of mind is associated with maladaptive behavioral and psychopathological outcomes. Mothers who displayed HH states of mind in their interviews were more likely to have infants who displayed disorganised attachment behaviors to them (Lyons-Ruth & Spielman, 2004; Milot et al., 2014) and they were more likely to engage in abusive caregiving with their children (Terry, Finger, Lyons-Ruth, Sadler, & Slade, 2021). In a study of 112 young adults, Byun et al. (2016) found higher levels of HH states of mind were strongly related to higher levels of dissociative symptoms. Additionally, the expression of HH mind states was positively associated with ASPD and BPD symptomology in late adolescents, and the link remained significant independently of comorbid Axis 1 psychopathology (Finger et al., 2015). Further, Lyons-Ruth, Melnick, Patrick, and Hobson (2007) examined the prevalence of contradictory attachment representations in young females diagnosed with BPD and dysthymia and found a significantly higher prevalence of HH states of mind among females with BPD. These studies indicate that HH states of mind may play a role in maladaptive caregiving and personality pathology in late adolescence and early adulthood. Despite the adverse outcomes associated with HH states of mind, relatively little is understood about how HH states of mind arise.

Whilst abuse experiences are not a requisite for HH states of mind on the AAI, studies have found that the overall severity of childhood abuse is robustly related to HH mind states in late adolescence and early adulthood (Byun et al., 2016; Milot et al., 2014). This indicates that childhood abuse may be a risk factor for the development of contradictory representations of attachment figures in later life. Additionally, Finger et al. (2015) demonstrated that childhood abuse predicted BPD and ASPD symptomology indirectly through the expression of HH states of mind in late adolescence. Similarly, in a small sample of mothers who committed filicide,

defined as the murder of a child by their parent, 73 % expressed HH states of mind, and maternal experiences of childhood abuse indirectly predicted infant filicide through HH states of mind (Barone & Carone, 2020). The cycle of intergenerational abuse suggests that expressed HH states of mind is associated with both the experience of maltreatment and the later infliction of abuse (e.g., Sauvé et al., 2022). However, the mechanism by which abuse experiences lead to HH states of mind is currently unknown. Considering the maternal and psychopathological risk factors associated with HH attachment representations, and how personality disorders begin to consolidate in adulthood (Chanen & Thompson, 2019), it is important to explore the development of HH states of mind in late adolescent samples. This may help to identify early markers to target for the prevention of HH states of mind and related psychopathologies.

1.2. Adolescent-parent attachment

The quality of adolescent and parent communication influences the security of adolescent attachment representations and is adversely impacted by abuse (Allen, Grande, Tan, & Loeb, 2017; Weymouth et al., 2016). Bowlby (1969–1982) conceptualised the dyadic adolescent-parent relationship as a goal-corrected partnership (GCP), in which adolescents view the relationships with their parents as a source of security wherein conflicts can be negotiated and resolved. The GCP has origins in childhood and may be particularly challenged during adolescence, as this developmental period is characterised by the adolescent's desire for autonomy and the parent's need for control. Abdication of the parental role or heightened conflict may disturb the GCP. For example, repeated exposure to maternal hostility increased the reluctance of adolescents to rely on their mothers as a secure base to regulate distress (Allen et al., 2017; Booth-LaForce, 2014; Martin, Sturge-Apple, Davies, & Gutierrez, 2019). Maltreated adolescents, referred to as adolescents who experienced harm or potential harm due to an act or omission by a caregiver, tended to exhibit more relational aggression and higher levels of hostility toward their parents compared to non-maltreated adolescents (Lavi et al., 2019). Further, maternal avoidance was indirectly related to adolescent use of the mother as a secure base through maternal hostility, whereby avoidant mothers expressed increased maternal hostility, leading the adolescent to perceive the mother as less available and less responsive (Jones & Cassidy, 2014). However, most studies assessing adolescent-parent interactions have relied on self-reports which may be susceptible to bias (van Berkel et al., 2020) and may not capture the reciprocal nature of adolescent-parent interactions. An observational coding system may provide an objective measure for assessing atypical interactions in the adolescent-parent dyad.

Building on the concept of GCP, the Goal-Corrected Adolescent Partnership Coding System (GPACS) was designed to address the need for an observational measure to assess secure and disorganised patterns of behavior in adolescent-parent dyads[1] (Lyons-Ruth et al., 2005b; Obsuth et al., 2014). Using the current study sample, Obsuth and colleagues (2014) conducted a validation study of the GPACS through assessing dyadic adolescent-parent behavior in a conflict discussion paradigm. Four independent patterns of behavior were confirmed by factor analysis: a secure/collaborative interaction pattern and three disorganised patterns (punitive control, caregiving/role-confused & disorientated). Whilst GPACS attachment behaviors have been associated with secure and insecure attachment classifications on the AAI (Kobak et al., 2017; Obsuth et al., 2014), only punitive control within the adolescent-mother dyad was related to HH states of mind in late adolescence. Punitive control is a dyadic score that reflects the adolescent's attempt to control the parent's behavior through engaging in devaluing, degrading and hostile remarks toward the parent and the parent engaging in parallel behavior toward the adolescent. However, the punitive dyadic pattern more strongly reflects adolescent than maternal behavior (Obsuth et al., 2014). This indicates that adolescent relational aggression specifically may be more strongly related to pervasively contradictory attachment representations.

Adolescent punitive control is thought to be analogous to controlling-punitive behavior observed in preschool (Main & Cassidy, 1988) and middle childhood (Bureau, Ann Easlerbrooks, & Lyons-Ruth, 2009; Khoury et al., 2020), where the child uses hostile and challenging behavior to control a caregiver who abdicates a parental role through engaging in combative and confrontational or, in the other extreme, passive behavior with the child (George & Solomon, 1998; Main & Cassidy, 1988). As controlling-punitive behavior is theorised to be a precursor to HH states of mind (Lyons-Ruth & Spielman, 2004), this indicates that hostile disorganised interactions throughout development may play a role in the expression of HH states of mind, though no studies have explored this link further. Females with BPD reported engaging in controlling-punitive behaviors with their mothers during childhood (Lyons-Ruth et al., 2007) and compared to females without BPD, demonstrated higher levels of punitive control during a conflict discussion task with their mothers (Khoury et al., 2020; Lyons-Ruth et al., 2015). Furthermore, punitive controlling behavior was associated with externalizing symptoms in middle childhood (Lecompte & Moss, 2014), and marginally predicted ASPD features in late adolescence (Shi et al., 2012). Given the established link between HH states of mind, BPD and ASPD (Finger et al., 2015; Lyons-Ruth et al., 2007), punitive behavior may contribute toward HH mind states in borderline and antisocial psychopathology.

Similar to HH states of mind, higher levels of punitive control in adolescent-mother dyads, particularly adolescent punitive behaviors, were related to the severity of childhood abuse in late adolescence (Byun et al., 2016). In contrast, no such relation was found between abuse and punitive controlling behavior in childhood (Khoury et al., 2020). This suggests that whilst punitive behavior in both adolescence and childhood may contribute towar developing HH mind states, only adolescent punitive control may represent an abuse-specific developmental pathway to HH states of mind. This is demonstrated further through studies which found that infant disorganised attachment predicted punitive controlling behavior in childhood (O'Connor, Bureau, Mccartney, & Lyons-Ruth, 2011),

[1] The GPACS has been recently expanded to include scales for interactions consistent with insecure organized attachment patterns, as well as collaborative and disorganized patterns. For information regarding GPACS coding and training contact Prof. Karlen Lyons-Ruth at klruth@hms.harvard.edu or Dr. Ingrid Obsuth at Ingrid.Obsuth@ed.ac.uk.

but not adolescent-mother punitive behavior, nor HH states of mind (Lyons-Ruth et al., 2003; Obsuth et al., 2014). These results indicate that punitive control in adolescent-mother dyads may uniquely lead to HH states of mind from prior experiences of abuse. Despite the theoretical and empirical research linking specifically adolescent-mother punitive behavior and HH states of mind, no studies have explored whether punitive control may mediate the link between experiences of abuse and HH states of mind.

1.3. Adolescent sex/gender

Within the attachment literature, the role of sex/gender in the development of disorganised attachment is relatively understudied. Some previous work in samples with BPD has explored HH states of mind or punitive control in female-only samples (Khoury et al., 2020; Lyons-Ruth et al., 2007), limiting the understanding of punitive behavior and HH attachment representations in males. Further, studies that included both females and males often controlled for sex/gender (Byun et al., 2016; Finger et al., 2015; Lyons-Ruth et al., 2015; Obsuth et al., 2014), and thus did not examine potential sex/gender differences in contradictory HH attachment representations or punitive adolescent-mother interactions.

Whilst there are no established sex/gender differences in the prevalence of punitive control or HH states of mind (Byun et al., 2016; Obsuth et al., 2014), previous work suggests that sex/gender may be associated with different developmental responses to hostility or abuse. A meta-analysis of 52 studies found that hostility within the adolescent-parent dyad was strongly related to youth maladjustment, though the effect size was significantly greater among females compared to males (Weymouth et al., 2016). In an earlier study, adolescent girls who had been physically abused viewed their parent as less caring compared to boys who experienced the same severity of abuse (Sunday et al., 2008), and maternal hostility was more strongly related to internalizing symptoms in insecurely attached girls than boys (Milan, Zona, & Snow, 2012). Further, Perry et al. (2017) found that females felt significantly less loved and greater shame compared to males when their parents exhibited punitive responses toward their negative emotions, and females who perceived their parents as critical reported lower self-esteem and had more negative attributional styles compared to adolescent boys (Gamble & Roberts, 2005). These sex/gender differences may result in a relatively greater effect of punitive control in adolescent-mother dyads on females' ability to form cohesive attachment representations in comparison to males. Moreover, how females perceive their own punitive behavior may contribute toward the development of HH states of mind. Studies have found that females perceive relational aggression as more harmful in comparison to males (Goldstein, 2010). As punitive control can be viewed as a form of relational aggression (Cullerton-Sen et al., 2008; Obsuth et al., 2014), females may view their own punitive control as more harmful than males. Such a belief may act to magnify their identification with a hostile caregiver, which is an integral component of HH states of mind (Lyons-Ruth et al., 2005a).

Further support for the influence of sex/gender on the relation between punitive control and HH states of mind is found in the sex/gender socialisation literature. Disorganised controlling behavior in parent-adolescent dyads is proposed to have more deleterious effects if the controlling behavior is gender incongruent (Brensilver, Negriff, Mennen, & Trickett, 2011). Indeed, parents are more likely to have negative responses to adolescent behavior that violates gender role stereotypes (Endendijk et al., 2016), and adolescents have been shown to exhibit conflicted sense of self when their behavior contradicts their expected gender norm (Drury, Bukowski, Velásquez, & Stella-Lopez, 2013; Street & Dardis, 2018). Hostile behavior may be viewed as sex/gender incongruent for females as it violates stereotypical feminine gender norms, in which girls are expected to show relational prosociality through being caring, supportive and sensitive to the needs of others (e.g., Eagly, 2009). In contrast, traditional masculine gender norms favour the expression of verbal and physical aggression (Malonda-Vidal, Samper-García, Llorca-Mestre, Muñoz-Navarro, & Mestre-Escrivá, 2021). Whilst prototypical gender stereotypes have reduced over time (Hsu, Badura, Newman, & Speach, 2021), girls tend to display attributes in line with femininity, and boys tend to express behaviors congruent with masculinity (Haines, Deaux, & Lofaro, 2016). As such, late adolescent females who engage in punitive control may experience increased negativity in the adolescent-mother dyad related to the misalignment between actual and socially expected behavior. The violation of sex/gender norms through punitive control may contribute toward conflicted mental states regarding the self (Street & Dardis, 2018), which is indicative of HH states of mind (Lyons-Ruth et al., 2005a). In contrast, punitive behavior in males aligns with stereotypical sex/gender norms (Koenig, 2018), and thus may not contribute to the same degree to conflicting mental states nor elicit equally negative responses from the parent. Considering the evidence that adolescent sex/gender may influence how behavior is experienced and perceived, it is important to explore the relations between HH states of mind and punitive control in a sex/gender informed manner.

The present study aimed to explore one potential mechanism by which HH states of mind might develop from prior experiences of childhood abuse in late adolescents. Specifically, we aimed to explore whether punitive control within adolescent-mother dyads was an indirect pathway from severity of abuse to HH states of mind in a sample of late adolescents. In addition, we sought to determine whether the prevalence of the indirect effect of punitive control on HH states of mind was conditioned by adolescent sex/gender. Based upon prior empirical and theoretical work, it was hypothesized that more severe experiences of childhood abuse would predict higher levels of punitive control in the adolescent-mother dyad, which in turn would be linked to higher levels of HH states of mind, and this would be the case particularly for females.

2. Methods

2.1. Participants

Participants in the current study comprised of the adolescent wave of the Family Pathways Study, a multi-wave, multi-method study of the development of infants at social risk, with assessments from the first year of life to late adolescence. The adolescent cohort

included 120 young people ($M_{age} = 19.6$ years, $SD_{age} = 1.65$) and their mothers residing in a Northeastern American city. Seventy-five adolescents identified themselves as female; 44 identified as male. The household income of 59 % of the families was < $40,000 per annum, 12 % of the mothers did not complete high-school, 38 % of the mothers were single parents. Of the 120 families, 56 were followed longitudinally from 18 months of age. An additional 64 families were recruited during late adolescence and were matched to the longitudinally studied families on adolescent age, ethnicity, and the mothers' relationship status. Of the 56 families seen longitudinally, half were referred from community service providers due to concerns over the infants' quality of care. The remaining families from the longitudinal cohort and families first seen during adolescence reported no referrals for parenting help during infancy. This sample composition led to a range of caregiving risk among the recruited families. The two sub-samples differed with respect to family reported income and maternal level of education, both of which were significantly higher in the sample recruited in adolescence.

Only participants with information on all study variables of interest were included in the present study, yielding a participant sample of 109 individuals (65 females, 44 males) of which 68.6 % were Caucasian, 13.6 % were African-American and others reported to be of mixed or other ethnic background. Written consent was sought from both the mothers and the adolescents. All phases of the study were reviewed and approved by the institutional research review board.

2.2. Measures

2.2.1. The Goal Corrected Partnership In Adolescence Coding System (GPACS)

Adolescent-parent interaction was assessed by observing adolescent-mother dyads in a conflict-resolution discussion paradigm. All interactions were videotaped and coded by trained naïve coders using the GPACS manual (Lyons-Ruth et al., 2005a; Obsuth et al., 2014). The GPACS consists of ten five-point scales that rate secure and atypical dimensions of parent-adolescent interaction. Two scales are dyadic, including the collaborative communication scale, which codes balanced, reciprocal communication within the dyad and the warmth scale, which rates the level of affection expressed in the dyad. The other eight scales rate the behavior of the adolescent and the parent separately. Adolescents are rated on four scales: Respectful Spontaneity, Punitive Control, Role Confusion/Caregiving Control, and Odd, Out-Of- Context Behavior. The parent is rated on Validation of the Adolescent's Voice, Punitive Control, Role/Confusion/Abdication of a Parental Role, and Odd, Out-Of- Context Behavior. All ten scales were reliable, $r_i = 0.75$–0.96 ($n = 16$).

In a previous factor analysis of the ten scales of the GPACS (Obsuth et al., 2014), four dyadic factors emerged, with the four factors indexing Collaborative Communication, Punitive Control, Role-Confusion, and Odd, Out-of-Context Behavior in the dyad. Only the punitive factor is relevant to the present study. The Punitive Factor had high loadings on both parental and adolescent punitive control. The adolescent punitive behavior scale measures the extent to which the adolescent attempts to control the parent through behaving in a hostile or devaluing manner, such as mocking the parent or dictating how the parent should behave. Similarly, the parent punitive behavior scale rates the extent to which the parent attempts to control the adolescent through hostile, devaluing, or coercive behavior (Obsuth et al., 2014).

In the current study, a score for dyadic punitive control was used as the most comprehensive index of hostile, controlling behavior within the dyad. The dyadic punitive control score was generated by averaging the punitive control scores that the adolescent and parent in each dyad received, and ranged from one to five. A rating of 1 indicated an absence of punitive control in the adolescent/parent interaction, whereas a high score reflected frequent displays of adolescent/parent hostile or controlling behaviors in the interaction.

2.2.2. Hostile-Helpless (HH) states of mind

Hostile-Helpless (HH) States of Mind were coded based on the Adult Attachment Interview (AAI). The AAI is a semi-structured interview designed to assess a person's current state of mind regarding their attachment experiences with significant caregivers in childhood (George, Kaplan, & Main, 1985). Participants were asked about the quality of their childhood experiences with their caregivers and how they responded to separation, rejection, loss, and trauma during childhood. Interviews were transcribed verbatim, and transcripts were coded by coders naïve to all other data, using detailed criteria for coding HH states of mind (Lyons-Ruth et al., 1995; Lyons-Ruth et al., 2005a). The overall nine-point rating for level of HH state of mind was utilised for the analyses in the present study. However, the scoring criteria indicate that individuals can be classified as exhibiting HH states of mind if they score five or above on the level of HH state of mind rating scale (Lyons-Ruth et al., 1995). Higher scores on level of HH state of mind were given based on the extent to which individuals expressed contradictory evaluations of the primary caregiver over the course of the interview that were not reconciled by the participant, for example, “She was terrible to me…We were really close.” (Finger et al., 2015; Lyons-Ruth et al., 2005a). In addition, before assigning a rating on the overall level of HH rating scale, transcripts were scored for the presence or absence of six specific HH states of mind indicators. These indicators were theoretically driven from the literature on segregated states of mind among trauma victims (i.e. ‘splitting’), as well as empirically through analysis of AAI’s in clinical populations (Lyons-Ruth et al., 2005a). The six indicators included: [1] global devaluation of the caregiver; [2] evidence of identification with a hostile caregiver; [3] frequency of references to fearful affect; [4] frequency of references to a sense of self as bad; [5] frequency of instances of laughter at pain; [6] evidence of ruptured attachments. The first two indicators were weighted most heavily in assigning a final HH rating as they referenced key components of an HH state of mind. Inter-rater reliability of the HH overall rating was $r_i = 0.83$ and inter-rater reliability of the HH classification was $K = 0.82$ ($n = 15$). Whilst subtypes of HH states of mind may also be noted descriptively (Hostile, Helpless, Mixed Hostile-Helpless), coders are not trained to reliability on classifying subtypes.

2.2.3. Overall severity of abuse

The overall severity of abuse score from birth to 18 years was assigned by reviewing participant responses to four measures:

adolescent self-report of abuse on the Conflict Tactics Scale 2nd version (CTS-2; Straus, Hamby, Finkelhor, Moore, & Runyan, 1998); adolescent self-report of abuse on the Traumatic Stress Schedule – Short Version (TSS; Norris, 1990); abuse experiences coded from the AAI interview using the Childhood Traumatic Experiences Scales-Revised (CTES-R; Dutra, Bureau, Holmes, Lyubchik, & Lyons-Ruth, 2009); and whether the adolescent experienced residential/foster care placements between zero and eighteen years of age. Based on the above measures, each participant's overall severity of abuse score was rated on the following seven-point scale: [1] no abuse; [2] harsh punishment only; [3] witnessed violence only; [4] verbal abuse only; [5] physical abuse, sexual abuse or residential/foster care placement; [6] two under level 5; [7] all those under level 5 (Finger et al., 2015). The experience of physical or sexual abuse was judged by the Department of Social Services guidelines for abuse. As individuals may not always report abuse or neglect experiences on the CTS-2, TSS or in the AAI, entering state care was considered prima facie evidence for state defined maltreatment. Sexual contact with an adult before the child was 16 years of age was classified as sexual abuse. Discrepancies in scoring were resolved by discussion. The overall severity of abuse scale reliability was ICC = 0.99 (n = 37). Severity of abuse coders were naïve to all other study data.

The Conflict Tactics Scale 2nd Version (CTS-2) is a 78-item self-report measure assessing physical and emotional intrafamily conflict (Straus et al., 1998). Participants rated each item on an 8-point scale about the frequency and type of conflict that has occurred during a specific time period. The time period rated in the current study was "the year that things were worst between you and your parent". Participants were asked to elaborate on questions that involved their mothers specifically. Higher scores indicated higher conflict. CTS-2 has demonstrated construct validity, moderate test-re-test reliability, and stable factor structure (Straus et al., 1998).

The Traumatic Stress Schedule – Short Version (TSS). TSS is an 8-question narrative survey about potentially traumatic experiences (Norris, 1990). Test re-test reliability of the TSS was 0.88 (Norris, 1990). Only the first three questions were asked in the current study, relating to experiences of sexual and physical abuse. If the participant provided a positive answer, they were asked to supply a short description of the event, who the assailant was and why they thought the event may have happened to them. As the TSS is a narrative measure, it was not possible to calculate its internal consistency for the current sample.

The Childhood Traumatic Experiences Scales-Revised (CTES-R). CTES-R rates the severity of abuse experiences within the AAI (Dutra et al., 2009; George et al., 1985). To further understand instances of childhood abuse, additional questions probing physical and sexual abuse experiences were added to the standard AAI protocol. Transcripts were transcribed and coded on four 5-point scales for witnessing interpersonal violence and the severity of sexual, physical and verbal abuse. Inter-rater reliability scores from the four scales ranged from r_i = 0.89 to r_i = 0.98. A higher score reflected greater severity of abuse experiences. Convergent validity between total scores from the CTES-R and the CTS-2 was r = 0.48.

2.3. Procedure

The AAI was administered to late adolescents, directly followed by the GPACS interaction task between late adolescents and mothers (Obsuth et al., 2014). To select a topic for the interaction task, mothers and adolescents independently completed an Issues Checklist in which they rated sources of disagreement within their relationship. Researchers selected a topic for discussion based on the Issue Checklist answers and the adolescent was taped for one-minute talking about their perspective on the topic. After this, the mother and adolescent were reunited and participated in an unstructured discussion for five-minutes, followed by the playing of the adolescent's tape and a 10-minute discussion about the topic of disagreement. The procedure here follows the GPACS protocol (Lyons-Ruth et al., 2005a; Obsuth et al., 2014), and allows the adolescent to fully express their own perspective on the topic without interruption before the discussion takes place. Measures of abuse experiences were collected after the conflict discussion.

2.4. Data preparation and analytical strategy

All statistical analyses were performed using SPSS version 23. All continuous study variables were non-normally distributed. As transformation of the data did not yield a normal distribution, non-parametric tests were used on the untransformed data. Spearman's rho correlations assessed associations between continuous study variables. Direct, indirect and conditional effects were tested using Process Model 14 (Hayes, 2018). Significance was established if bootstrapped confidence intervals did not contain zero and 5000 bootstrap samples were conducted in accordance to Hayes (2018) recommendations in order to tighten the estimated standard errors. Due to the greater power of continuous measures (Altman & Royston, 2006) and the preference for continuous variables in mediation testing, the overall HH state of mind scaled score rather than the HH classification was used in all analyses. The prevalence of missing data was 1.68 % for study variables. As the cases that contained missing data were significantly different from the remaining sample on age, U(962.50), z = 4.069, $p < .001$, and sex/gender, $X^2(1, N = 120) = 6.81$, $p = .009$, and the raw data were non-normal, the eleven cases that contained missing values were removed by listwise deletion for complete case analysis.

3. Results

3.1. Descriptive statistics

The mean, standard deviation, minimum and maximum scores of study variables for the total sample and for male and female subsamples are provided in Table 1. 2.8 % (n = 3) of participants met the criteria for two HH states of mind features; 28.4 % (n = 31) for three features; 17.4 % (n = 19) for four features; and 51.4 % (n = 56) met criteria for five or more HH state of mind features. Regarding abuse, 34.9 % (n = 38) experienced no abuse; 48.6 % (n = 53) of participants experienced one form of abuse and 16.5 % (n = 18) experienced at least two forms of abuse. Independent Mann-Whitney U tests revealed no significant differences by adolescent sex/

gender for any of the continuous study variables.

3.2. Bivariate and covariate analyses

Table 2 presents the Spearman's rho correlations between study variables for the total sample and separately for males and females. In the total sample, HH state of mind features were positively correlated with overall severity of abuse and punitive control. Higher overall severity of abuse was also related to higher levels of punitive control. In the female subsample, higher levels of punitive control were related to higher overall severity of abuse and higher HH state of mind features. These correlations were not significant in the male subsample. Higher overall severity of abuse was associated with higher HH state of mind features in both the male and female subsamples. Further, younger age was related to higher levels of punitive interactions in the total and female subsample. Younger age was also related to higher HH state of mind features in the total sample. Due to the possible confounding effect of age, this variable was included as a covariate in the subsequent moderated mediation analysis.

3.3. Moderated mediation analysis

For the moderated mediation analysis, overall severity of abuse was the independent variable (X), HH state of mind was the outcome variable (Y), adolescent-parent punitive control was the mediator variable (M), and sex/gender was the moderator for the relation between adolescent-parent punitive control and HH state of mind (W). Adolescent age at interview was entered as a covariate. Unstandardized regression coefficients for the direct and conditional indirect effects are presented in Table 3. There was a significant direct effect (c') from overall severity of abuse to HH states of mind, meaning overall severity of abuse predicted HH state of mind in the absence of punitive control and sex/gender. Regarding the indirect effects, overall severity of abuse positively predicted punitive control (a_1), punitive control positively predicted HH state of mind (b_1) and the effect of sex/gender on HH state of mind was not significant (b_2). The interaction (b_3) between sex/gender and punitive control was significant, meaning the effect of adolescent-mother punitive control on HH state of mind was conditioned by adolescent sex/gender.

Testing the hypothesis, the conditional indirect effect of overall severity of abuse on HH state of mind was significant for females (B = 0.06, SE_{Boot} = 0.04, 95 % CI_{Boot} 0.01, 0.15), but not significant for males (B = −0.02, SE_{Boot} = 0.02, 95 % CI_{Boot} − 0.07, 0.02). The overall model was significant (Index = 0.083, SE_{Boot} = 0.04, 95 % CI_{Boot} − 0.18, −0.01), indicating the presence of a moderated mediation. Thus, the results support the study hypothesis that the indirect effect from overall severity of abuse to HH state of mind through punitive control was significant and dependent on adolescent sex/gender. The moderated mediation explained an additional 4.1 % of the variance in HH state of mind ($R^2 = 0.041$, $F(103,1) = 6.07$, $p = .015$). The statistical diagram for the moderated mediation is presented in Fig. 1 along with relevant coefficients.

4. Discussion

The purpose of the current study was to understand how HH states of mind in late adolescence develop from experiences of childhood abuse. Consistent with the current study hypothesis, the results revealed a significant indirect pathway from overall severity

Table 1
Descriptive statistics for total sample and by sex/gender (N = 109).

Continuous variables	Mean (SD)	Minimum	Maximum
Overall severity of abuse			
Total sample	3.32 (2.04)	1	7
Females	3.22 (2.12)	1	6
Males	3.45 (1.93)	1	7
HHS			
Total sample	4.73 (0.50)	2	8
Females	4.81 (1.75)	2	8
Males	4.63 (1.43)	3	7
Punitive control			
Total sample	2.21 (0.84)	1	4.50
Females	2.20 (0.80)	1	4.50
Males	2.22 (0.90)	1	4.50
Age			
Total sample	19.90 (1.46)	18	23
Females	20.00 (1.53)	18	23
Males	19.75 (1.35)	18	22

Note. Total sample (N = 109); Females (n = 65); Males (n = 44); Age = Age of teen at Interview; HHS = Hostile-Helpless State of Mind Scaled Score; SD = Standard Deviation.

Table 2
Bivariate correlations for total sample and by sex/gender ($N = 109$).

		1	2	3	4
1.	Overall severity of abuse	–	–	–	–
2.	HHS				
	Total sample	0.46***	–	–	–
	Females	0.51***	–	–	–
	Males	0.43***	–	–	–
3.	Punitive control				
	Total sample	0.29**	0.26**	–	–
	Females	0.32**	0.39***	–	–
	Males	0.25	−0.03	–	–
4.	Age				
	Total sample	−0.13	−0.20**	−0.25**	–
	Females	−0.12	−0.22	−0.28*	–
	Males	−0.12	−0.03	−0.21	–

Note. Total sample ($N = 109$); Females ($n = 65$); Males ($n = 44$); Age = Age of Teen at Interview; HHS = Hostile-Helpless State of Mind Scaled Score; *$p < .05$. **$p < .01$. ***$p < .001$. 1 – Overall Severity of Abuse; 2 – Hostile- Helpless State of Mind; 3 – Punitive Control; 4 – Age.

Table 3
Unstandardized regression coefficients for direct and conditional indirect effects ($N = 109$).

		Punitive Control (M)			HHS (Y)	
		B (SE_{Boot})	95 % CI_{Boot}		B (SE_{Boot})	95 % CI_{Boot}
Overall severity of abuse (X)	a_1 →	0.11 (0.04)	0.03, 0.17	c'→	0.35 (0.70)	0.21, 0.48
Punitive control (M)		–	–	b_1→	1.39 (0.50)	0.39, 2.39
Sex/gender (W)		–	–	b_2→	1.47 (0.75)	−0.05, 2.99
Punitive Control*Sex/Gender (M*W)		–	–	b_3→	−0.80 (0.30)	−1.44, −0.16
Constant	i_M	4.12 (1.12)	−0.32, 4.11	i_Y	2.11 (2.36)	−2.57, 6.80
Age (Covariate)		−0.11 (0.06)	−0.22, −0.01		−0.06 (0.10)	−0.25, 0.13
		$R^2 = 0.12$			$R^2 = 0.30$	
		$F(106, 2) = 7.20$ $p = .001$)			F(103, 5) = 8.63 $p < .001$)	

Note. B = unstandardized coefficient; SE_{Boot} = bootstrapped standard error; 95 % CI_{Boot} = bootstrapped 95 % upper and lower confidence intervals. Age = Age of Teen at Interview; HHS = Hostile-Helpless State of Mind Scaled Score; 95 % bootstrapped confidence interval based on 5000 samples for direct and conditional indirect effect.

of abuse to HH states of mind through adolescent-mother punitive control in adolescent females, but not males. The indirect conditional model accounted for 4.1 % of the variance in HH attachment representations. These findings highlight the importance of hostile adolescent-mother interactions in the development of HH mind states in females, whilst also affirming the idea that adolescent sex/gender should be taken into account when exploring developmental pathways toward disorganised attachment in late adolescence.

The correlational analysis revealed that severity of childhood abuse was positively related to HH states of mind in both late

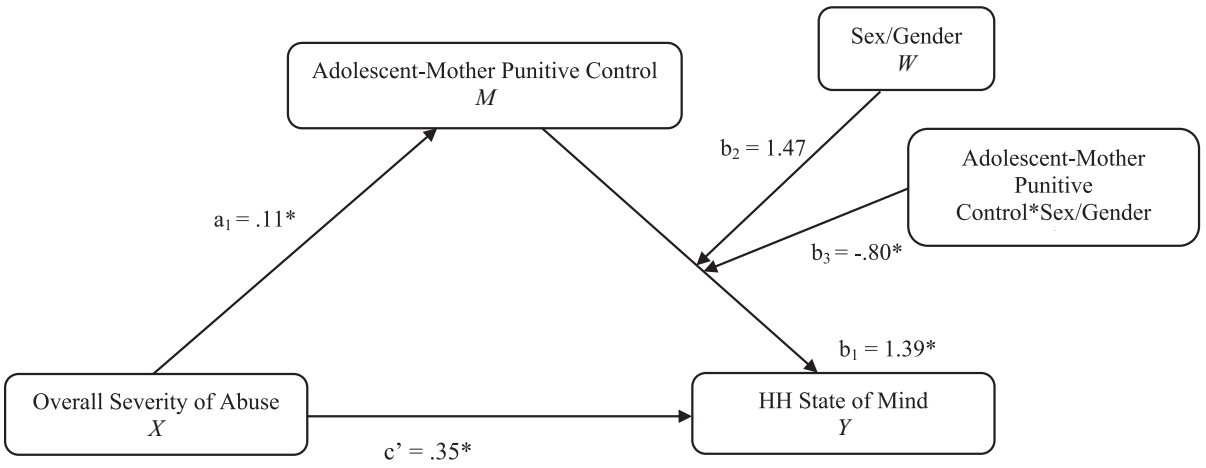

Fig. 1. Statistical diagram of direct and conditional indirect pathways in the moderated mediation model
Note. Unstandardized regression coefficients presented on respective pathway. Covariate = Age of Teen at Interview; HH = Hostile-Helpless. All coefficients bootstrapped at 95 % confidence interval based on 5000 samples. *$p < .05$.

adolescent males and females. These findings suggest that abuse experiences are related to contradictory attachment representations in adolescence and are consistent with previous work demonstrating a strong link between disorganised attachment and a history of childhood abuse (Gander et al., 2020). In addition, greater severity of abuse was related to higher levels of adolescent-mother punitive interaction among females. However, abuse was not significantly related to adolescent-mother punitive interaction among males. The non-significant result for males is surprising. Considering the established link between childhood abuse and psychological aggression in late adolescence (Augsburger, Basler, & Maercker, 2019; Perry et al., 2017) and that males are more likely than females to exhibit externalizing behaviors after childhood abuse (Moylan et al., 2010), it was expected that the abuse/punitive interaction pathway would also be significant for males. However, the non-significant relation for males may be due to the type of aggression examined. Other studies have found that adolescent males who have been abused engage in more physical aggression compared to females (Cullerton-Sen et al., 2008). Furthermore, higher levels of adolescent-mother punitive control were associated with higher levels of HH mind states in females, but not males. This suggests that females within punitive adolescent-mother dyads express pervasively contradictory attachment representations, indicating that increased maternal hostility may be more detrimental in the establishment of secure attachments in females. Considering that maternal HH states of mind is related to infant disorganization (Finger, 2006; Lyons-Ruth et al., 2005a) and infant abuse (Barone & Carone, 2020), adolescent females who engage in punitive behavior may also be vulnerable to engaging in infant maltreatment and establishing disorganised attachment relationships with their infants. Together, these results highlight sex/gender differences in the relations between abuse, punitive control and HH states of mind.

The significant direct pathway from overall severity of abuse to HH states of mind in late adolescents corroborates previous findings that abuse is robustly related to HH mind states in both males and females (e.g., Byun et al., 2016; Lyons-Ruth et al., 2003; Milot et al., 2014). This supports the idea that abusive experiences may directly lead to the development of pervasively contradictory attachment representations in late adolescence. This is important in understanding factors that contribute to the development of disorganised attachment in males and females and highlights the benefit of applying an alternative coding system for disorganised states of mind on the AAI that focusses on pervasive contradictions in how attachment relationships are represented.

Additionally, the findings supported the presence of an indirect pathway from abuse to HH states of mind via adolescent-mother punitive control that was contingent upon adolescent sex/gender, such that it was significant for adolescent females, but not males. This supports the need to consider adolescent sex/gender when exploring developmental pathways toward disorganised attachment in adolescence. Notably, there were no sex/gender differences in the level of dyadic punitive control, severity of abuse, or HH state of mind features. The absence of differences implies that adolescent-mother punitive interactions differentially impact attachment states of mind in late adolescent abused females compared to abused males. Whilst no literature has explored this specific effect, sex/gender differences have been found in wider research relating to interpersonal relationships (Martin et al., 2019), attachment security (Lavi et al., 2019) and socialisation (Street & Dardis, 2018). The sex/gender effect observed here may therefore be explained by differences in how adolescent males and females interpret punitive control within the adolescent-mother dyad.

As reviewed in the introduction, a number of studies reported sex/gender differences in the impact of aggressive and violent behavior in adolescence, such that compared to boys, girls who experienced parental abuse and/or hostility reported feeling less loved (Perry et al., 2017), viewed their parent as less caring (Sunday et al., 2008), had more negative attributional styles (Gamble & Roberts, 2005) and increased youth maladjustment (Weymouth et al., 2016). Females with a history of childhood abuse may therefore be more adversely affected by punitive control within adolescent-mother dyads through internalizing the hostility within the relationship, which may impair their ability to perceive their mother as a secure base (Martin et al., 2019). This breach in the attachment relationship may, in turn, lead to more pervasively contradictory views of their attachment figures, which is a key feature of HH states of mind. Subsequently, punitive control within adolescent-mother dyads following experiences of abuse may have a more detrimental effect on adolescent females' internal working models of attachment relationships compared to males'. Further studies are warranted to explore the psychological mechanisms through which punitive control may differentially impact male and female adolescent attachment representations.

As punitive control in the current study reflected a dyadic relationship between the adolescent and mother, it is important to consider how this dyadic aspect may have impacted the findings. How adolescent females perceive their own punitive behavior may also contribute to why the indirect pathway was present for females only. Goldstein (2010) found that females perceived relational aggression as significantly more hurtful than males. Similarly, other studies have demonstrated that females are more likely than males to perceive relational aggression as wrong (Murray-Close, Crick, & Galotti, 2006). Thus, adolescent females may interpret their own punitive behavior toward their mothers as particularly harmful and feel more conflicted about acting in this manner than their male counterparts.

Sex/gender socialisation may also contribute toward the female adolescents' interpretation of their punitive behavior. Behaving punitively may be considered sex/gender incongruent for females as it violates stereotypical sex/gender expectations of relational prosociality (Eagly, 2009). Consequently, adolescent females may develop conflicted mental states regarding how they and others perceive they should act versus their actual behavior (Drury et al., 2013). The combined experience of being more negatively impacted by relational aggression, while simultaneously participating in the behavior they view as wrong, could lead to concurrent states of identification with the abusive caregiver and conflicting mental states that maintain a positive view of their relationship. The presence of these two contradictory representations is an integral feature of HH states of mind (Lyons-Ruth et al., 2005a) and may explain the found sex/gender-specific associations.

The current study contained several limitations that warrant consideration and point to future directions of research in this field. First, whilst participants were part of a longitudinal cohort, levels of HH states of mind and punitive control were obtained during the same time period (Obsuth et al., 2014), so that the data were concurrent and correlational and causality between the key study variables could not be established. Future longitudinal studies that measure punitive control and HH states of mind at different periods

during adolescence could further address whether there are likely to be causal relationships among abuse, punitive control and HH states of mind. Similarly, the assessment of the timing of abuse and related trauma may provide important additional insights, given that exposure to early trauma has been shown to have an exacerbating impact on the development of later mental health problems (e.g. Dunn, Nishimi, Powers, & Bradley, 2017). In addition, future studies, with a larger sample size may wish to explore the role of the other disorganised interaction patterns – role-confused and disoriented and their role in the development of HH states of mind. Future studies may also include additional factors, including the history of parental maltreatment and parental attachment representations, as these are likely to be important contributors to these pathways and should be explored in future work.

Furthermore, parent sex/gender may contribute toward the found sex/gender differences in the development of HH states of mind. Previous studies have shown that same-sex/gendered adolescent-parent interactions have a significantly greater influence on adolescent psychosocial development compared to opposite-sex/gendered dyads (Bully, Jaureguizar, Bernaras, & Redondo, 2019), indicating that parent sex/gender may influence the effect of adolescent-parent punitive control. However, at present no studies have directly explored whether parent sex/gender impacts the effect of controlling punitive behaviors in adolescent-parent dyads. Future work is required to support the sex/gender dependant pathway in HH states of mind to better understand how these differences arise. Finally, due to the high number of single mothers in the original study (Obsuth et al., 2014), punitive control could not be assessed between adolescents and fathers. Although adolescent sex/gender moderated the indirect effect, it is unclear whether adolescent-father dyads would yield similar results compared to adolescent-mother dyads. Future research should examine whether the conditional indirect effect of adolescent-parent punitive control is still significant for females within adolescent-father dyads, and whether punitive-controlling attachment behaviors within son-father dyads capture developmental pathways that lead to the development of HH states of mind from experiences of abuse in adolescent males.

Despite the limitations, the present study had a number of strengths. The multimethod assessment of abuse increased the probability of capturing a range of abuse experiences that may have been omitted when using one form of abuse assessment (e.g., Negriff, Schneiderman, & Trickett, 2017). The use of the observational GPACS provided an objective measurement of adolescent-parent interactions and allowed the examination of dyadic behavior. Moreover, the present study was the first to explore how HH states of mind may develop from experiences of abuse and how adolescent sex/gender may influence the development of HH states of mind. This was particularly important as all prior studies exploring HH states of mind in relation to adolescent-parent interactions controlled for adolescent sex/gender, rather than examining the influence of sex/gender on HH states of mind and punitive control (e.g., Byun et al., 2016).

The current study supports the development and implementation of sex/gender-sensitive interventions that target punitive interactions within daughter-mother dyads to attenuate the development of HH states of mind in the context of childhood abuse. Interventions that target social and emotional learning specifically may help to reduce relational aggression within daughter-mother dyads through supporting the management and recognition of emotions (Voulgaridou & Kokkinos, 2015). It may be useful to implement such interventions in females during early stages of adolescence, as higher levels of punitive control were related to younger adolescent age. Early detection and prevention of HH states of mind development is imperative due to the associated risks of intergenerational transmission of disorganised attachment, infant maltreatment and filicide (Barone & Carone, 2020; Terry et al., 2021) and personality psychopathologies (Finger et al., 2015; Khoury et al., 2020; Lyons-Ruth et al., 2007; Lyons-Ruth et al., 2015). In addition, researchers (e.g., Godbout, Daspe, Runtz, Cyr, & Briere, 2019) have highlighted the importance to develop and provide gender-specific interventions for individuals with BPD. Given the established links between punitive control, abuse, HH states of mind and BPD (Finger et al., 2015; Khoury et al., 2020), future research could explore whether the conditional indirect pathway to HH states of mind in the current study is present in females with BPD to potentially inform such a gender-specific approach.

Finally, the finding that adolescent sex/gender moderated the indirect pathway reinforces the idea that sex/gender should be considered as a potential moderator in the development of disorganised states of mind. This is particularly important as studies exploring the influence of sex/gender are largely absent from the attachment literature. The incorporation of sex/gender into future investigations may inform the understanding of sex/gender-specific attachment-related developmental pathways, and ultimately yield more nuanced understanding and more targeted interventions.

5. Conclusions

The current work extends prior understanding of disorganised attachment in adolescence and is the first to investigate the developmental mechanisms that lead to HH states of mind in the context of childhood abuse. The results point to the existence of sex/gender-specific developmental trajectories toward HH states of mind in late adolescence. Our findings underscore the importance of examining developmental trajectories toward pervasively contradictory attachment representations in a sex/gender-informed manner. Further, punitive control in daughter-mother dyads may be an important intervention target to prevent the development of HH states of mind in adolescent females and the intergenerational transmission of abusive behavior.

Declaration of competing interest

None.

Data availability

The authors do not have permission to share data.

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