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Parent–child attachment as a mechanism of intergenerational (dis)advantage

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A growing literature connects childhood socio-emotional skills to adult socio-economic outcomes. But what explains differing levels of socio-emotional skills? Current theories consider parental investment and socialisation, but neglect the emotional and relational aspects of parenting. Attachment theory offers a model of the micro-level mechanisms that connect parenting processes and socio-emotional development intergenerationally. It has, however, tended to de-emphasise macro, contextual socio-economic factors. Through an extensive, integrative review of the empirical literature on the effects and antecedents of parent–child attachment, we argue that attachment is a mechanism through which socio-emotional – and socio-economic – (dis)advantages persist.

key words attachment • intergenerational transmission • socio-emotional • non-cognitive
• parenting • early childhood

Introduction

Sociology and economics have recently contributed evidence that childhood socio-emotional skills influence socio-economic outcomes into adulthood. But neither discipline has engaged with the dominant developmental psychological theory of the origins of socio-emotional skills: attachment. Meanwhile, however, attachment scholars have had little to say about the socio-economic context in which attachment develops. Through an integrative review of the empirical literature on parent–child attachment and skill development, and the antecedents of attachment security, we propose a model that incorporates attachment into an analysis of the intergenerational transmission of (dis)advantages.

Socio-emotional skills in childhood have been associated with attainment in school and in the labour market. In particular, self-regulation and the absence of externalising (conduct) problems predict positive educational and economic outcomes (Currie and Stabile, 2006; Borghans et al, 2008; Duncan and Magnuson, 2011; Moffitt et al, 2011; McLeod et al, 2012; Heckman et al, 2013; Turney and McLanahan, 2015). But what

explains young children's differing levels of socio-emotional skills? Prevailing theories focus on parental *investment* of time and money (Bianchi et al, 2004; Coneus et al, 2012), and parental or school *socialisation* through modelling or teaching (Coleman, 1988; Lareau, 2003). As part of an econometric model of parental investment, Heckman and Mosso (2014: 726) briefly mention the potential role of parent-child interactions, and attachment, in 'transform[ing] time and goods investments to shape children's capacities.' But neither the parental investment nor socialisation model engages with the emotional, relational aspects of parenting that attachment theory emphasises. This limits our understanding of socio-emotional skill development – and of the mechanisms by which inequalities transmit across generations.

Where policy has sought ways to intervene early in the life course to address disadvantage, it has focused on access to preschool education and educationally orientated school readiness. Where this agenda engages parents, it is principally over the promotion of reading to children, and strategies for managing, rather than preventing, child behaviour problems (Karoly et al, 2005; Lindsay and Cullen, 2011). Early intervention with children still often inadequately addresses parents' needs and context (Chase-Lansdale and Brooks-Gunn, 2014). Other than the Family Nurse Partnership, which is designed for adolescent, low-income, first-time parents (Olds and Kitzman, 1993), less attention has been paid to the period before age three, and to the socio-emotional side of parent-child interaction.

Attachment theory offers a model for how socio-emotional skills develop through the parent-child relationship in the first years of life (Sroufe, 2011). In its development by Bowlby, a British psychologist trained in natural science, infants' attachment to their primary caregivers was thought to be evolutionarily adaptive. The stress activated when proximity to the parent was lost or under threat helped the infant to survive. Through observational research with Ainsworth, the idea emerged that attachment also helped children to socially and emotionally thrive.

The concept of a *secure base* reconciled the apparent contradiction observed where children who displayed autonomous, self-directed behaviours had strong emotional attachments to parents as infants. Attachment theory claims that children's early experiences of parents' responses to their needs and distress are internalised. From around six months, the infant is able to anticipate their parents' response when they are distressed, and adapt their behaviour accordingly. When parents have mostly responded to the child in a sensitive way, the child can safely express negative emotion, expect to receive comfort when needed, and explore when not. This secure parental attachment, it is theorised, generalises to other times, settings and people.

Attachment theorists think that this generalisation occurs through self-regulatory processes (Drake et al, 2013). Through repeated experiences of parental responses, the child develops an 'internal working model' of social interaction. A secure model provides the child with healthy ways to manage their emotions, and so more opportunities to learn and explore.

From its earliest expositions, attachment was a way of explaining intergenerational continuities in human development. Parents' own attachment styles would shape their parenting, and therefore children's attachment styles. The idea was that 'the inheritance of mental health and ill health through family microculture may well be as important, if not far more important, than is genetic inheritance' (Bowlby, 1973: 323). However, focus on the emotional bond between parent and child tends to obscure the social and economic context in which it sits. As a consequence of this, as well as the confusion

between attachment theory and the popular advice on ‘attachment parenting’ (Cox, 2006), and still-embryonic neuroscientific research (Shonkoff and Garner, 2012), attachment gets dismissed by sociologists (Macvarish et al, 2014). Attachment theory, however, engages with the micro-level mechanisms that connect parenting processes and socio-emotional factors to the intergenerational transmission of socio-economic inequality. It can, we argue, be a complementary explanation for the intergenerational transmission of (dis)advantages.

Method, scope and terminology

The idea that parent–child attachment serves as a foundation for child social and emotional development has been under empirical investigation for 50 years. This article is therefore a review of reviews in that we consider mainly the published meta-analyses: van IJzendoorn (1995); van IJzendoorn, Dijkstra and Bus (1995); van IJzendoorn, Wolff and van IJzendoorn (1997); Lovejoy et al (2000); Bakermans-Kranenburg et al (2003); Nievar and Becker (2007); Cyr et al (2010); Fearon et al (2010); Groh et al (2012); and Verhage et al (2016). We supplement these with recent findings, selected from search in PubMed, primarily in the highest ranked relevant journals, in which articles will have been subject to rigorous peer review: *Child Development*, *Development and Psychopathology*, and *Developmental Psychology*. In addition, relevant papers were selected from the specialist journal, and official journal of the Society for Emotion and Attachment Studies and International Attachment Network: *Attachment & Human Development*.

We do not attempt further meta-analysis – there is insufficient commonality between outcomes, samples and ages of observation to do so reliably (Cooper et al, 2009). Our contribution is to integrate analyses of the effects of attachment on child skills with those of the antecedents of attachment.

Studies with relatively small sample sizes are included in the review because (as discussed below) observational measures of attachment are rarely conducted at scale. As in any review, null findings are likely to be under-represented due to publication bias (Mervis, 2014).

Our focus is on the security of attachment to parents, with the recognition that attachments to other figures, including paid caregivers, are also relevant (Howes, 1999). Many studies only measure attachment to mothers, maintaining a gendered model of parenting. However, attachments to fathers are similarly made, distributed and associated with child outcomes (Bretherton, 2010; Lamb and Lewis, 2010; Ramchandani et al, 2013). We therefore use the term *parental* attachment and sensitivity. The rest of this section outlines how attachment is measured and classified.

Measures of attachment

The first method developed by Ainsworth to test attachment theory was the ‘Strange Situation’ (Ainsworth et al, 1978). Advanced in sync with Bowlby’s work, behaviour in the Strange Situation has become almost synonymous with attachment (Bretherton, 1992). The Strange Situation is an experimental procedure in which the child is observed playing while the parent and a stranger enter and leave the room in sequence. Four behaviours are coded: (a) separation anxiety, the unease the infant shows when left by the parent; (b) the infant’s willingness to explore; (c) stranger anxiety, the

infant's response to the presence of a stranger; and (d) reunion behaviour, the way the parent was greeted on return.

The US National Institute of Child Health and Development (NICHD) launched the Study of Early Child Care and Youth Development (SECCYD) in the early 1990s, conducting 1,200 Strange Situations. Coder agreement over attachment classification was 86 per cent (Friedman and Boyle, 2008). The Strange Situation is expensive to administer, so usually conducted only for small samples, or sub-samples of larger surveys.

A second observational measure, the Attachment Q-Sort, is taken over two- to three-hour home visits. Using 90 items, observers sort children's attachment-related behaviour into attachment styles (Waters and Deane, 1985). The Toddler Attachment Sort (TAS-45) is a shorter version, derived from a clustering of indicators (Andreassen and West, 2007; Spieker et al, 2011). Unless otherwise noted, attachment in what follows is measured observationally, by one of these three measures. Parents' attachment styles are measured through the Adult Attachment Interview, a quasi-clinical semi-structured interview asking about an adult's state of mind regarding their attachment in their family of origin (Main and Goldwyn, 1994; Crowell and Treboux, 1995).

Attachment styles

A child's attachment is classified as one of four styles: secure, avoidant, ambivalent or disorganised. Children who *avoid* the parent when distressed learn to minimise expressions of negative emotions and needs. This avoidant attachment strategy is thought to be a response to a parent who is consistently rejecting in times of distress. Children who are *ambivalent* towards the parent are wary and hesitant to play, even in their presence, and may resist them. This ambivalent strategy develops when parents are inconsistent in their responses to the child. Infants who are securely attached feel safe to express negative emotion in the knowledge it will elicit comforting from the caregiver. They seek proximity to and maintain contact with the caregiver when distressed. Secure attachment develops when caregivers respond to distress in a consistent, warm manner, such as picking and reassuring the infant up promptly.

The fourth category of attachment, *disorganised*, was introduced in 1990 by Main and others (Main and Solomon, 1990). Children with disorganised attachment display particularly frightened behaviour. Disorganised attachment is high in families reported for maltreatment (Cyr et al, 2010), and where parents have suffered loss and major depression (van IJzendoorn et al, 1999).

The distribution of attachment styles by socio-demographic characteristics for the most recent nationally representative study in which it is measured, the United States' Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), is given in Table 1. Measured dichotomously as secure and insecure, attachment style is largely stable into adolescence (Hamilton, 2000), and similarly distributed across the two representative studies measuring attachment, the ECLS-B and SECCYD, undertaken a decade apart.

Table 1: Distribution of attachment classifications by socio-demographic characteristics

	Attachment type (%)			
	Secure	Avoidant	Ambivalent	Disorganised
Total sample	61.12	16.27	8.91	13.46
Poverty status				
Below poverty threshold	51.58	20.12	10.85	17.45
Above poverty threshold	63.95	15.27	8.40	12.41
Mother's education				
8th grade and under	63.18	16.03	10.28	10.52
9th–12th grade	50.76	18.67	11.28	19.29
High school diploma	59.57	17.48	8.85	14.10
Vocational/technical programme	64.98	14.19	8.49	12.34
Some college	62.30	16.52	8.58	12.79
Bachelor's degree	66.98	14.63	7.32	11.07
Graduate/professional school, no degree	77.50	11.70	3.12	7.68
Master's degree	78.23	9.62	7.61	4.55
Doctoral or professional degree	61.90	15.60	7.70	14.78
Mother's age				
19 and under	48.63	16.68	11.38	23.31
20–29	57.79	18.06	9.24	14.91
30–39	65.53	14.62	8.48	11.37
40 and over	64.68	14.57	8.68	12.06
Child's race/ ethnicity				
White	65.70	14.31	8.08	11.91
Black	51.95	24.41	8.03	15.61
Hispanic (race specified)	57.83	15.99	10.27	15.90
Hispanic (no race specified)	56.88	16.66	12.84	13.62
Asian	61.70	13.64	12.22	12.44
More than one race/ ethnicity	58.99	17.61	6.65	16.74

Note: Figures are weighted percentages. N=8,750.

Source: US Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), two-year data collection, 2003–04, from Andreassen and Fletcher (2007)

Attachment's effects on children's skill development

In this section, we consider evidence for the effects of parent–child attachment on children's self-regulation, externalising and internalising behaviours, executive function and language. All but the latter two are considered socio-emotional skills. We also note evidence for the effect on educational attainment.

Self-regulation

A central hypothesis of attachment theory is that secure attachment to a parent promotes the capacity for emotional and behavioural self-regulation at older ages and in other settings (Drake et al, 2013). Drake, Belsky and Fearon distinguish teacher-rated social self-control (the ability to respond appropriately to peers in conflict or pressure), effortful control (the ability to pay attention and control impulses) and observed task persistence. Attachment security was moderately, positively associated with social self-control and effortful control, but not with task persistence (Drake et

al, 2013). Social self-control was also a pathway connecting attachment with learning engagement at age 10/11.

In a sample of low-income boys, secure attachment and positive maternal control were positively associated with effective strategies for anger control and attention (Gilliom et al, 2002). Murray et al (2011) found the expected adverse effect of maternal depression on self-regulation at ages five and nine was mediated by the child's prior attachment style.

Externalising behaviours

Socio-emotional health is regularly described in terms of the degree to which negative symptoms or behaviours are externalising (directed toward others) or internalising (directed toward the self). Externalising behaviours include aggression, disruption and defiance. A meta-analytic study of 69 studies found a substantial overall effect of insecure attachment on these externalising behaviours (Fearon et al, 2010). The effects were largest for boys, disorganised attachment, and when behavioural problems were observed by researchers or clinically diagnosed.

Attachment insecurity was a risk factor for externalising behaviours even among more middle-class families. However, the association between attachment and externalising behaviours was smaller in samples of higher socio-economic status families (Fearon et al, 2010). This indicates that the importance of attachment in parent-child transmission may depend on the presence of other advantages.

Attachment appears to protect against the effects of disadvantage on externalising problems. Multiple numbers of social risks (maternal depression, parenting stress, lack of social support, single parenting, lack of maternal psychological support and minority ethnic status) are associated with behaviour problems at age three – for children with insecure-avoidant attachment (Belsky and Fearon, 2002b). For securely attached children, the number of these risks had no association with externalising behaviour (Belsky and Fearon, 2002b). Owens and Shaw (2003) similarly found that of boys who experienced poverty in early childhood, those with secure attachments at 18 months were two-and-a-half times as likely as those without to show positive adjustment – a lack of behavioural problems and above-average social skills – five-and-a-half years later. However, because poverty, parental stress and mental health are risk factors for insecure attachment, those who manage to make secure attachments in these circumstances are likely to be a select group.

Internalising behaviours

Internalising behaviours include withdrawal, eating and sleeping difficulties, and, at high levels, indicate depression and anxiety. Meta-analysis confirms a small but consistent association between attachment security and internalising symptoms in childhood (Groh et al, 2012). Attachment is less predictive of internalising than of externalising behaviours. Yet it is only when combined with externalising behaviours that internalising behaviours are associated with educational attainment (McLeod et al, 2012).

Child attachment representations are associated with the risk of experiencing a major depressive episode or chronic depression by age 16 (Murray et al, 2011). Such

depression in adolescence increases the likelihood of dropping out of high school, and completing college, compared to a non-depressed sibling (Fletcher, 2010).

More general indicators of socio-emotional skills, as rated by teachers and counsellors, are also predicted by attachment security. In a study of 250 children born into poverty in 1975 in the US (the Minnesota Longitudinal Study of Risk and Adaptation), securely attached children were rated by teachers and student counsellors as more self-confident and curious (Sroufe et al, 2005). Teacher reports also indicated that securely attached children had better relationships with peers, were more resilient and less likely to be bullied. Children's self-esteem is also strongly associated with attachment (Jacobsen and Hofmann, 1997).

Executive functions

Attachment is not associated with intelligence measured by IQ (van IJzendoorn et al, 1995). It is, however, associated with a set of cognitive processes that control behaviour and predict academic performance, including cognitive flexibility, impulse (inhibitory) control and working memory: executive functions. In a small 62-family sample, the sensitivity of mothers and fathers' interactions with their children and attachment security between age one and two affected cognitive flexibility (but did not affect impulse control) by age three (Bernier et al, 2012). The association with cognitive flexibility remains when language, family socio-economic status and other aspects of parenting are statistically adjusted for (Bernier et al, 2012). As with many outcomes of interest, much variation in executive functions between individuals is left unexplained by statistical models relying on observed variables. Still, parent interaction and attachment security explained more of the variation in cognitive flexibility (18 per cent) among children in this sample than did parents' socio-economic status and child verbal ability together (8 per cent).

Language

Attachment security predicts children's language development, whether language ability is measured in terms of the length of utterances, comprehension or expressive language (Thompson, 2008; van IJzendoorn et al, 1995; Thompson, 2008). In a 1995 meta-analysis, the average effect size was over half a standard deviation (van IJzendoorn et al, 1995). A more recent study finds avoidant attachment specifically was associated with poorer language skills at age three (Belsky and Fearon, 2002b). Further, the detrimental effect of insecure attachment on expressive language was greater with every socio-economic risk factor (Belsky and Fearon, 2002a).

Murray and Yingling (2000) find no significant correlation between attachment style and 'HOME' inventory scores that gauge educational stimulation in the home. The effects of attachment and stimulation at home were additive, with children receiving high levels of stimulation at home also benefiting linguistically from secure attachments. Children with more stimulating home environments but insecure attachment had lower language competence at age two than did those in less stimulating home environments but secure attachment (Murray and Yingling, 2000).

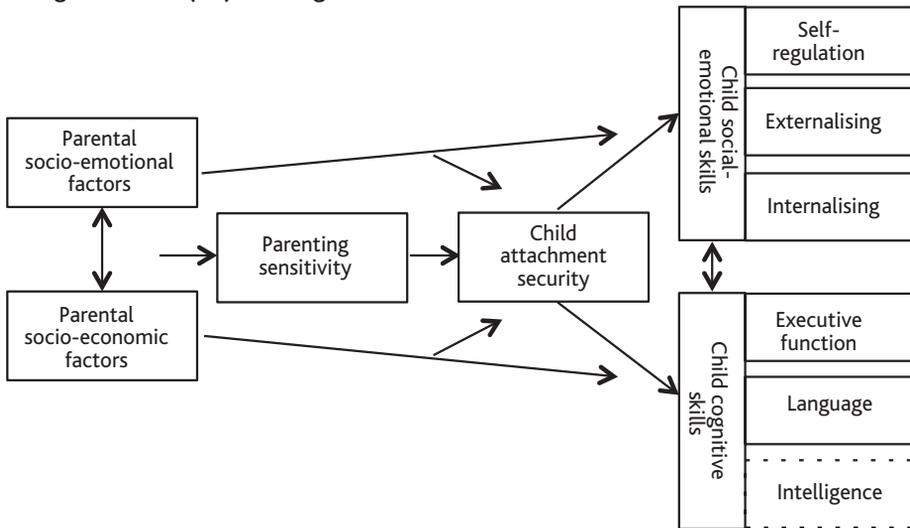
Educational attainment

The long-term studies that measure attachment show associations between attachment and educational attainment. Most notably, the Minnesota study described above found that the quality of early parenting and attachment, measured at age three-and-a-half, predicted with 77 per cent accuracy whether or not children later graduated high school (Sroufe et al, 2005). Including measures of IQ or later test scores did not add to the strength of this prediction. Insecure attachment, combined with measures of parent sensitivity, before age four was a strong predictor of dropping out of high school, second only in magnitude to behaviour problems measured at 12 (Sroufe et al, 2005).

Attachment security, measured through children’s representations at age seven, was associated with student school test scores, adjusting for prior academic achievement, IQ and socio-demographic factors (Jacobsen and Hofmann, 1997). In this Icelandic study, attachment affected attention and participation in school, and these partially mediated the relationship between early attachment and Grade Point Average at age 15.

Independently of education, attachment has been linked with occupational attainment. Among men with lower educational levels in the English Whitehall II study of British civil servants, those who had secure attachment styles were more likely to be in higher grades (Bartley et al, 2007).

Figure 1: Graphic summary of the theorised role of parent-child attachment in intergenerational (dis)advantage



Note: Dotted line indicates no evidence for association

Attachment’s antecedents and parents’ skills

If socio-emotional and some cognitive skills are predicted by attachment security, what predicts attachment security? In this section we review the antecedents of attachment security: parent’s own attachment style and skills: their sensitivity of interaction, socio-emotional health and their socio-economic circumstances. We also consider the role of genetic heritability, childcare and child characteristics in attachment.

Intergenerational continuity in attachment style

Attachment security is highly correlated between parents and children. Mothers and fathers' attachment styles, measured in adulthood, are strongly associated (correlated by up to 0.74) with their children's (van IJzendoorn, 1995; Bernier et al, 2014; Verhage et al, 2016). The specific *type* of insecure attachment corresponds less well between parents and children (van IJzendoorn, 1995; Shah et al, 2010), with disorganised attachment styles particularly hard to establish (Bernier and Meins, 2008). The intergenerational transmission of attachment style is also smaller in higher risk samples (Verhage et al, 2016). The association between mothers' attachment style and her children's has declined across time, while fathers' has remained the same. As a result, mothers and fathers' attachment styles are now similarly associated with their children's (Verhage et al, 2016).

To date, studies have found little evidence for the genetic heritability of attachment security (Bokhorst et al, 2003; Fearon et al, 2006; Roisman and Fraley, 2008). One gene was found to moderate the effect of mothers' unresolved trauma or loss on disorganised attachment. However, no gene was found to moderate the effects of mothers' behaviour on disorganised attachment (van IJzendoorn and Bakermans-Kranenburg, 2006). It is thought that parental attachment styles matter primarily because they influence the sensitivity of parents' interaction with their children.

Parent sensitivity

'Sensitivity', Ainsworth et al (1974: 129) wrote, 'requires being aware of and correctly interpreting the infant's signals, and responding appropriately and promptly. A mother also needs to follow through with her responses, such as holding her infant long enough that he is comforted and does not immediately seek to be picked up again after being set down' (cited in Lyons-Ruth et al, 2013).

Indicating that parental sensitivity plays a causal role, short-term interventions to improve maternal sensitivity increased attachment security (Hoffman et al, 2006; Moss et al, 2011; de Falco et al, 2014). In a meta-analysis of 23 randomised interventions with parents and children aiming to increase attachment security, only those that focused on sensitivity had significant effects (Bakermans-Kranenburg et al, 2003). Paternal and maternal sensitivity is similarly associated with child outcomes (Grossmann et al, 2002; Bretherton, 2010; Miljkovitch et al, 2012), and interventions that successfully improved attachment security engaged fathers as well as mothers (Bakermans-Kranenburg et al, 2003).

Another way to understand the proximate causes of attachment is to consider cases where attachment styles change over early childhood. Moss et al (2005) found children whose attachment classification moved from secure to organised-insecure (avoidant or ambivalent) between 24 and 36 months experienced a decrease in mother–child communicative quality over the same period. Children who developed disorganised insecure attachment styles after turning two had experienced the greatest decreases in parental sensitivity. Conversely, increased parental sensitivity predicted a change from attachment insecurity to security. In a separate study, where sensitivity improved among children insecurely attached in infancy, teachers rated children lower on externalising problems. However, for children already securely attached in infancy,

changes in parenting quality had no effect on externalising behaviours (NICHD Early Care Research Network, 2006).

Sensitivity does not fully explain the intergenerational continuity in attachment styles (Verhage et al, 2016). Nor is sensitivity the aspect of parenting important for attachment security (Wolff and van IJzendoorn, 1997). Disorganised attachment specifically is thought to be less the outcome of insensitivity than of frightening, hostile and intrusive behaviour (Lyons-Ruth et al, 1999). However, the studies were subsequently reanalysed to find that when the definition of sensitivity included responsiveness, synchrony and mutuality, it was distinctly important to attachment (Nievar and Becker, 2007). One more recent study finds that the relationship between parent and child attachment styles can be fully accounted for by sensitivity and 'autonomy support', which is how the parent behaves when the infant is exploring (Bernier et al, 2014). Separately, Gutman, Brown and Akerman (2009) find that sensitivity is the only factor showing a continuing relationship with other aspects of parenting at age five.

Although the quality of parental interaction is consistently found to be central to attachment, there is no evidence that the quantity is. One study finds that time with infants is associated with sensitivity, and the quality of the home learning environment, but independent of sensitivity, there is no effect of time with children on attachment security at 15 months (Huston and Rosenkrantz Aronson, 2005).

Non-parental childcare

Brooks-Gunn, Han and Waldfogel (2010) examined the role of maternal employment specifically, and found that, on average, net of other factors, maternal employment starting before children turned one did not increase the risk of insecure attachment. Whether non-parental childcare affects attachment security or not depends on parent sensitivity. The SECCYD was launched in the 1990s to assess the effects of early childcare on children's attachment. It found that attachment security at age three was not associated with the quantity, quality or type of childcare (Friedman and Boyle, 2008). However, for children already at risk by virtue of not having received sensitive maternal care, low-quality early childcare elevated the risk of insecure attachment (NICHD Early Child Care Research Network, 1997; Friedman and Boyle, 2008), and externalising problems as late as adolescence (Belsky and Pluess, 2011). One study finds that children attach to paid child carers independently of their attachment to their mothers and fathers, and security reflects the child carer's sensitivity of interaction (Goossens and van IJzendoorn, 1990).

Child characteristics

The association between parenting sensitivity and child attachment is contingent on child health. Very premature and low birth weight babies are more likely to have disorganised attachment style than those born full-term. Yet for these children, sensitivity is not associated with disorganised attachment (Wolke et al, 2013). Children with autism spectrum disorder diagnoses are also less likely to have secure attachment styles, although they are just as likely as other children to receive sensitive care (van IJzendoorn et al, 2007).

Child temperament may play a role in attachment, but it is hard to assess, because studies generally rely on maternal reports of temperament. A review concluded that any effects of child temperament on attachment security depend on maternal characteristics (Mangelsdorf and Frosch, 1999). A subsequent study finds that although mothers' reports of difficult temperament predicted their reports of externalising problems, this was only true for mothers who engaged in harsh parenting (Miner and Clarke-Stewart, 2008).

Socio-emotional determinants of parenting sensitivity

The effect of maternal depression on children's (social-emotional) development is well established, although effects are larger for clinical samples (Dirks et al, 2012). Parental sensitivity is thought a major mechanism (Coyl et al, 2002). Using the NICHD study of early child care, maternal depressive symptoms were associated with attachment insecurity when, and only when, combined with low sensitivity (Campbell et al, 2004). In a randomised study of disadvantaged families, Duggan et al (2009) find that home visiting is less effective in improving maternal sensitivity when mothers are depressed and suffering attachment anxiety. The negative association between maternal depression and sensitivity persists when adjusting for maternal education or intelligence, family income and marital status (Albright and Tamis-LeMonda, 2002). However, the effects of depression on parenting interactions are larger in more disadvantaged samples, suggesting access to other resources can be compensatory (Lovejoy et al, 2000).

The way mothers *think* about their family attachments, regardless of their own style, may also be important to their parenting sensitivity. Addressing this maternal 'state of mind' was pivotal in improving attachment-related behaviour in an experimental intervention with high-risk mothers (Bosquet and Egeland, 2001).

Socio-economic determinates of parental sensitivity

While parental sensitivity and socio-emotional/mental health are central in attachment studies, their socio-economic causes and context has received comparatively less attention. As seen in Table 1, rates of child attachment security vary by education. Sixty-seven per cent of children whose mothers had a Bachelor's degree were securely attached, compared to 50 per cent of those with a 9th–12th grade education (Andreassen and Fletcher, 2007). At both the lowest and highest levels of education, the gradient apparently reverses, with children of mothers with very little education having relatively high rates of secure attachment, and children of mothers with doctoral and professional degrees having relatively low rates. These figures, however, should be interpreted cautiously as they are based on small numbers of observations.

Low income is also associated with lower parental sensitivity (de Falco et al, 2014). For mothers matched on age, sensitivity fully mediates the association between income and their children's attachment security (Bakermans-Kranenburg et al, 2004).

That is, net of maternal age, income has no relationship to attachment security other than through its relationship with sensitivity.

Additionally, there is evidence that children in low-income families have less stable attachment classifications over childhood, reflecting greater volatility in their mothers' income, partnership and health status (Bar-Haim et al, 2000). For disorganised

attachment specifically, higher incidences of family violence, separations and transitions help account for the higher rates among low-income families (Vondra and Barnett, 1999; Bar-Haim et al, 2000).

Rates of secure attachment are lower for African-American than White children (51 compared to 64 per cent) (Andreassen and Fletcher, 2007). Among low-income families, similar associations between sensitive parenting and attachment are found regardless of ethnicity (Dexter et al, 2013).

Young mothers experience higher degrees of stress, and tend to be less responsive to their infants than older mothers (Flaherty and Sadler, 2011). The higher probability of insecure attachment for children of adolescent parents is seen net of other factors correlated with young parenthood, such as education, family structure and income (Berlin et al, 2002), but there is little variation in these factors among young parents.

Together, maternal education, ethnicity and age accounts for most of the difference in attachment security between different family structures (Rosenkrantz Aronson and Huston, 2004). There is no evidence that a secure attachment to two parents brings additional benefits. However, for the risk of behavioural and externalising problems, a secure attachment with one parent can compensate for an insecure attachment with another (Verschueren and Marcoen, 1999; Kochanska and Kim, 2013). Additionally, parents' relationship quality and parenting sensitivity are strongly associated (Gable et al, 1994; Doyle et al, 2000; Lamb and Lewis, 2010).

Finally, there is evidence that the socio-economic context outside the family influences parenting sensitivity. For instance, adjusting for income, education and age, residential crowding is associated with lower maternal responsiveness (Evans et al, 2009), as are features of poor neighbourhoods (Pinderhughes et al, 2007). Certainly, natural experiments show that improved neighbourhood environments, and income supplements, can improve children's socio-emotional development (Leventhal and Brooks-Gunn, 2003; Akee et al, 2015). These suggest that macro social and economic factors can influence the micro level of parent sensitivity and attachment security.

Conclusion

The social sciences have recently converged in recognising the importance of socio-emotional skills. A similar convergence is needed around where these socio-emotional skills come from, that integrates the role of developmental psychological process – attachment – into existing models of the intergenerational transmission of inequality.

Attachment is of course only one mechanism among many in the intergenerational transmission of advantages and disadvantages. Attachment alone falls far short of a full explanation for the variation in children's development, and even for continuities between parents and children's skills. Few studies provide tests of the causal role of attachment security in children's development, or of the various antecedents of attachment security. Yet the magnitude, number and consistency of associations spanning multiple decades, samples and specifications indicates that attachment is relevant to the intergenerational transmission of (dis)advantages.

Consistent with attachment theory, the effects of attachment (in)security are generally larger for socio-emotional than for cognitive aspects of child development. Yet the research on attachment also supports the idea of developmental complementarity between the two kinds of skills. In parallel, there is a need to better understand how

parents' socio-emotional health and their socio-economic context relate and influence their ability to interact sensitively with their young children.

Attachment, partly due to its popular presentation, is often thought to demand highly intensive parenting, particularly of women. There is some irony to this because attachment theory was always concerned about overbearing or intrusive parenting and allied with the emphasis on 'good enough' mothering (Winnicott, 2012). Sensitive parenting, in line with attachment theory, can be seen as the primary way in which attachment is enacted and brought into embodied being. But greater attention is needed to the context in which mothers and fathers parent: social and economic conditions can work for or against sensitivity.

By emphasising the emotional and relational aspects of parenting, attachment can complement parental investment and socialisation models of transmission. Attachment can also enrich life course and multigenerational perspectives on inequality (Ermisch, 2008; Mare, 2014), through its attention to the enduring role of childhood conditions and psychological mechanisms through which advantages and disadvantages persist across generations. Those seeking to understand the transmission of socio-economic inequalities from parents to children should not overlook social-emotional processes, including attachments. Equally, however, our understanding of socio-emotional processes will remain incomplete without further consideration of how socio-economic conditions affect parents' capacity to form secure attachments with their children.

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