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THE BUFFERING EFFECT OF PERCEIVED SOCIAL SUPPORT ON THE RELATIONSHIP
BETWEEN MOTHER-CHILD ATTACHMENT AND ANXIETY IN YOUTH AFFECTED BY
MATERNAL HIV

by

SAE-JIN KIM

Under the Direction of Lisa Armistead, Ph.D.

ABSTRACT

Based on the stress buffering hypothesis, this study considered the moderating effect of perceived social support from adults other than the mother living with HIV (MLH) on the attachment-child anxiety relationship. The study utilized baseline data from the Teaching, Raising, and Communicating with Kids study, a randomized controlled trial testing the efficacy of an HIV disclosure intervention. Overall, results of this study demonstrated a significant negative association between MLH-child attachment and anxiety when controlling for child age and gender. However, results found no significant interaction effect between attachment and general perceived social support on anxiety, with informational social support in fact strengthening the negative association of attachment on anxiety. These findings underscore the consideration of children's relationships with family members and other adults as a target for addressing anxiety symptoms in youth affected by maternal HIV, as well as the need to develop measures to accurately capture the child's relationship context.

INDEX WORDS: Maternal attachment, Perceived social support, Child anxiety, Mothers living with HIV (MLH), Vulnerable children

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SAE-JIN KIM

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Arts

in the College of Arts and Sciences

Georgia State University

2020

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Sae-Jin Francis Kim
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DEDICATION

This thesis is dedicated to my parents, Tai-Young Kim and Yang-Mee Moon, for their unceasing love and support. I will forever be grateful for all that you have sacrificed so that I may unabashedly pursue my passions and dreams.

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I am grateful to my committee members, Drs. Laura McKee and Erin Tully. Dr. McKee's nuanced perspective on attachment deepened my understanding of the construct, whereas Dr. Tully's experience with structural equation modeling gave direction and comprehensiveness to my data analyses. I hope that we will have another opportunity to work and collaborate with each other in the near future.

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1 INTRODUCTION

Human immunodeficiency virus (HIV) is an international public health issue of significant concern. By the end of 2018, there were 37.9 million cases of HIV worldwide. Of those people, an estimated 1.7 million became newly infected with HIV in 2018 alone (World Health Organization, 2019). The impact of the HIV epidemic is further complicated as HIV is a collective experience that is lived by families, not only the HIV positive (+) individual (Rotheram-Borus, Flannery, Rice, & Lester, 2005). For example, HIV can increase the financial burden on the family, particularly if the HIV+ person is the family's primary source of income. Also, all family members are likely to encounter some level of HIV-related stigma and discrimination even if they are negative for HIV (Bogart et al., 2008). Overall, the full scope of the HIV epidemic is difficult to determine, but researchers within the field have established that an HIV+ serostatus is associated with a number of negative outcomes for the HIV+ individual and their family (Ji, Li, Lin, & Sun, 2007; Rotheram-Borus et al., 2005).

1.1 Demographic Shifts in HIV-Affected Families

As the individuals most dependent upon family structure, children are affected by parental HIV. For the most part, researchers have studied the functioning of children who have lost one or both parents to acquired immunodeficiency disease (i.e. AIDS orphans). However, with the development of anti-retroviral therapy and the increased life expectancy of HIV+ individuals, death from AIDS has become less of a concern (Chi & Li, 2013; Samji et al., 2013). Now, many parents living with HIV are able to raise their children and not worry about premature mortality due to their medical condition. As a result, it is increasingly important to examine the relationship and associated well-being of children living with one or two HIV+ parents (i.e. vulnerable children).

In particular, since an estimated 23% of all Americans living with HIV are female, and women are often the caregivers of children (Centers for Disease Control and Prevention [CDC], 2019; Wiener, Battles, & Heilman, 1998), the broad goal of the current study was to examine how attachment between mothers living with HIV (MLH) and their children influences the child's anxiety, a facet of psychosocial functioning. The current study also took into consideration that a majority of MLH do not disclose their HIV status to their children, especially if the child is of school-age (Armistead, Tannenbaum, Forehand, Morse, & Morse, 2001; Murphy, Steers, & Dello Stritto, 2001). Literature reviews estimate that the rate of maternal HIV disclosure to negative serostatus children has remained relatively low and stable since the late 1990s at 30 to 45% (Hawk, 2007; Murphy, 2008; Qiao, Li, & Stanton, 2013). Consistent with this body of research, in the sample used for this project, the rate of MLH-to-child disclosure was approximately 34.5% even up to 15 months after intervention (Schulte, Armistead, Murphy, & Marelich, under review). Thus, focus on vulnerable children, who are unaware of their mother's HIV status, accurately represents a large proportion of families affected by HIV and is conscious that a mother's HIV+ diagnosis may have greater impact than a father's diagnosis from a child-rearing perspective.

1.2 Impact of MLH-Child Attachment on Anxiety

Within the nomological net, attachment theory is one of the most fundamental models to understanding mother-child interactions. Attachment is the emotional aspect of the caregiver and child relationship that makes the child feel protected, secure, and safe (Ainsworth & Bowlby, 1991). Generally, scientists conceptualize attachment as a relatively stable construct that formalizes during infancy. A growing body of literature indicates, though, that attachment is susceptible to moderate changes based on negative life events and shifts in family dynamics

(Fraley, 2002; McConnell & Moss, 2011). Beyond the financial burden, stigmatization and medical care specific to HIV, comorbidities are common among people with an HIV+ diagnosis, including essential hypertension, hyperlipidemia, endocrine disease and substance misuse (Gallant, Hsue, Shreay, & Meyer, 2017; Tarantino & Armistead, 2016). Altogether, these HIV-related challenges may lead to extended periods of physical separation between the caregiver and the child (“big breaks”) due to hospitalization, change in custody, and incarceration (Tarantino & Armistead, 2016).

In relation to attachment, the “big breaks” not only compromise the stability of the family structure (Ji et al., 2007; Rotheram-Borus et al., 2005), but likely disrupt the ongoing relationship between the HIV-affected parent and the child (Tarantino, Lamis, Ballard, Masuda, & Dvorak, 2015). Qualitative reports from MLH and their adolescent children demonstrate the difficulties in mending the emotional quality of the mother-child relationship following these long periods of separation. Notably, adolescents of MLH highlight increased feelings of mistrust, anger, and distance with their mothers as a result of “big breaks” (Tarantino, Guthrie, & Armistead, 2020). Subsequently, the research provided a strong basis for examining the role of current MLH-child attachment (instead of historical attachment) into adolescence because of specific and broad family disruptions associated with HIV that may lead to a pattern of stable instability in the MLH-child attachment relationship (Fraley, 2002). In other words, the attachment quality between the MLH and child has the potential to fluctuate across time in response to significant changes in the family environment like “big breaks.” Thus, due to the difficulty of recruiting families affected by HIV and capturing the demographic heterogeneity within this sample, a broad age range of child participants was sampled to not only ensure adequate sample size and power, but also to accurately measure the variability of attachment across HIV-affected families

with children in different developmental periods.

Within a clinical context, the study of MLH-child attachment is important because the quality of the affective relationship between a caregiver and a child is associated with the child's overall psychosocial functioning later in life. Psychosocial functioning is the level at which an individual performs in their environment to sustain daily living. Given that researchers within the field continue to debate how to operationalize psychosocial functioning, understanding the concept can be facilitated through its intrinsic link with how mental disorders are defined, a more well-established field of research (Ro & Clark, 2009). A meta-analysis demonstrated that psychological disorders map onto an internalizing (e.g. anxiety, depression, and withdrawal) or externalizing spectrum (e.g. aggression and rule-breaking), which represent tendencies to deal with stressful situations in the environment through inward or outward processes (Krueger & Markon, 2006). Subsequently, as disorders constitute difficulties or lower levels of psychosocial functioning, the literature on the meta-structure of mental disorders could be extended to operationalize psychosocial well-being with the same factors.

This study, in particular, focused on symptoms of anxiety as the outcome, considering that none of the children in the sample were aware of their mother's HIV+ serostatus. As part of the internalizing spectrum of psychosocial functioning, anxiety represents an inward coping strategy involving feelings of worry, unease, or apprehension (Krueger & Markon, 2006; Chorpita, Tracey, Brown, Collica, & Barlow, 1997). Relevant to HIV and other chronic illnesses, prior reviews of the disclosure literature suggest that parental non-disclosure of a positive serostatus is associated with a wide array of disruptions in child psychosocial functioning, including increased internalizing and externalizing symptoms (Murphy, 2008; Qiao et al., 2013). However, across previous reviews, elevated child anxiety appears to be the outcome most

consistently associated with parental non-disclosure. Thus, due to the centrality of anxiety to the experience of children unaware of and affected by parental chronic illness, selecting anxiety as the outcome in this study helps address an important aspect of the sample and strengthens conclusions drawn about its relationship with caregiver-child attachment (Murphy, 2008; Qiao et al., 2013).

Speaking to that association, extensive research has demonstrated that poor caregiver-child attachment positively correlates with higher levels of anxiety in children (Chauhan, Awasthi, & Verma, 2014). Moreover, despite evidence that similar results may be found with vulnerable children and MLH, HIV researchers have only examined the broader impact of the relationship context, of which attachment is an important part. Specifically, different from attachment, researchers have primarily studied the behavioral and not the affective components of the caregiver-child relationship, including conflict management and parent-child monitoring (Bauman, Camacho, Silver, Hudis, & Draimin, 2002; Holditch-Davis et al., 2001; Hough, Brumitt, Templin, Saltz, & Mood, 2003). In all, considering the extant literature on caregiver-child attachment and youth anxiety and the lack of application to MLH and vulnerable child populations, another aim of the proposed study was to isolate MLH-child attachment as a unique predictor for youth anxiety within the context of parental non-disclosure.

1.3 The Buffering Effect of Perceived Social Support

According to theory, the attachment between a caregiver and their child informs the youth's understanding about the quality of the self, the world, and relationships, thereby predicting overall psychosocial development and functioning (Ainsworth & Bowlby, 1991; McConnell & Moss, 2011). Current literature on attachment, however, criticizes the theory for focusing on the dyadic relationship between the caregiver and the child, effectively ignoring the

importance of other contextual factors in the caregiving of the child (Keller, 2013). In turn, to address this limitation of attachment theory and acknowledge the presence of others as a context in caring for the child, the current study utilized the stress buffering hypothesis to incorporate perceived social support from other adults as a moderator in the relationship between caregiver-child attachment and child anxiety (Cohen & Wills, 1985).

Perceived social support is operationalized as the belief or confidence that people are helpful and trustworthy and that one is valued, liked, and cared for by those individuals (Armsden & Greenberg, 1987). In particular, the study looked at perceived social support from adults besides the mother (i.e. any individual 18 years or older) as both a function of the measure used in the original study and an opportunity to expand upon this nascent area of research. Broadly speaking, scientists have not focused on non-parental adults as a source of social support. Nonetheless, there is a growing substantive base of research to suggest the importance of this source of social support, especially as it relates to youth psychosocial functioning (Sterrett, Jones, McKee, & Kincaid, 2011). From their literature review, Sterrett et al. (2011) found that social support from non-parental adults was associated with better youth psychosocial functioning in terms of higher levels of academic adjustment and self-concept, as well as lower levels of emotion and behavior problems. Thus, considering the potential for “big breaks” with MLH and the tendency of mothers to assume a more intensive caregiver role than their partner, the support of non-parental adults is vital to consider for vulnerable children in HIV-affected populations in the probable absence or limited functioning of the child’s primary caregiver, the MLH (Ainsworth & Bowlby, 1991; Tarantino et al., 2015; Wiener et al., 1998).

According to the stress buffering hypothesis, perceived social support is important in that it can protect an individual from the negative effects of stress on psychosocial functioning

(Cohen & Wills, 1985). This study aimed to examine whether perceived social support buffers the association between MLH-child attachment and child anxiety, which functionally replaced stress and psychosocial functioning drawing from the stress buffering hypothesis. While no research with vulnerable children has been conducted regarding the study model, previous literature has demonstrated that weak attachment is associated with neurobiological pathways of stress and anxiety disorders (Nolte, Guiney, Fonagy, Mayes, & Luyten, 2011). Also, previous research has shown that perceived social support provides numerous psychological benefits, including lower anxiety even within the context of compromised attachment (Mikulincer & Shaver, 2008; Stanton & Campbell, 2014). Therefore, when controlling for child age and gender, the hypothesis is that weaker MLH-child attachment will be associated with higher anxiety and that high perceived social support will weaken or buffer this negative relationship (see Figure 1 below).

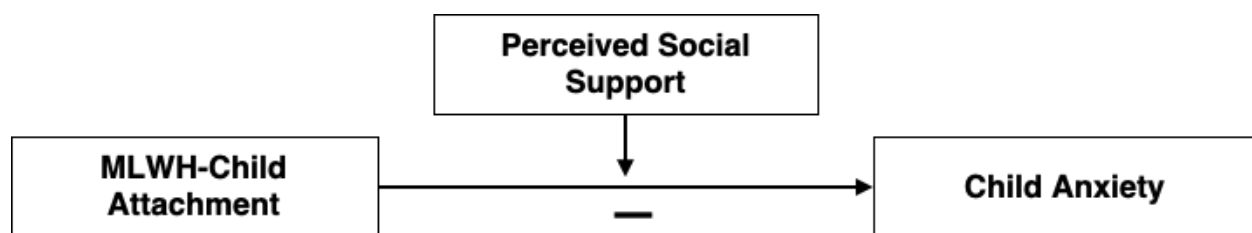


Figure 1. Proposed moderation model between MLH-child attachment, perceived social support, and child anxiety in vulnerable youth affected by maternal HIV

Note. Despite not being depicted in the figure, child age and gender will be included as covariates in the regression analyses.

1.4 Types of Perceived Social Support

Researchers categorize perceived social support into four different types as a function of what is provided by the relationship. Informational support is the belief that one receives advice and guidance from others. Companionship support is the belief that one receives a sense of group

identity from others. Tangible support is the belief that one receives material goods and services from others, and emotional support is the belief that one receives empathy and affirmation from others (Wolchik, Ruehlman, Braver, & Sandler, 1989). Typically, however, as evidenced by the frequent use of the Multidimensional Perceived Social Support Scale, a majority of studies examine the nuanced and complex nature of perceived social support based on the source of support (e.g., family, friends) rather than the type (Dambi et al., 2018; Zimet, Dahlem, Zimet, & Farley, 1988). While there is tremendous value in understanding perceived social support by source, a review by Nurullah (2012) suggests that in the few studies looking at the differential effects of perceived social support type, the results are mixed, which highlights the need for further research on the multidimensional nature of perceived social support type. Therefore, another aim of this study was to disentangle whether and how different types of perceived social support moderate the relationship between MLH-child attachment and youth psychosocial functioning through exploratory analysis.

To conclude, the proposed study addressed several gaps in the literature. Despite changes to the demographics of HIV-affected families, a majority of the child development literature focuses on the functioning of AIDS orphans instead of vulnerable children. Furthermore, the study was the first to look at the interactive effect between perceived social support and maternal attachment on child anxiety in children affected by maternal HIV. Thus, the proposed study added to the current understanding about the relationship between MLH-child attachment and youth psychosocial functioning by reflecting how HIV has shifted from being a terminal to a chronic illness. It also extended the external validity of attachment theory, helped clarify the multidimensional nature of social support, and addressed how the HIV epidemic has disproportionately impacted low income families from communities of color, including mothers

who primarily identify as either African American or Latinx. (Clara, Cox, Enns, Murray, & Torgrudc, 2003; Wolchik et al., 1989; Zhao, Li, Zhao, Zhang, & Stanton, 2012). Overall, the research may serve as a theoretical basis for prevention and intervention efforts targeted at vulnerable children, a segment of the population that is in dire need of mental health services.

2 METHOD

2.1 Participants

Archival data for this study was taken from the Teaching, Raising, and Communicating with Kids (TRACK-II) randomized controlled trial, which tested the efficacy of an HIV disclosure intervention aimed at facilitating mother-to-child disclosure of HIV status by improving the relationship between MLH and their children. Referrals from local community and health agencies in Georgia and Southern California, served as the primary source of recruitment for the study. A total of 362 MLH and child participants ($N = 181$ MLH-child dyads) were enrolled between the two sites. To be eligible for participation, the mother had to have a confirmed status of HIV/AIDS and be their child's primary caregiver, but not necessarily the biological parent. The child had to have a negative serostatus, be unaware that their mother was HIV+ and be between the ages of 6 to 14 years. In addition, the mother and child must be English or Spanish speaking and have no reported history of psychosis or cognitive delay, as the mother-child dyad had to be able to understand and provide informed consent and assent, respectively. If the MLH had multiple children that met the eligibility criteria, the participating child was picked using random selection.

Ten MLH-child dyads were excluded from the final sample ($N = 342$ participants or 171 dyads) because researchers learned that these participants either failed to meet eligibility criteria after enrollment or had incorrectly completed the measure of perceived social support. Within this final sample, participants reported an average age of 39 years ($SD = 7.74$) for the mothers and 10 years ($SD = 2.48$) for the children. Mothers were predominantly single (19.9% married) and had an average income of \$970 per month. A slight majority of children were female (51.5%). Reflective of the demographics in Atlanta and Los Angeles (CDC, 2019) and the

recruitment locations for TRACK-II, there was also a diverse representation of race/ethnicities in the final sample with a significant portion of participants being African-American (55.6% of mothers and 56.7% of children) and Hispanic/Latinx (34.5% of mothers and 36.3% of children).

2.2 Measures

In the TRACK-II study, MLH and children were provided separate batteries of assessments to gather information about the social environment of the family, the relationship between the mother and child, the status of mothers' disclosure to children, and mother and child psychosocial functioning. Only baseline data from the following measures were used for this study. Also, with the exception of demographic information provided by the MLH, the primary constructs of MLH-child attachment, perceived social support, and child anxiety were measured only with child report for a couple of reasons. One, from a logistical perspective, multi-informant measures were unavailable for MLH-child attachment and perceived social support from the TRACK-II study. Two, the child is arguably the best reporter with respect to their perception of who provides social support, and some research asserts that children are more reliable and valid reporters of internalizing symptoms (Smith, 2007). Thus, recognizing the limitations to a single reporter, the current study relied solely on child report due to the availability of measures from TRACK-II and the nature of two out of the three constructs assessed.

2.2.1 Demographics

Basic demographic information was collected from the MLH, including age, race, marital status, residential stability, educational background, and SES. The mother also reported on their child's age, gender, and race.

2.2.2 MLH-Child Attachment

The Inventory of Parent Attachment (IPA) is a self-report measure completed by the

child (Armsden & Greenberg, 1987). It assesses maternal-child attachment from the child's perspective to determine the extent to which statements about their mother (e.g. "My mother accepts me for who I am") are true to their lived experience. The measure has a total of 25 items scored on a Likert scale from 1 ("never true") to 5 ("always true") with 3 subscales of trust, communication, and alienation. The subscales demonstrate high internal consistency with alpha coefficients (α) of 0.91, 0.91, and 0.86, respectively. A global score is calculated by reverse-scoring negatively-worded items and then totaling all the item values together, higher scores indicating a stronger quality of maternal-child attachment. The subscale and global scores have maintained adequate reliability and construct validity when used in other studies with minority children affected by maternal HIV (Murphy, Armistead, Marelich, Payne, & Herbeck, 2011; Murphy, Marelich, & Herbeck, 2012) and youth across a wide range of age groups from pre-adolescence and beyond (Armsden & Greenberg, 1987; Shlafer & Poehlmann, 2010). Several items on the IPA were incorporated to measure current attachment (e.g. My mother doesn't understand what I'm going through these days), acknowledging the potential for discontinuity in attachment (Armsden & Greenberg, 1987).

2.2.3 Perceived Social Support

The Children's Inventory of Social Support (CISS) is an interview measure that is administered to the child (Wolchick et al., 1989). It assesses different types of perceived social support that are provided by adults other than the child's mother. Consistent with broader social support theory, the measure divides perceived social support based on its function into recreation (or companionship support), goods/services (or tangible support), emotion (or emotional support), and advice and positive feedback (or informational support). For each type of social support, the examiner gives a brief description to the child and then prompts them to list up to

four adults, besides their mother, that have provided them the described type of social support in the past month. From the lists, count variable scales are created to measure the frequency of different types of social support with higher counts indicating a greater number of people perceived as providing each type of social support. As the child can list the same adult for multiple types of social support, the overall measure of perceived social support will equate to the total number of unique individuals provided by the child, which will help control for potential ceiling effects, whereas for the individual types of social support, the count will be equal to the total number of people, irrespective of overlap from other subscales. Across the different types of perceived social support, the average α is high and ranges from 0.79 to 0.91. No studies, however, have tested the psychometric properties of the measure with families affected by HIV, and the norming sample was predominately Caucasian (92%) with limited representation of African American and Latinx communities (Wolchik et al., 1989).

2.2.4 Child Anxiety

The Pennsylvania State Worry Questionnaire (PSWQ) is a self-report questionnaire given to the child to assess for symptoms of anxiety (Chorpita et al., 1997). The 14-item measure involves the child determining the extent to which they agree with statements about their level of worry (e.g. “My worries really bother me” and “When I am under pressure, I worry a lot”). Scored on a Likert scale from 0 (“Never True”) to 3 (“Always True”), the total score on the PSWQ ranges from 0 to 42 with higher scores indicating higher levels of anxiety. The psychometric properties were adequate with the standardization sample (Chorpita et al., 1997) and diverse racial/ethnic populations similar to the one sampled for the TRACK-II study (Forehand et al., 2007).

2.3 Procedures

2.3.1 Consent/Assent

Members from the local research team briefed clinical staff at community agencies about the study and provided an informational pamphlet for distribution. The clinicians reviewed the pamphlet with MLH that were potential candidates for the TRACK-II study, after which a member of the research team would follow-up and determine the family's eligibility for the study by speaking with the MLH over the phone. If the family was deemed eligible to participate in the study based on the enrollment criteria, the research team member scheduled a day and time for baseline assessment. During the phone screen, MLH were informed that they and one of their children would participate in assessments at baseline, 3-, 9-, and 15 months. The screener also told the MLH that the purpose of the TRACK-II study was to examine the efficacy of an intervention designed to address the needs of MLH. When assenting the child, the child's interviewer explained that the purpose of the TRACK-II study was to look at how mothers and children talk to one another. Both the child and MLH were informed that participation in the study was voluntary and that early termination from the study would not cause the participants to incur any penalty or loss of benefit.

2.3.2 Interview

Interviewers were trained to administer the battery of self-report measures using a computer-assisted personal interview (CAPI) program. CAPI had interviewers guide participants through the assessments using a structured interview and input participant's responses onto a laptop in real-time. Based on the mother's preference, interviews were conducted at the recruitment site, research office, or, most often, in the family's home. In order to limit reactivity and experimenter expectancies, interviewers assessed the families in pairs. One interviewer

assessed the child participant, and the other interviewer assessed the MLH. Mother and child interviews occurred at the same time, but in separate rooms. Assessments generally lasted for 75 minutes with mothers and 45 minutes with the child. MLH received \$60 in cash for each interview and intervention session, whereas children received \$30 in gift cards for participation in each assessment of the TRACK-II study. For this study, only baseline data was used.

3 RESULTS

3.1 Data Analysis Plan

The researcher used IBM SPSS Statistics, Version 25.0, to analyze the data, which involved descriptive statistics and bivariate correlations, hierarchical linear regression, and the PROCESS macro (Hayes, 2017). Descriptive statistics and bivariate correlations established a base understanding of the study measures. Hierarchical linear regression looked at the association between MLH-child attachment and child anxiety when controlling for child age and gender, and the PROCESS macro enabled testing of the interaction between MLH-child attachment and perceived social support on child anxiety.

3.2 Data Analysis

On average, children reported strong levels of attachment with their mothers ($M = 99.36$, $SD = 17.03$, with a possible range of 25-125) and low levels of perceived social support ($M = 6.06$, $SD = 3.14$, possible range of 0-20) and anxiety ($M = 17.11$, $SD = 8.26$, possible range of 0-42). Bivariate correlations demonstrated that stronger MLH-child attachment associated with older child age ($r = .19$, $p < .05$) and lower anxiety ($r = -.24$, $p < .01$). In addition, the correlations showed higher levels of perceived social support reported by girls than boys ($r = .17$, $p < .05$) and lower anxiety related to older child age ($r = -.16$, $p < .05$). No other correlations were significant among the other study variables, including perceived social support and child age, gender, and anxiety (see Table 1 below).

Table 1. Descriptive statistics and bivariate correlations among all study variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Child Age	9.59	2.40	--				
2. Child Gender	51.5% female		.00	--			
3. Mother-Child Attachment	99.36	17.03	.19*	.08	--		
4. Perceived Social Support	6.06	3.14	-.03	.17*	.14	--	
5. Child Anxiety	17.11	8.26	-.16*	.03	-.24**	.01	--

Note. * $p < .05$; ** $p < .01$; *** $p < .001$

The hierarchical linear regression demonstrated that neither child age ($\beta = -.50, t = -1.89, p = .06$) nor gender ($\beta = .41, t = .32, p = .77$) was significantly related to child anxiety within a linear model. However, inclusion of MLH-child attachment within the regression accounted for a significant amount of variance in child anxiety, $\Delta R^2 = .05, F(3,166) = 4.06, p < .01$, with the final model explaining a total of 5.2% variance. Specifically, MLH-child attachment was significantly and negatively associated with child anxiety ($\beta = -.11, t = -2.90, p < .01$). In other words, stronger attachment was associated with lower child anxiety (see Table 2 below).

Table 2. Hierarchical regression analysis predicting child anxiety

Predictor	B	t	F	ΔR^2
Step 1			1.83	
Child Age	-.50	-1.89		
Child Gender	.41	-.32		
Step 2			4.06**	.05**
Child Age	-.35	-1.33		
Child Gender	.63	.51		
Mother-Child Attachment	-.11	-2.90**		

Note. * $p < .05$; ** $p < .01$

The PROCESS macro (Hayes, 2017) showed an insignificant interaction or moderated effect between MLH-child attachment and perceived social support on child anxiety ($\beta = -.02, t = -1.33, p = .18$). Additional exploratory analyses revealed that, of the four types of social support (i.e., emotional, tangible, companionship, and informational), only informational support had a significant moderated effect with MLH-child attachment on child anxiety ($\beta = -.07, t = -2.68, p < .01$). Given average or high informational social support, poor MLH-child attachment was significantly associated with higher symptoms of anxiety ($\beta = -.11, t = -2.94, p < .01$; $\beta = -.26, t = -4.13, p < .001$), whereas at low levels of informational social support, the association between poor MLH-child attachment and anxiety was insignificant ($\beta = -.03, t = -.69, p = .49$; see Figure 2 below).

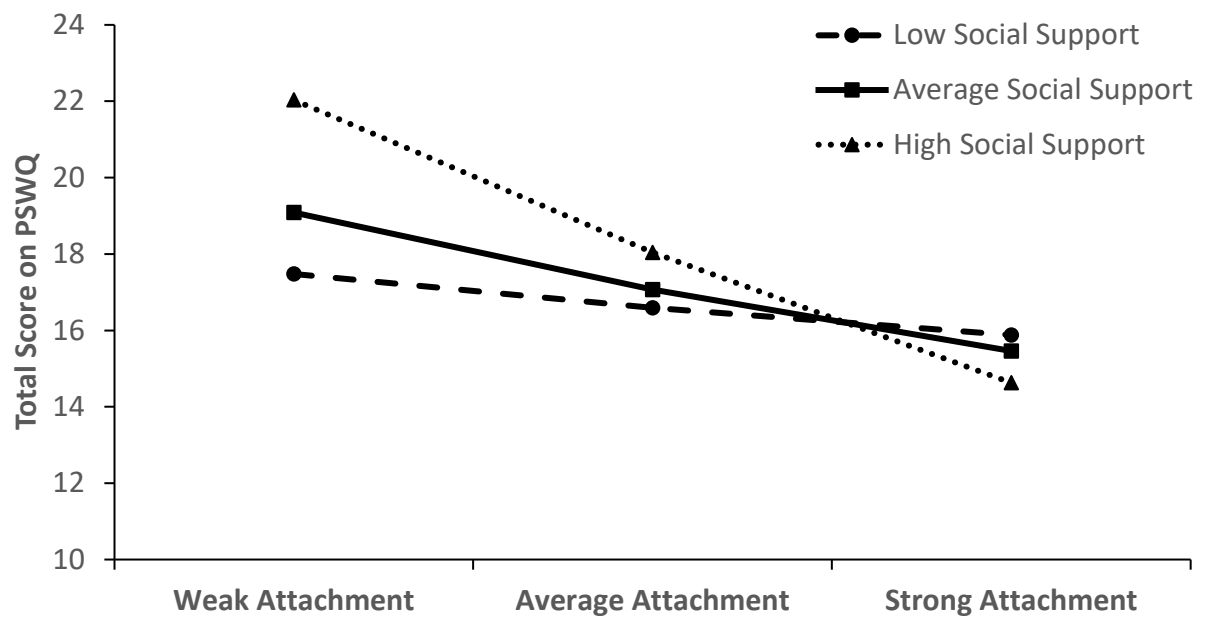


Figure 2. Effects of attachment on anxiety as moderated by informational social support
Note. PSWQ refers to the Pennsylvania State Worry Questionnaire, a self-report measure on anxiety symptoms.

4 CONCLUSIONS

This study aimed to improve upon the study of attachment as related to anxiety. Specifically, reflective of current demographics, the researchers examined the association between mother-child attachment and symptoms of anxiety in vulnerable and racially diverse children affected by maternal HIV, a growing segment of the population that previously had been underrepresented in research (Chi & Li, 2013; Samji et al., 2013). In addition to the lack of representation, focus on this HIV-affected population was warranted given prior research suggesting that a positive serostatus of caregiver HIV was associated with significant disruptions to the family structure, as the illness and its sequelae can not only compromise caregiver-child attachment but, relatedly, child psychosocial functioning as well (Tarantino et al., 2015; Tarantino & Armistead, 2016). Using the stress buffering hypothesis (Cohen & Wills, 1985), the researchers included perceived social support as a potential moderator in the relationship between MLH-child attachment and symptoms of anxiety in the child to address limitations of attachment theory by accounting for the breadth of individuals that support the child. Overall, the results of this study provide an interesting perspective on future directions for studying the associations between attachment, perceived social support, and anxiety.

Consistent with the original hypothesis, MLH-child attachment was significantly and negatively correlated with child anxiety (e.g., excessive worry, difficulty concentrating, and restlessness) even when controlling for child age and gender, emphasizing the importance of the dyadic connection between the caregiver and the child. However, perceived social support did not buffer the relationship between attachment and anxiety, which may be due to differential effects of perceived social support types. Exploratory analyses revealed that, of the various types of perceived social support, only informational support showed significant moderation results.

Specifically, given average or high informational social support, poor MLH-child attachment was significantly associated with more symptoms of anxiety. In other words, informational social support strengthened the negative association between weak MLH-child attachment and anxiety. While contrary to our expectations and prior research on the buffering effects of social support (Chu et al., 2010; Malecki & Demaray, 2003), recent literature with AIDS orphans and vulnerable children in China suggests that the type of perceived social support could be differentially associated with youth psychosocial well-being (Hong et al., 2010; Zhao et al., 2011). More specifically, different from other types of social support, the researchers found that informational support had a significant, positive correlation with internalizing problems such as depression and loneliness. With greater informational support came more symptoms of internalizing problems. Concurrent with other studies in the social support literature, aspects of informational support could be seen as stressful and negative, instead of supportive in function, depending on the quality of information from the advisor and the interpretation of that information by the advisee (Clara, Cox, Enns, Murray, & Torgrudc, 2003; Joiner, 2000; Zhao et al., 2011).

In terms of this study sample, a unique aspect was that all the children were unaware of their mother's HIV+ status, which in essence constitutes withholding of information from the child. Relevant to the outcomes of this study, the primary issue seen with this withholding of information is increased child anxiety derived from a sense of not knowing (Murphy, 2008; Qiao et al., 2013). Subsequently, if the perceived sense of receiving advice or guidance from others was not HIV-related, informational social support as compared to the other types of social support may have been more detrimental or stressful in addressing the concern underlying the child's anxiety within the context of non-disclosure of paternal serostatus. Overall, the

moderation results underscore the mixed findings for multidimensional effects of perceived social support on psychosocial functioning and the need to conduct more research on the topic, which informed the design and analyses in this paper (Nurullah, 2012).

Regarding demographic differences, attachment was significantly and positively correlated with child age. In other words, older children reported stronger attachment to their maternal caregiver than younger children, which departs in some ways from what may have been assumed in this sample given reports of poorer parent-child relationship quality as children age (Crow & Seybold, 2013; Nomaguchi, 2012), as well as specific and broad family disruptions associated with HIV that lead to more volatility in the MLH-child attachment relationship (Tarantino et al., 2015; Tarantino & Armistead, 2016). Nonetheless, within the disclosure literature, research has found that HIV+ parents are more likely to partially or fully disclose their positive serostatus as the child becomes older (Armistead, et al., 2001; Murphy et al., 2001). Thus, it is possible that the mothers of older, relative to younger, children provided their children with some information about their illness, without labeling it as HIV. In fact, it is not uncommon for the older children of mothers who disclose to report that they already knew their mother was living with HIV (Kennedy et al., 2010). Relative certainty about their mothers' health, compared to younger children, may explain the increased attachment in the older children.

Somewhat related, we determined a negative, significant correlation between child anxiety and age. Specifically, older children noted less anxiety than younger ones. The lower levels of anxiety could be related to the increased likelihood of partial disclosure by a positive serostatus parent to older children (Armistead, et al., 2001; Murphy et al., 2001). Not only does this address one of the primary anxieties for the child within the context of non-disclosure, depending on the child's age, the child may have had additional time to process the information,

which generally improves their anxiety and psychosocial functioning outcomes (Murphy, 2008; Qiao et al., 2013). Finally, higher perceived social support was reported by girls instead of boys. The results are consistent with gender differences in perceived social support and thereby extends the applicability or external validity of those findings (Rueger, Malecki, & Demaray, 2008).

Although promising, the results of this study are qualified by several limitations. In regard to sample selection, while it ensured adequate sample size, accounted for the potential volatility of MLH-child attachment, and was controlled as a covariate in the study, the researchers of TRACK-II gathered a wide age range of child participants, introducing additional variability to the study in terms of developmental ability and functioning. Also, all children in the sample were unaware of their mother's positive serostatus, which the researchers tried to reflect more accurately in selecting child anxiety as the outcome of the study. As a whole, even though the researchers had clear rationales and controls for the sampling limitations in this study, these unique aspects about the sample, ultimately, weakened the external validity of the results and its applicability to other HIV-affected populations.

With respect to measurement-related limitations, the study assessed the constructs using a single self-report measure completed by the child for MLH-child attachment, perceived social support, and child anxiety. In some ways, use of only child informant manifest indicators could be seen as beneficial in that children are arguably the best reporters with respect to their perceived social support and anxiety (Smith, 2007), two of the primary constructs in the current study. However, the lack of multi-modal assessment may have hampered the internal validity of the study, and the implications for common reporter method variance must be considered. The latter limitation is particularly salient given the relatively small amount of variance accounted for

in the final model. Additionally, even though the CISS has previously been validated, conceptual questions remain as to how accurately the measure captures the construct of perceived social support (Nurullah 2012; Wolchick et al., 1989), namely in the way that it quantifies perceived social support by the count or number of adults besides the primary caregiver who have provided a particular type of perceived social support (instead of considering the quality of that support from those individuals).

In conclusion, the results of the study could serve as the basis for various research and clinical work moving forward. One clear implication, for example, was that more research is required to study attachment as a unique predictor of broader psychosocial functioning in HIV-affected populations. While this study opted to constrain the operationalization of attachment and psychosocial functioning to MLH-child attachment and child anxiety due to the nascent nature of this research area, it would be hypothesized that similar to other populations, attachment would have broader connections to other facets of psychosocial functioning for HIV-affected groups (Chauhan et al., 2014). Moreover, in expanding the study of attachment, it could be helpful to consider perceived social support as an important contextual factor in the parent-child relationship context given that the study underscored the importance of other sources of social support (e.g. family and friends) for children affected by parental/caregiver HIV. Towards that end, use of advanced statistical techniques such as structural equation modeling or development of new measures may be helpful in more closely approximating the attachment construct as a network of relationships. Finally, from a more practical perspective, it appears that as much as directly addressing the attachment between the caregiver and child would be helpful in promoting the psychosocial functioning of vulnerable children, determining ways to improve informational social support from others could be another beneficial and interesting pathway to

explore for prevention efforts in the future.

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