When do peers matter? The moderating role of peer support in the relationship between environmental adversity, complex trauma, and adolescent psychopathology in socially disadvantaged adolescents

Karen Yearwood^{a,*}, Nicole Vliegen^a, Cecilia Chau^{b,} Jozef Corveleyn^a, and Patrick

Luyten^{a,c}

^a Faculty of Psychology and Educational Sciences, KU Leuven, Tiensestraat 102 – pobox 3720, 3000 Leuven, Belgium

^b Department of Psychology, Pontificia Universidad Católica del Perú (PUCP), Lima, Perú

^c Research Department of Clinical, Educational and Health Psychology, UCL

(University College London), 1-19 Torrington Place, London WC1E 7HB, UK

* Corresponding author. E-mail: <u>karen.yearwood@kuleuven.be</u>

Funding

This work was supported by the "Fonds Dr. Pierre Vereecken" from KU Leuven, Belgium. This sponsor had no role in the study design, data collection, analysis and interpretation of data, writing of the report; or in the decision to submit the article for publication.

Declaration of interests: none

Abstract

Introduction: This study examined the longitudinal associations between environmental adversity (defined in terms of exposure to violence in the neighborhood, school, and media), complex trauma (operationalized as experiences of abuse and neglect), and adolescents' internalizing and externalizing symptoms. Methods: Using a cross-lagged panel research design, we investigated the moderating role of peer support in these relationships in a sample of 644 adolescents from a severely disadvantaged district of Lima, Peru, who were followed up in a 1-year prospective study. Results and conclusions: We found significant unidirectional dynamic relations, where both types of adversity were associated with higher levels of internalizing and externalizing symptoms. Peer support significantly moderated this effect, but only for complex trauma, in that higher levels of peer support were associated with a decreased impact of complex trauma on internalizing and externalizing symptoms. These findings highlight the importance of social relations and the quality of peer relations in particular as factors that may mitigate the risk of early exposure to trauma.

Keywords: early adversity, complex trauma, environmental adversity, peer support, internalizing symptoms, externalizing symptoms.

Introduction

Experiencing early negative life events and exposure to violence can have a serious impact on development. Even though this has been a topic of interest across the United States and Europe, very little research has been done in Latin American countries like Peru, where the prevalence of adversity and trauma is known to be higher.

Four out of ten adolescents (from 11 to 18 years old) from disadvantaged areas of Lima, Peru, are victims of various forms of severe violence, abuse, and neglect (Yearwood, Vliegen, Chau, Corveleyn, & Luyten, 2017). Moreover, and as a consequence, half of these adolescents meet cut-off criteria for internalizing and externalizing problems. These findings may not be surprising given that young people growing up in these areas are exposed to high levels of community violence and trauma (Yearwood et al., 2017).

In order to understand the range of possible adverse experiences, we differentiate between environmental adversity (EA) and complex trauma (CT). EA refers to structural attributes, such as poverty and exposure to violence in the community, media, and schools (Páez, Fernández, & Beristain, 2001), whereas CT refers to early negative life experiences of abuse and neglect within a caregiving setting (Asnes & Leventhal, 2011; Kounou et al., 2013; Waldinger, Schulz, Barsky, & Ahern, 2006).

The negative impact of both EA and CT on development has been broadly studied, and in particular, regarding their association with internalizing and externalizing problems (Geffner & Tishelman, 2011; Havens et al., 2012; Kira, Lewandowski, Somers, Yoon, & Chiodo, 2012; Luthra et al., 2009; Nilsson & Svedin, 2006; Rousseau, Drapeau, & Platt, 1999; Weber, 2009; Yearwood et al., 2017). Internalizing problems refer to anxiety, depression, and somatic complaints symptoms, whereas externalizing problems are defined as behavioral problems such as rulebreaking and aggressive behaviors (Achenbach & Rescorla, 2001).

Despite the growing body of literature addressing the effects of CT and EA, much less attention has been given to protective factors that may buffer the detrimental effects of early negative life experiences (Yearwood et al., 2017).

Some recent studies focusing on the search for these protective elements have identified attachment to parents as an important mitigating factor for adolescents in the context of early adversity (Drury, 2012; Yearwood, Vliegen, Corveleyn, & Luyten, 2019). Moreover, even though parental relationships remain crucial for development and well-being during adolescence (Ichiyama et al., 2009; Wood, Read, Mitchell, & Brand, 2004), the increasing importance of the role of other attachment figures, such as peers, remains underexplored.

Adolescence is a developmental stage during which peers play an important role in terms of social relatedness (Nickerson, 2005; Yearwood, Vliegen, Luyten, Chau, & Corveleyn, 2018). As adolescents begin to form bonds outside of their family system, friends and peers represent crucial agents in the development of social connectedness and interpersonal relationships (Armsden & Greenberg, 1987; Gorrese & Ruggieri, 2012). During this stage of development, close friends and peers become the primary source of intimacy, disclosure, and emotional and social support (Wilkinson, 2004). Moreover, they play a key role in specific developmental tasks, such as individuation from the family, identity formation, and exploration of sexuality (Wilkinson, 2010). As adolescents' parental relationships begin to change and relationships with peers gain importance, these new attachment figures also gain significance in terms of emotional well-being and psychological functioning.

4

Beyond the adaptive and normative role of peer relationships during adolescence, these new attachment figures, when positive, can be seen as protective elements in the face of adversity. In this sense, exploring whether positive peer relations can also have a mitigating effect for adolescents growing up in harsh environments, could help tailor preventive and psychosocial interventions in such contexts.

Peer attachment in adolescence has been associated with lower levels of internalizing (Gorrese, 2016) and externalizing (Oldfield, Humphrey, & Hebron, 2016) problems. Similarly, closeness of peer relationships and peer support have been linked to decreased suicidality (Matlin, Molock, & Tebes, 2011), and to increased self-esteem and self-competence among adolescents (Wilkinson, 2010).

In this study, we therefore investigated peer attachment, and more specifically, peer support, as a potential mitigating factor of environmental adversity and complex trauma. Peer support has been previously operationalized as a proxy of peer attachment (Yearwood et al., 2019).

We explored whether social support from peers may moderate the effects of early negative life experiences in a context that has not yet been investigated, a severely disadvantaged setting in Peru. Furthermore, to the best of our knowledge, no previous studies have simultaneously investigated whether peer support may moderate the impact of both EA and CT. We hypothesized that adverse experiences would be associated with increases in psychopathology over time and that these relationships would be moderated by social support, in that, peer support was expected to buffer the effects of adverse experiences.

Consequently, we assessed (a) possible associations between EA, CT, and adolescents' internalizing and externalizing symptoms in a 1-year prospective study,

and (b) the moderating role of peer support in these relationships, in a large sample of 644 adolescents from a severely disadvantaged district of Lima, Peru.

Methods

Participants and Procedures

The current study includes data from a larger longitudinal study addressing CT, EA, and adolescent mental health in Villa El Salvador, Lima, Peru. This area is characterized by high levels of poverty and inequality, a low quality and inaccessibility of education, a history of political conflict, and domestic and community violence (Instituto Nacional de Estadística e Informática, 2013; Ministerio de la Mujer y Poblaciones Vulnerables, 2013).

The study included two waves of assessment (September 2015 and September 2016) with a 1-year interval. The sample consisted of 644 adolescents (46.9% boys and 53.1% girls) aged between 11 and 18 years (M = 13.89, SD = 1.31). Adolescents were recruited through a public high school from the district by using a nonprobability sampling method with a convenience sample. In Peru, attending a public high school implies a lower socio-economic status, as public (basic) education remains to be of considerably lower quality in comparison to private education.

Informed consent was obtained from the participants, and ethical considerations were taken into account within the guidelines of the KU Leuven University Social and Societal Ethics Committee, which approved this study. More information about the procedures is provided in Yearwood et al. (2017).

Measures

Environmental Adversity

As a measure of EA, a latent variable was extracted and saved as a score based on a measurement model presented in our previous studies (Yearwood et al., 2017; Yearwood et al., 2019). Within this measurement model, the latent variable "environmental adversity" was defined by exposure to violence in three areas of life: the community, school, and media. These three elements correspond to three of the scales of the following questionnaire.

Questionnaire of Exposure to Violence. The Questionnaire of Exposure to Violence (Orue & Calvete, 2010) is a 21-item, self-report questionnaire for children and adolescents that assesses different contexts of exposure to violence. It is scored on a five-point Likert scale. In order to measure EA, the scales of exposure to violence in school, community, and media were used. Acceptable reliability coefficients of $\alpha = .74/.77$, .70/.70, and .79/.84 (T1/T2), were found in this study for the school, community, and media scales, respectively.

Complex Trauma

The latent variable "complex trauma" was extracted from the same measurement model mentioned above, in a similar fashion to EA (Yearwood et al., 2017; Yearwood et al., 2019). This variable was composed of seven aspects of violence children can encounter in their caregiving environment: emotional abuse, emotional neglect, physical abuse, sexual abuse, exposure to violence in the household, parental conflict, and household dysfunction. These factors were estimated using scales from the following questionnaires.

Childhood Trauma Questionnaire-Short Form. The Childhood Trauma Questionnaire-Short Form (Bernstein et al., 2003) is a 28-item retrospective self-report questionnaire, including 25 clinical items assessing five dimensions of childhood trauma: physical abuse, emotional abuse, sexual abuse, physical neglect, and emotional neglect. An additional three-item subscale measures minimization/denial. Answers are rated on a five-point Likert-type scale structured to reflect the frequency of maltreatment experiences. In the current study, the Spanish version was used with minor adaptations, taking into consideration the differences in the Spanish language between Spain and Peru. The physical abuse, emotional abuse, sexual abuse, and emotional neglect scales were used, following recommendations and/or previous results (Yearwood et al., 2017). For these scales we found reliability coefficients of $\alpha = .75/.75$ for physical abuse, $\alpha = .76/.79$ for emotional abuse, $\alpha = .83/.85$ for sexual abuse, and $\alpha = .76/.83$ for emotional neglect (T1/T2).

Questionnaire of Exposure to Violence. The Questionnaire of Exposure to Violence (Orue & Calvete, 2010) is a 21-item self-report questionnaire for children and adolescents that assesses different contexts of exposure to violence. It is scored on a five-point Likert scale. In order to measure CT, the scale of exposure to violence in the household was used. Acceptable reliability coefficients of $\alpha = .84/.85$ (T1/T2), were found in this study for this scale.

Adverse Experiences and Interparental Conflict. Adverse experiences and interparental conflict were measured using a set of 14 items from the Family Health History Questionnaire (Anda et al., 2006; Felitti et al., 1998). The items about adverse experiences assess whether someone in the adolescent's household used or uses drugs, is mentally ill, was or is currently incarcerated or committed a crime; whether the adolescent's parents are divorced; and/or whether the adolescent lives with a stepparent. Items about interparental conflict refer to physical aggression between parents. Answers are rated on a five-point Likert-type scale structured to reflect the frequency of events of physical aggression between parents. The items were translated into Spanish and adapted for the longitudinal study.

Peer Support

Quality of Relationships Inventory. The Quality of Relationships Inventory (Pierce, 1994; Pierce, Sarason, & Sarason, 1991) is a 25-item self-report questionnaire that assesses the perceived availability of social support from specific relationships, the extent to which the relationship is perceived as positive important and secure, and the extent to which the relationship is a source of conflict and ambivalence. The internal structure of the instrument consists of three subscales: support, conflict, and depth. For this study, only the support scale was considered, for which we found an internal consistency coefficient of $\alpha = .82$ (T1).

Internalizing and Externalizing Problems

Youth Self-Report. The Youth Self-Report (Achenbach & Rescorla, 2001) is a 112-item self-report questionnaire for adolescents between 11 and 18 years of age. It assesses eight first-order syndromes (e.g., Anxious/Depressed, Rule-breaking Behavior), which are clustered into two second-order factors: the internalizing dimension, covering anxious-depressed, withdrawn-depressed, and somatic complaints syndromes, and the externalizing dimension, including rule-breaking behavior and aggressive behavior syndromes. For this study, we found a reliability coefficient of α = .88/.89 for the externalizing factor and a coefficient of α = 90/.90 for the internalizing factor (T1/T2).

Data Analysis

Study hypotheses were tested using cross-lagged structural equation modeling (SEM) in Mplus Version 6.12 with Maximum Likelihood Robust (MLR) estimator. For all other analyses, IBM SPSS version 22 was used.

A series of cross-lagged models were fitted where EA and CT were the main predictors. EA and CT were assessed using latent variables, which were defined within a measurement model previously tested in different samples and used across various stages of the longitudinal study (Yearwood et al., 2019). The scores of the latent variables were saved and used as observed variables.

The baseline models assessed possible bi-directional associations of adversity (in terms of both CT and EA) and symptoms (internalizing and externalizing) in adolescents over the course of the 1-year period. Then, the moderating role of peer attachment was explored. To this end, we used a multigroup approach by dividing the total sample into groups with low, middle, or high scores on peer support, corresponding to percentiles 0–25, 25–75, and 75–100, respectively. For each moderation model, we also estimated a comparison model by constraining the effects of either CT or EA on symptoms to be equal across these three groups of peer support, to test whether the paths from these predictors to psychopathology were equivalent in the three groups. Chi-square difference testing (with Satorra Bentler correction (S-B)) was used to compare moderating models with and without constraining the effects in the three peer support groups.

Regarding the specification of our models, all models controlled for the shared error terms' variance of T2 measures. Nevertheless, when non-significant, these shared error terms' variance were set to zero. Stability paths were constrained to be equal across groups. Moreover, paths from symptoms to early adversity were non-significant and were therefore also constrained to zero. Multiple fit indices were considered to determine the goodness of fit of the SEM models; acceptable fit was defined by standardized root mean square residual (SRMR) < .08, and comparative fit index (CFI) and Tucker-Lewis index (TLI) > .90 (Hooper, Coughlan, & Mullen, 2008; Hu & Bentler, 1999, Little, 2013).

10

Results

Cross-Lagged Panel Model Analysis: Main Effects and Directionality

Means, standard deviations, and zero-order correlations for all study variables are presented in Table 1. Model fit indices and model comparisons are shown in Table 2. Standardized estimates are shown in Figures 1–3.

The baseline models showed an acceptable fit to the data, with significant independent main effects of both EA and CT on internalizing and externalizing symptoms (β ranging from .110 to .242), confirming our central hypothesis that adverse experiences are associated with increases in psychopathology over time. These associations were unidirectional, that is, symptoms did not have a significant effect on environmental adversity or complex trauma. The strong stability paths of EA and CT, together with the nonsignificant feedback effects, reflect the high stability of adversity over time in this sample.

Cross-Lagged Panel Model Analysis: Moderating Effects

In the case of EA, the moderating role of peer support was not significant. More specifically, results showed that when the effects of EA on symptoms were constrained to be equal across peer support groups, these models did not have a significantly poorer fit to the data (Δ S-B $\chi^2(8) = 8.108$, p > .05 for internalizing symptoms, and Δ S-B $\chi^2(8) = 7.662$, p > .05 for externalizing symptoms).

However, in the case of CT, peer support did have a significant moderating role, in that high scores of peer support significantly decreased the effect of CT on symptoms; indeed, in the group with the highest levels of social support, CT was not associated with symptoms. Here, the models with peer support as moderators, showed the best fit to the data, both by having a nonsignificant S-B χ^2 , and by showing a better fit than the comparison models (Δ S-B $\chi^2(8) = 17.538$, *p* < .05 for internalizing symptoms, and Δ S-B $\chi^2(8) = 21.829$, *p* < .05 for externalizing symptoms).

Figure 1 presents the standardized estimates for the baseline models that assessed the effects of EA on symptoms. Figures 2 and 3 illustrate the moderating role of peer support in the relationship between CT and psychopathology.

Discussion

The present study examined the effects of environmental adversity and complex trauma on psychopathology, and the possible mitigating role of peer support, among Peruvian adolescents growing up in adverse circumstances.

Results showed that both CT and EA were prospectively associated with increases in adolescent psychopathology, consistent with other studies that have demonstrated the detrimental effect on mental health of different types of adversity (Baskin & Sommers, 2015; Moffitt, 2013; Yearwood et al, 2017). Adolescents with greater exposure to abuse, neglect, and violence had an increased likelihood of developing symptoms of anxiety and depression, as well as rule-breaking, aggressive, noncompliant, and undercontrolled behaviors. For both types of adverse experiences, the effect was stronger for externalizing symptoms, indicating how these adolescents' negative early life experiences may have led them to engage in antisocial behavior. This strong link between adversity and externalizing problems is evidence for the cycle of violence, in which violent societies tend to evoke violence in the individuals living within them, thus reinforcing the problem (Baskin & Sommers, 2015).

In terms of the unidirectional character of these longitudinal associations, with early negative life experiences leading to increased symptoms, but increased symptoms having no effect on negative life experiences, our results are in line with our hypotheses and previous studies (Yearwood et al., 2019). The results reflect the harshness of the context in which these adolescents are growing up, with little ability for control or change.

Moreover, we found that age was not correlated with internalizing symptoms, and it had a negligible correlation with externalizing symptoms (r = .13, p < .01), providing further evidence of the strength of the effects of this harsh environment, regardless of the developmental age.

Regarding the moderating role of peer support, we found that active involvement in healthy peer relationships could mitigate the influence of complex trauma. In those young people with the highest levels of peer support, CT was not related to internalizing and externalizing symptoms. Interestingly, low quality of peer support significantly increased the effects of abuse and neglect on symptoms. These results indicate that the quality of social relatedness during adolescence can either increase or decrease pathological outcomes after experiences of abuse and neglect.

In contrast, peer support did not moderate the effects of EA. One possible explanation is that in this community EA is so harsh that it overwrites any possibility of mitigation by social influences.

This sample can be taken as a case study, and our results can inspire the design and implementation of interventions aimed to buffer more adequately the deleterious effects of violence for young people who experience adverse experiences in similar disadvantaged contexts. At the macro level, these findings could be a stepping-stone for the development of guidelines for policymakers and local authorities, who can take into consideration the need for providing safe spaces for social interaction during adolescence. At the micro level, they point families, teachers, clinicians, and caretakers towards the importance of fostering positive interpersonal relationships in order to prevent the emergence of psychopathology.

13

Conclusions and Future Directions

Our findings suggest, first, that these adolescents are exposed to high levels of environmental adversity and complex trauma, that these levels of adversity have a detrimental impact on their psychological development, and that this impact can be partially buffered by meaningful peer relationships in the case of CT. Therefore, the main implications in terms of public policy call for a focus on providing safe spaces and improved social environments, and, on a second level, providing opportunities for the fostering of peer relations as a preventive effort against the effects of adversity.

This study is, to our knowledge, the first to explore the moderating role of peer relationships in a context of environmental adversity and trauma. It adds to our understanding of the possible pathways from healthy development to pathology in children who have been exposed to severe trauma and pathological environments.

Future research should focus on further exploring the underlying mechanisms of attachment as a protective factor. Recent studies have suggested that the buffering role of attachment following maltreatment is mediated by emotion regulation (Alink, Cicchetti, Kim, & Rogosch, 2009). Nevertheless, these results have been assessed only in the context of maternal attachment. Investigating other intervening variables (such as emotion regulation) as well as other attachment figures could help shed light on the specific processes by which attachment relationships can help mitigate adversity and, in turn, help translate these research findings into improved preventive and intervention efforts.

Limitations

Several limitations of the present study should be acknowledged. First, we used a non-probability sampling method, where a convenience sample was used, thus limiting the possibilities of generalization. Second, we worked with self-report measures, which could imply a certain amount of bias. The latent variables of the measurement model were saved as scores and used as observed variables in independent cross-lagged models. This increased the power and parsimony of the models, but certainly includes a degree of measurement error. Then, the sample was used as a whole group in terms of age. This approach helped to maintain the necessary power and parsimony for model definition and convergence, but we consider this a limitation in the sense that there could be differences in the associations between variables, across different developmental stages. Future research could include larger samples and explore these age effects,

Finally, we focused on peer attachment as a moderator, but we advise that other relationships should be further explored, both from the household (for example parents and siblings) as from the broader environment of the participants (teachers) (Bevington, Fuggle, Fonagy, Target, & Asen, 2013).

While acknowledging these limitations, the results that emerge from our analyses provide preliminary evidence for the relationships between CT, EA the emergence of psychopathology in adolescents, and the moderating role of peer support.

References

- Achenbach, T. M., & Rescorla, L. A. (2001). Manual for the ASEBA school-age forms
 & profiles. Burlington, VT: University of Vermont, Research Center for Children,
 Youth, & Families.
- Alink, L. R. A., Cicchetti, D., Kim, J., & Rogosch, F. A. (2009). Mediating and moderating processes in the relation between maltreatment and psychopathology: Mother-child relationship quality and emotion regulation. *Journal of Abnormal Child Psychology*, *37*(6), 831-843. https://doi.org/10.1007/s10802-009-9314-4

- Anda, R. F., Felitti, V. J., Bremner, J. D., Walker, J. D., Whitfield, C., Perry, B. D., ...
 Giles, W. H. (2006). The enduring effects of abuse and related adverse experiences in childhood. A convergence of evidence from neurobiology and epidemiology. *European Archives of Psychiatry and Clinical Neuroscience*, 256(3), 174–186.
 http://doi.org/10.1007/s00406-005-0624-4
- Armsden, G., & Greenberg, M. T. (1987). The Inventory of Parent and Peer Attachment: Individual differences and their relation to psychological well-being in adolescence. *Journal of Youth and Adolescence*, 16, 427–454.
- Asnes, A. G., & Leventhal, J. M. (2011). Connecting the dots in childhood and adolescent trauma. Archives of Pediatrics & Adolescent Medicine, 165(1), 87–89. https://doi.org/10.1001/archpediatrics.2010.241.
- Baskin, D., & Sommers, I. (2015). Exposure to community violence and trajectories of violent offending. *Criminal Justice and Behavior*, 42(6), 587–609. http://doi.org/10.1177/1541204013506920
- Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., & Ahluvalia, T. (2003). Development and validation of a brief screening version of the Child Trauma Questionnaire. *Child Abuse & Neglect*, *27*(2), 169–190. http://doi.org/10.1016/S0145-2134(02)00541-0
- Bevington D, Fuggle P, Fonagy P, Target M, & Asen E. (2013). Innovations in practice: Adolescent mentalization-based integrative therapy (AMBIT)--a new integrated approach to working with the most hard to reach adolescents with severe complex mental health needs. *Child and Adolescent Mental Health*,18(1),46-51. http://doi.org/10.1111/j.1475-3588.2012.00666.x
- Drury, S. S. (2012). Maternal sensitivity and attachment: Softening the impact of early adversity. Journal of the American Academy of Child and Adolescent Psychiatry,

51(7), 670–672. http://doi.org/10.1016/j.jaac.2012.05.003

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards,
V., ... Marks, J. S. (1998). Household Dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, 14(4), 245–258.

Geffner, R., & Tishelman, A. C. (2011). Child and Adolescent trauma across the spectrum of experience: Underserved Populations and psychological abuse. *Journal of Child & Adolescent Trauma*, 4(2), 87–89.
http://doi.org/10.1080/19361521.2011.578913

- Gorrese, A., & Ruggieri, R. (2012) Peer attachment: A meta-analytic review of gender and age differences and associations with parent attachment. Journal of Youth and Adolescence, 41(5), 650-672. http://doi.org/10.1007/s10964-012-9759-6
- Gorrese, A. (2016). Peer attachment and youth internalizing problems: A meta-analysis. *Child & Youth Care Forum*, 45, 177–204. https://doi.org/10.1007/s10566-015-9333-y
- Havens, J. F., Gudiño, O. G., Biggs, E., Diamond, U. N., Weis, J. R., & Cloitre, M. (2012). Identification of trauma exposure and PTSD in adolescent psychiatric inpatients: an exploratory study. *Journal of Traumatic Stress*, 25(2), 171–178. http://doi.org/10.1002/jts.21683
- Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modelling:
 Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, 6(1), 53–60.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling: *A Multidisciplinary Journal*, 6(1), 1–55.

http://doi.org/10.1080/10705519909540118

Ichiyama, M. A., Fairlie, A. M., Wood, M. D., Turrisi, R., Francis, D. P., Ray, A. E., & Stanger, L. A. (2009). A randomized trial of a parent-based intervention on drinking behavior among incoming college freshmen. *Journal of Studies on Alcohol and Drugs, Supplement*, 16, 67-76.

Instituto Nacional de Estadística e Informática - INEI (2013). Perú: Estimaciones y proyecciones de población por sexo, según departamento, provincia y distrito, 2000 - 2015 - Boletín especial No 18. [Peru: Population Estimates and projections by sex, according to department, province and district, 2000 - 2015 - Special bulletin No. 18]. Lima: INEI

- Kira, I., Lewandowski, L., Somers, C. L., Yoon, J. S., & Chiodo, L. (2012). The effects of trauma types, cumulative trauma, and PTSD on IQ in two highly traumatized adolescent groups. *Psychological Trauma: Theory, Research, Practice, and Policy*, 4(1), 128–139. http://doi.org/10.1037/a0022121
- Kounou, K. B., Bui, E., Dassa, K. S., Hinton, D., Fischer, L., Djassoa, G., ... Schmitt, L. (2013). Childhood trauma, personality disorders symptoms and current major depressive disorder in Togo. *Social Psychiatry and Psychiatric Epidemiology*, 48(7), 1095–1103. https://doi.org/10.1007/s00127-012-0634-2.
- Little, T. D. (2013). *Longitudinal structural equation modeling*. New York: Guilford Press.
- Luthra, R., Abramovitz, R., Greenberg, R., Schoor, A., Newcorn, J., Schmeidler, J., ...
 Chemtob, C. M. (2009). Relationship between type of trauma exposure and
 posttraumatic stress disorder among urban children and adolescents. Journal of
 Interpersonal Violence, 24(11), 1919–1927.
 http://doi.org/10.1177/0886260508325494

- Matlin, S. L., Molock, S. D., & Tebes, J. K. (2011). Suicidality and depression among African American adolescents: The role of family and peer support and community connectedness. *American Journal of Orthopsychiatry*, 81(1), 108-117. http://doi.org/10.1111/j.1939-0025.2010.01078.x.
- Ministerio de la Mujer y Poblaciones Vulnerables MIMP. (2013). Boletín informativo anual: Intervención de los programas sociales del mimp a nivel nacional 2013.
 [Annual newsletter: Intervention of the social programs of the mimp at national level 2013]. Lima: MIMP.
- Moffitt, T. E. (2013). Childhood exposure to violence and lifelong health: Clinical intervention science and stress-biology research join forces. *Development and Psychopathology*, 25, 1619–1634. http://doi.org/10.1017/S0954579413000801
- Nickerson, A. B. (2005). Parent and peer attachment in late childhood and early adolescence. *The Journal of Early Adolescence*, 25, 223–249. https://doi.org/10.1177/0272431604274174
- Nilsson, D., & Svedin, C. G. (2006). Dissociation among Swedish adolescents and the connection to trauma: an evaluation of the Swedish version of Adolescent
 Dissociative Experience Scale. *The Journal of Nervous and Mental Disease*, *194*(9), 684–689. http://doi.org/10.1097/01.nmd.0000235774.08690.dc
- Oldfield, J., Humphrey, N., & Hebron, J. (2016). The role of parental and peer attachment relationships and school connectedness in predicting adolescent mental health out- comes. *Child and Adolescent Mental Health*, *21*(1), 21–29. http://doi.org/10.1111/camh.12108
- Orue, I., & Calvete, E. (2010). Elaboración y validación de un cuestionario para medir la exposición a la violencia en infancia y adolescencia. [Preparation and validation of a questionnaire to measure exposure to violence in childhood and adolescence].

International Journal of Psychology and Psychological Therapy, 10(2), 279–292.

- Páez, D., Fernández, I., & Beristain, C. (2001). Catástrofes, traumas y conductas colectivas: procesos y efectos culturales. [Disasters, trauma, and collective behaviors: processes and cultural effects]. In C. San Juan (Ed.), Catástrofes y ayuda de emergencia. Barcelona: Icaria.
- Pierce, G. R. (1994). The Quality of Relationships Inventory: Assessing the interpersonal context of social support. In B. R. Burleson, T. L. Albrecht, & I. G. Sarason (Eds.), *Communication of social support: Messages, interactions, relationships, and community.* Thousand Oaks, CA: Sage Publications, Inc.
- Pierce, G. R., Sarason, I. G., & Sarason, B. R. (1991). General and relationship-based perceptions of social support: are two constructs better than one? *Journal of Personality and Social Psychology*, *61*, 1028–1039. http://doi.org/10.1037/0022-3514.61.6.1028
- Rousseau, C., Drapeau, a, & Platt, R. (1999). Family trauma and its association with emotional and behavioral problems and social adjustment in adolescent Cambodian refugees. *Child Abuse & Neglect*, *23*(12), 1263–1273.
- Waldinger, R. J., Schulz, M. S., Barsky, A. J., & Ahern, D. K. (2006). Mapping the road from childhood trauma to adult somatization: The role of attachment. *Psychosomatic Medicine*, 68(1), 129–135.

https://doi.org/10.1097/01.psy.0000195834.37094.a4.

- Weber, S. (2009). Treatment of trauma- and abuse-related dissociative symptom disorders in children and adolescents. Journal of Child and Adolescent Psychiatric Nursing , 22(1), 2–6. http://doi.org/10.1111/j.1744-6171.2008.00163.x
- Wilkinson, R. B. (2004). The role of parental and peer attachment in the psychological health and self-esteem of adolescents. *Journal of Youth and Adolescence*, *33*, 479–

493. https://doi.org/10.1023/B:JOYO.0000048063.59425.20

- Wilkinson, R. B. (2010). Best friend attachment versus peer attachment in the prediction of adolescent psychological adjustment. *Journal of Adolescence*, 33 (5), 709–717. https://doi.org/10.1016/j.adolescence.2009.10.013
- Wood, M. D., Read, J. P., Mitchell, R. E., & Brand, N. H. (2004). Do parents still matter? Parent and peer influences on alcohol involvement among recent high school graduates. *Psychology of Addictive Behaviors*, 18(1), 19. https://doi.org/10.1037/0893-164X.18.1.19
- Yearwood, K., Vliegen, N., Chau, C., Corveleyn, J., & Luyten, P. (2017). The effects of complex trauma and exposure to community violence in a Peruvian sample of adolescents. *Journal of Interpersonal Violence*. Advanced online publication. http://doi.org/10.1177/0886260517731788
- Yearwood, K., Vliegen, N., Luyten, P., Chau, C., & Corveleyn, J. (2018). Validation of the Quality of Relationships Inventory in a Peruvian sample of adolescents: associations to peer attachment. *Psykhe*, 27(1), 1-11. https://doi.org/10.7764/psykhe.27.1.1122
- Yearwood, K., Vliegen, N., Corveleyn, J., & Luyten, P. (2019). The moderating role of mother-son attachment in the relationship between environmental adversity and externalizing symptoms: A 1-year longitudinal study. Manuscript submitted for publication.

Table 1.

Zero-Order Correlations between all Study Variables

	1	2	3	4	5	6	7	8	9	М	SD	Skewness
1. EA T1	1									.00	.527	.376
2. EA T2	.528***	1								.00	.573	.324
3. CT T1	.676***	.364***	1							.00	.458	1.490
4. CT T2	.427***	.607***	.664***	1						.00	.439	1.161
5. Internalizing T1	.354***	.238***	.458***	.366***	1					17.820	9.916	.785
6. Internalizing T2	.293***	.344***	.372***	.498***	.571***	1				16.692	9.814	.685
7. Externalizing T1	.409***	.312***	.407***	.321***	.674***	.362***	1			11.667	7.913	1.089
8. Externalizing T2	.391***	.438***	.379***	.487***	.383***	.656***	.492***	1		12.068	8.109	1.080
9. Peer support	.123**	.074	.157***	.097*	.183***	.133**	.100*	.083*	1	2.798	.668	356

Note. N = 644. ***p<.001. ** p<.01, *p<.05, EA = Environmental adversity, CT = Complex trauma, T1 = Measurement time point 1, T2 = Measurement time point 2. EA and CT are scores of latent variables and therefore have 0 as mean. Skewness SD = 0.096.

Table 2.

Model Fit for Cross-Lagged Models and Model Comparisons

	Fit statistics									Model comparisons			
Model			S-B χ^2	df	Scaling Correction Factor for MLR	RMSEA	SRMR	CFI	TLI	Scaling correction	Scaled Differenc Test	Conditional e <i>p</i> -value	
Environmental adversity	Internalizing symptoms	Baseline	2.417	1	1.0873	.047	.016	.996	.982				
		Peer support as moderator	5.409	3	1.0100	.061	.024	.994	.969				
		Equal across groups	13.517	11	1.2251	.033	.042	.994	.991	1.306	8.498	.386	
	Externalizing symptoms	Baseline	7.326*	1	1.3653	.099	.028	.979	.897				
		Peer as moderator	8.364	3	1.2644	.091	.030	.983	.914				
		Equal across groups	16.026	11	1.2512	.046	.046	.984	.978	1.246	7.604	.473	
Complex trauma	Internalizing symptoms	Baseline	5.064	1	1.1021	.079	.020	.991	.953				
		Peer as moderator	9.698	3	0.9359	.102	.026	.984	.920				
		Equal across groups	27.236*	11	1.2819	.083	.058	.961	.947	1.412	18.303	.019*	
	Externalizing symptoms	Baseline	3.149	1	1.1242	.058	.016	.993	.967				
		Peer Support as moderator	4.218	3	1.0478	.043	.018	.996	.981				
		Equal across groups	26.047*	11	1.3570	.080	.059	.952	.934	1.473	20.996	.007*	

Note. N = 644, * p < .05. RMSEA = Root mean square error of approximation, SRMR = Standardized root mean square residual, CFI = Comparative fit index, TLI = Tucker-Lewis index. The last three columns of this table present the results of the chi-square difference testing with Satorra Bentler correction (S-B).



Figure 1. Baseline Models of Environmental Adversity and Internalizing and Externalizing Symptoms

Note. Standardized coefficients are shown. Significant paths are represented by straight lines, and nonsignificant paths are represented by dotted lines. EA= Environmental adversity, as a latent variable defined in a previous model. T1 = Measurement time point 1, T2 = Measurement time point 2



Figure 2. Moderating Role of Peer Support on the Relationship between Complex Trauma and Internalizing Symptoms

Note. Standardized coefficients are shown. Significant paths are represented by straight lines, and nonsignificant paths are represented by dotted lines. CT= Complex Trauma, as a latent variable defined in a previous model. T1 = Measurement time point 1, T2 = Measurement time point 2



Figure 3. Moderating Role of Peer Support on the Relationship between Complex Trauma and Externalizing Symptoms

Note. Standardized coefficients are shown. Significant paths are represented by straight lines, and nonsignificant paths are represented by dotted lines. CT= Complex Trauma, as a latent variable defined in a previous model. T1 = Measurement time point 1, T2 = Measurement time point 2