EARLY ADOLESCENTS IN ADVERSITY: A MIXED METHODS APPROACH TO UNDERSTANDING PSYCHOSOCIAL RISKS ACROSS FOUR LOW- AND MIDDLE-INCOME COUNTRIES

by
Shoshanna L. Fine

A dissertation submitted to Johns Hopkins University in conformity

with the requirements for the degree of Doctor of Philosophy

Baltimore, Maryland

December, 2020

Abstract

Early adolescents (ages 10-14) living in low- and middle-income countries (LMICs) have heightened vulnerability to psychosocial risks, but available evidence from these settings is limited. The objective of this dissertation is to contribute evidence on psychosocial risks among early adolescents living in four LMICs. Participants were drawn from the multi-country Global Early Adolescent Study and included 10,437 early adolescents from the Democratic Republic of Congo, Malawi, Indonesia, China. In *Chapter One*, we introduce the dissertation's three specific research aims. In *Chapter Two*, we review the literature on central concepts related to these aims. In *Chapter Three,* we use latent class analysis (LCA) to characterize prototypical patterns of emotional and behavioral problems among early adolescents from the four included LMICs, and explore the extent to which these patterns vary by country and sex. Results supported the existence of four subgroups across countries: *Well-Adjusted*, *Emotional Problems*, *Behavioral Problems* (not present in China), and *Maladjusted*. Despite the consistency of these patterns, there were notable contextual differences. Further, tests of measurement invariance indicated that the prevalence and nature of these classes differed by sex within each country. In *Chapter Four*, we build on the LCA results from the preceding chapter, using multivariate latent class regression to assess the extent to which risk and protective factors across the family, peer, school, and neighborhood levels are associated with latent class membership. Across countries, we found that childhood adversity, peer bullying behaviors, and a perceived lack of school safety were consistently associated with psychosocial challenges. In *Chapter Five*, we explore Indonesian early adolescents' motivations, perceptions, and beliefs regarding bullying involvement. Building on our prior quantitative findings, we use an explanatory sequential mixed methods approach to better understand the myriad ways in which bullying involvement ties into other psychosocial challenges. Qualitative

interviews yielded contextual insights into adolescents' definitions of bullying, related risk behaviors, key drivers, social and emotional consequences, and coping strategies. Lastly, in *Chapter Six*, we discuss the implications of these findings for researchers, practitioners, and policymakers focused on bolstering psychosocial adjustment among vulnerable early adolescents in low-resource settings worldwide.

Dissertation Committee Members

THESIS ADVISORS:

Judith K. Bass, PhD

Robert W. Blum, MD, PhD

THESIS READERS:

Rashelle J. Musci, PhD

W. Courtland Robinson, PhD

Kristin Mmari, DrPH

ALTERNATES:

Tamar Mendelson, PhD

Caitlin E. Kennedy, PhD

Acknowledgements

While my name may be on the cover page, this dissertation would not have been possible without an immense amount of support, for which I am extraordinarily grateful. First and foremost, I would like to extend my deepest thanks to my academic advisor, Dr. Judy Bass. I will never forget my first conversation with Judy, back when I was interviewing for PhD programs. Skipping over small talk, she immediately asked me what was motivating my pursuit of a degree in global mental health – and how I would use the knowledge I gained in service of those in need. Since that initial conversation, Judy has continually challenged me to think critically about how to transform research into practice. She has provided me with invaluable opportunities to engage with innovative projects in low-resource contexts around the world. She has always been accessible, despite myriad competing demands on her time. She has been a fierce advocate, a dedicated mentor, and an unyielding source of encouragement.

I am extremely fortunate to have had a dissertation co-advisor, Dr. Bob Blum, who has been instrumental in shaping this research since its earliest stages. I have learned volumes from Bob about conducting adolescent development research in cross-cultural settings – about elevating the voices of international partners; approaching situations with curiosity, humility, and a sense of humor; translating findings into on-the-ground advocacy efforts; remaining flexible; planning one rather than five steps ahead. As the Principal Investigator of the Global Early Adolescent Study, Bob facilitated access to a treasure trove of data on adolescent health and well-being. And when I told him that I wanted to conduct qualitative interviews with participants from the study, his primary response was, “let’s make it happen.” I am forever changed as a researcher through my interactions with Bob, and I know that I will carry the lessons I have learned from him throughout my future endeavors.

I would like to thank the other members of my dissertation and preliminary oral examination committees, Drs. Rashelle Musci, Kristin Mmari, Courtland Robinson, Tamar Mendelson, and Caitlin Kennedy, for their thoughtful feedback throughout the proposal development and dissertation writing process. Without Rashelle's enthusiastic guidance, I would still be buried under a tangle of complex statistical models without any means of moving forward. And Kristin's expertise around sensitively collecting qualitative information from vulnerable youth was invaluable, particularly during my months conducting field work in Indonesia. I am also grateful for a range of other mentors at Johns Hopkins, including Drs. Paul Bolton, Wietse Tol, Laura Murray, Jeremy Kane, Emily Haroz, and Sarah Murray, as well as my advisor at the Harvard School of Public Health, Dr. Theresa Betancourt. In addition, I am beholden to two sources of funding: the Global Mental Health Training Fellowship, supported by the National Institute of Mental Health, and the Ruth L. Kirschstein National Research Service Award Fellowship, supported by the National Institute of Child Health and Human Development.

This dissertation has benefited from the efforts of a number of international collaborators, including Drs. Effie Chipeta, Aimée Lulebo, Eric Mafuta, William Stones, and Xiayun Zuo. I am also deeply indebted to the Indonesian Global Early Adolescent Study team for their facilitation of my qualitative research: to the University of Gadjah Mada, Rutgers, and the Indonesian Planned Parenthood Association for their collaboration; Drs. Siswanto Wilopo and Miranda van Reeuwijk for their enduring support; Anggriyani Pinandari for her expert project management; Solia Muzir, Lina Agnesia, and Putri Novitasari for their tenaciousness in conducting interviews with (often reticent) adolescents, their dedication to the research process, and their warmth in welcoming me to Semarang. And, of course, I am extremely grateful to the youth around the world who gave their time to participate in this research.

We are living in strange and unprecedented times, and amidst the daily uncertainties, I have found myself especially thankful for my steadfast network of friends and colleagues at Johns Hopkins. To the Department of Mental Health staff – and particularly to Patty Scott, Michelle Maffett, Sherrie Morris, Carlina Carter, and Scott Hubbard – thank you for keeping things running behind the scenes. To the Global Mental Health Research Group, thank you for providing a home for me throughout the PhD process. To Farah Behbehani, Ankita Meghani, and Monica Pasqualino, thank you for helping me maintain a sense of balance. And to my cohort – Sherrie-Chanelle Brighthaupt, Geoff Kahn, Angela Lin, Kyle Moored, John Thorne, Kayla Tormohlen, and Lindsey Webb – thank you for being there week after week to offer laughter, solidarity, advice, and some much-needed beer.

Last but certainly not least, I am grateful every day for my family, who have contributed to this process in unique and valuable ways. My parents, Deborah Hirschland and Jeffrey Fine, have always encouraged me to forge my own path, and have buoyed me through their unwavering belief that I will find my way forward. Thank you for supporting work that sometimes takes me halfway around the world, and for "holding up the plane" whenever I'm on my way home. Thank you to my grandmother, Evelyn Polk, whose deep and energetic engagement with the world at large I strive to emulate. Thank you to my sister, Sarah Fine, who has been my role model for as long as I can remember and has shown me what it looks like to embrace a career that is rooted in both scholarship and practice. And thank you to her husband, Micah Perlin, and my two rambunctious nephews, Avi and Sasha Perlin, for cheering me on from the West Coast. Thank you to my wonderful in-laws, the Gabler family, for providing thoughtful encouragement. Thank you to my dog, Juno, who has gotten me out of the house two times a day rain or shine, who is a

nonjudgmental listener, and whose blissful ignorance of current events reminds me to find joy in the small things.

Finally, I am endlessly thankful for my partner, Laurel Gabler, who has been my greatest source of support for nearly a decade. When I first met Laurel, I was awed by her stories about trekking up and down mountains in Nepal to conduct her own PhD research on barriers to healthcare among rural farmers. And I remain inspired by her unflagging commitment to serving vulnerable children at home and abroad through her work as a pediatrician. It would take a separate dissertation to list all of the many ways, both big and small, that she has helped me throughout this journey. I can't begin to imagine how I would have managed without each and every one of them.

Table of Contents

List of Tables

List of Figures

Chapter 1

Introduction

1.1 Background and Significance

Early adolescence (ages 10-14) is a critical developmental period, with the social-emotional skills and health-related behaviors that emerge during this time serving as a foundation for future well-being (McCarthy et al., 2016; Sawyer et al., 2012). While local definitions of adolescence vary – and may depend on social, environmental, and cultural factors – it has historically been considered to commence with puberty and culminate with a number of key social role transitions (Sawyer et al., 2012). The rapid biological, cognitive, social, and emotional changes during early adolescence make it a particularly sensitive period for the manifestation of emotional and behavioral problems (Patton et al., 2016). Such psychosocial adjustment issues can have life-long implications, as a substantial proportion of adult mental health problems originate during early adolescence (Kessler et al., 2005). These findings highlight the need to focus on early interventions that target psychosocial adjustment among this susceptible age group in order to influence the onset and progression of mental health challenges (Patel et al., 2007). Despite this documented need, there are significant gaps in the provision of psychosocial support services for adolescents around the globe (Belfer, 2008; Kieling et al., 2011).

A fundamental driver of this global service gap is the lack of evidence from low- and middle-income countries (LMICs). While approximately 90% of the world's adolescents live in LMICs (UNICEF, 2012) only a fraction of the research (<6%) on adolescent psychosocial development has been conducted in these settings (Patel et al., 2008), and even less has focused specifically on early adolescent populations (McCarthy et al., 2016). This represents a serious gap in evidence, as early adolescents living in LMICs may be particularly vulnerable to psychosocial

adjustment issues due to factors such as forced displacement, migration, violence, socioeconomic deprivation, and gender inequality (Fatusi & Hindin, 2010; Patton et al., 2012; WHO, 2018).

The nature of early adolescence as a sensitive period for psychosocial development underscores the importance of improving strategies for identifying youth at risk of experiencing long-term adjustment issues. Longitudinal studies conducted in high-income countries have identified a number of emotional and behavioral indicators during adolescence that are predictive of negative mental health and psychosocial outcomes later in life, including symptoms of depression and anxiety (Clayborne et al., 2019; Doering et al., 2019; Dyer et al., 2019; D. Johnson et al., 2018), involvement in interpersonal aggression as a victim or perpetrator (Copeland et al., 2013; Gibb et al., 2011; Stapinski et al., 2014), and drug and alcohol use (Gobbi et al., 2019; Silins et al., 2018; Wilkinson et al., 2016). The extent to which such findings are generalizable to adolescents living in LMICs remains an open question. Understanding this variation is critical to etiologic research across contexts, and can inform appropriate psychosocial assessment tools, prevention strategies, and implementation approaches (Belfer, 2008).

While studies focusing on individual psychosocial risks in adolescence have utility in uncovering etiologic pathways for specific mental disorders, such approaches overlook the common co-occurrence of emotional and behavioral problems during this developmental period. This is problematic, as these problems are rarely found in isolation (Angold et al., 1999; Cummings et al., 2014; Doran et al., 2012; Hale & Viner, 2016; Haynie et al., 2001; Melton et al., 2016) and such co-occurrence confers additional psychosocial vulnerability for adolescents (Angold et al., 1999; Copeland et al., 2013; Ezpeleta et al., 2006; Lewinsohn et al., 1995; Sourander et al., 2007). In order to address these complexities, person-centered statistical approaches such as latent class analysis (LCA) and latent profile analysis (LPA) are increasingly used to examine heterogeneity

in psychosocial development among adolescent populations (Lanza & Cooper, 2016). While a growing number of studies have used LCA/LPA to examine patterns of psychosocial risks among adolescents (Bianchi et al., 2017; Eastman et al., 2018; Luk et al., 2012; Ma et al., 2019; Nelon et al., 2019; Zhao et al., 2019), there are notable limitations in the extant literature. Existing studies have generally been restricted to either emotional or behavioral problems, with few simultaneously examining a broader spectrum of psychosocial risks. Further, studies have largely been drawn from populations living in high-income countries and have rarely focused exclusively on early adolescents. Finally, most of these analyses have been conducted within a single population, precluding an understanding of whether patterns of psychosocial risks differ in meaningful ways across diverse geographic settings.

Successful prevention strategies targeting vulnerable adolescents also require an understanding of the layered contexts in which youth develop. Decades of research have illuminated the overlapping social environments that shape adolescent health, with potentially modifiable risk and protective factors at the family, peer, school, and neighborhood levels (Patton et al., 2016; Viner et al., 2012). While there is robust evidence that social environmental factors play a central role in adolescent psychosocial adjustment (Patel et al., 2007; Patton et al., 2016), as above, few studies have used person-centered statistical approaches to examine risk and protective factors for co-occurring emotional and behavioral problems. Of the recent investigations that *have* used such methods (Ang et al., 2020; Assanangkornchai et al., 2018; González-Forteza et al., 2017; Ji et al., 2018; Luk et al., 2012; Oshri et al., 2011; Sullivan et al., 2010), most have focused exclusively on family- or peer-level factors, precluding their ability to disentangle the relative influence of a broader range of social determinants. A better understanding of risk and

protective factors across social environments is essential for identifying mechanisms enhancing resiliency among vulnerable youth and tailoring health promotion efforts at multiple levels.

Overall, multi-country studies are needed to assess the contextual generalizability of key factors in adolescent psychosocial development. A recent study investigating adolescent health (ages 15-19) in five low-income urban settings around the globe found similar associations between social environmental factors and health outcomes, although the strength and patterns of associations differed (Blum, 2014; Cheng et al., 2014; Mmari et al., 2014; Olumide et al., 2014). The authors concluded that, "For young people growing up in poverty, residency in a high-income country may matter far less than the immediate social contexts within which they develop" (Blum, 2014). These results suggest that research conducted among adolescents living in contexts of adversity may have broad applicability, regardless of the geographic setting. This dissertation builds on this investigation through its focus on co-occurring psychosocial risks, as well as its consideration of early adolescents. Given the paucity of evidence from early adolescents living in LMICs, similar findings could be transformative in bolstering the uptake of innovative psychosocial support interventions for vulnerable youth worldwide.

Finally, while quantitative studies provide insights into risk behaviors in adolescence that increase psychosocial vulnerability, the individual motivations underlying such behaviors often remain unclear. A number of qualitative studies have explored attitudes that adolescents hold towards key risk behaviors (Hellström et al., 2015; Katainen et al., 2015; Resko et al., 2016; Romo-Avilés et al., 2016), but these investigations have been limited in their ability to identify thematic distinctions linked to individual endorsement of these behaviors. A mixed methods approach has the potential to overcome these limitations by elucidating the meanings that adolescents with differing profiles of psychosocial risks ascribe to their own behaviors as well as the behaviors of

their peers (Creswell & Clark, 2017; R. Johnson & Onwuegbuzie, 2004). This information on within-group differences could be used to tailor interventions to more effectively mitigate psychosocial vulnerability. Despite the potential of this type of mixed methods approach (Aresi et al., 2020; Lowe et al., 2015; Suárez-Orozco et al., 2010), few existing studies of adolescent psychosocial risks have combined latent class methods with qualitative interviews.

1.2 Specific Aims

As detailed above, there is a need for multi-country investigations that: 1) generate evidence on psychosocial development among early adolescents in LMICs; 2) classify vulnerable early adolescents through the identification of co-occurring emotional and behavioral problems; 3) evaluate the relative importance of social environmental factors to these co-occurring psychosocial risks; 4) explore qualitative nuances between adolescents with differing psychosocial vulnerability; and 5) assess the contextual generalizability of findings to inform intervention approaches. This dissertation aims to address these gaps through a focus on psychosocial risks among early adolescents living in low-resource urban settings across four LMICs. Participants were drawn from the Global Early Adolescent Study (GEAS), an international collaboration between the Johns Hopkins Bloomberg School of Public Health (JHSPH), the World Health Organization (WHO), and research institutions in participating countries. The GEAS is a longitudinal study which seeks to understand risk and protective factors for healthy development among early adolescents living in low-resource urban settings around the world. This dissertation uses cross-sectional baseline data from GEAS study sites in Kinshasa, Democratic Republic of Congo (DRC; n = 2,006; 51.5% girls); Blantyre, Malawi (n = 2,016; 49.6% girls); Semarang, Bandar Lampung, and Denpasar, Indonesia (n = 4,657; 53.0% girls); and Shanghai, China (n = 1,758; 48.6% girls). The dissertation has three specific aims:

Aim 1. *Characterize prototypical patterns of emotional and behavioral problems among early adolescents living in four LMICs* (**Aim 1A**) *and explore the extent to which these patterns vary between boys and girls within each country* (**Aim 1B**). LCA will be used to identify and classify psychosocial risk subgroups (i.e., classes) separately by study country, and will utilize ten indicators related to depressive and anxiety symptoms, aggressive behaviors, peer victimization, and substance use. Within each country, measurement invariance by sex will be evaluated using a multiple-group approach.

Aim 2. *Assess the extent to which risk and protective factors across family, peer, school, and neighborhood environments are correlated with the psychosocial risk subgroups identified in Aim 1.* A three-step multivariate latent class regression approach will be used to determine the associations between latent class membership and ten risk and protective factors in each country.

Aim 3. *Explore the meanings that early adolescents in one study country ascribe to interpersonal aggression based on their membership in different psychosocial risk subgroups.* Qualitative interviews will be conducted with a sub-sample of GEAS participants living in Semarang, Indonesia, and will focus on the motivations, perceptions, and beliefs that Indonesian early adolescents have regarding bullying involvement. Sampling will be based on adolescents' probable latent class membership (Aim 1), with participants purposively sampled from each psychosocial risk subgroup.

1.3 Methodological Approach

This dissertation employs an explanatory sequential mixed methods approach, in which qualitative data are collected after an initial quantitative analysis, with qualitative data used to interpret and expand upon quantitative findings (Figure 1.1) (Creswell & Clark, 2017). Specifically, qualitative data collected among Indonesian adolescents in Aim 3 will be used to

yield a deeper understanding of the psychosocial risk subgroups uncovered in Aim 1 within the Indonesian context, with a specific focus on the contribution of interpersonal aggression to an adolescent's broader constellation of psychosocial risks.

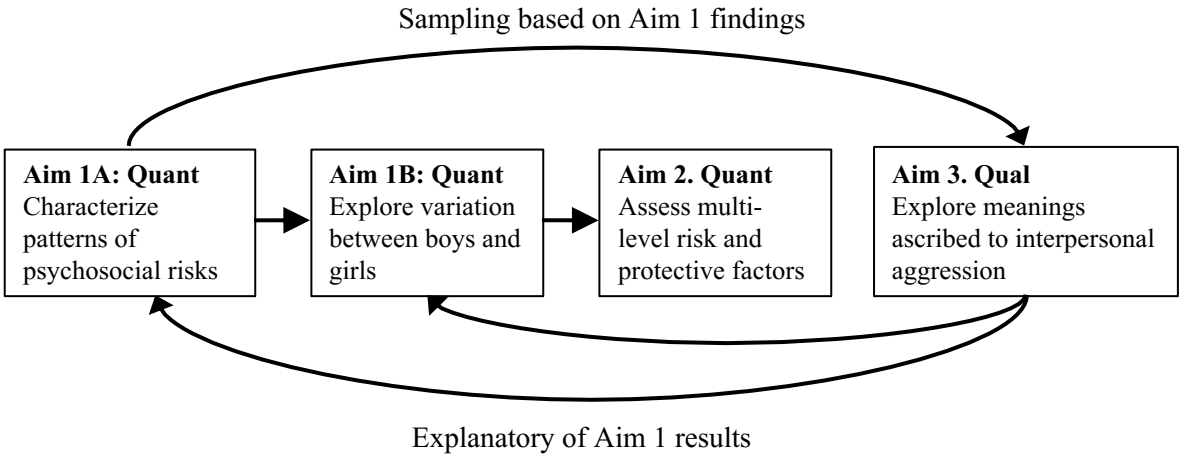


Figure 1.1. Explanatory sequential mixed methods approach

1.4 Theoretical Frameworks

This dissertation draws on several theoretical frameworks. The first is Jessor et al.'s Problem Behavior Theory, which suggests that adolescent risk behaviors frequently co-occur due to a single underlying dimension of psychosocial vulnerability (Jessor & Jessor, 1977). The theory posits that this vulnerability arises from a common set of risk and protective factors within multiple interrelated domains (biology/genetics, social environment, perceived environment, personality, and behavior), with the resulting constellation of risk behaviors contributing to subsequent health-compromising outcomes (Jessor, 1991). While Jessor et al.'s initial definition of risk behaviors was limited to transgressive behaviors (e.g., alcohol use, illicit drug use, delinquency, and early sexual activity), the authors later expanded this conceptualization to include a range of factors

compromising healthy development (e.g., depression, low academic performance, and poor dietary practices) (Jessor, 1998).

The focus on risk and protective factor domains within Problem Behavior Theory aligns with Bronfenbrenner's social-ecological framework (Bronfenbrenner, 1979). This classic model for child and adolescent development expands on what Jessor et al. labeled as the "social environment" to consider interactions between influences at the individual, family, peer, community, and cultural levels. In taking a broad-based perspective, this framework allows for a nuanced analysis of the complex interplay of social environmental factors that are critical to adolescent psychosocial adjustment. This dissertation draws on both of these theories through its focus on the constellation of emotional and behavioral problems that denote underlying psychosocial vulnerability, as well as the common set of social environmental risk and protective factors that may exacerbate or buffer these challenges (Figure 1.2).

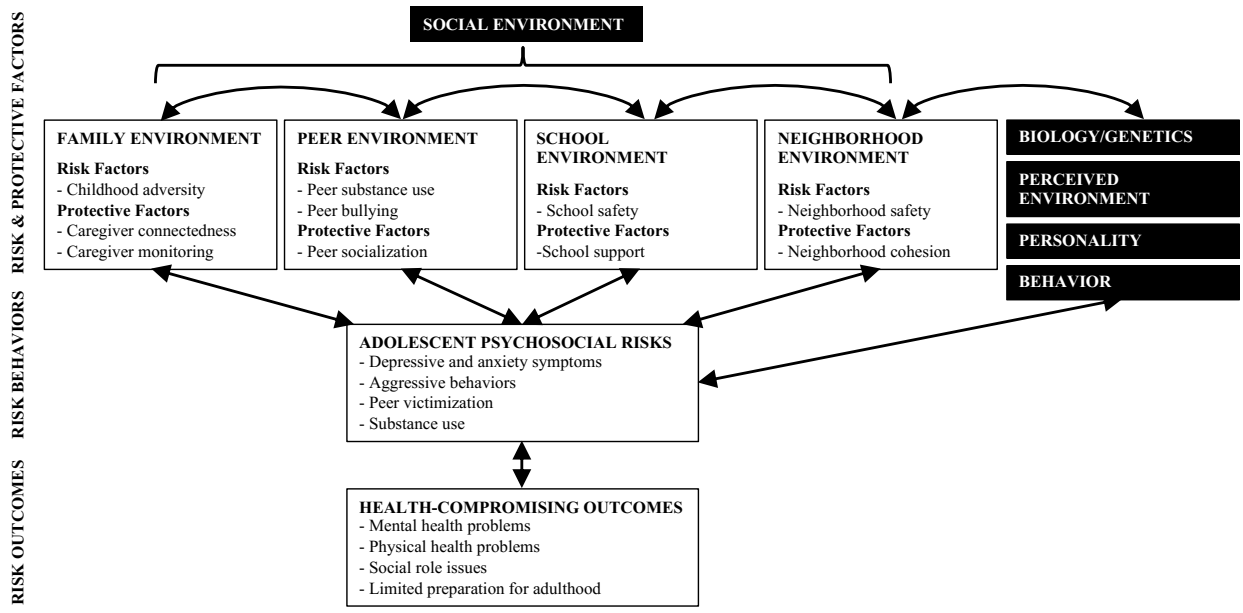


Figure 1.2. A conceptual framework for adolescent psychosocial vulnerability (adapted from Jessor, 1991)

1.6 References

Ang, R. P., Li, X., Huan, V. S., Liem, G. A. D., Kang, T., Wong, Q., & Yeo, J. Y. P. (2020). Profiles of Antisocial Behavior in School-Based and At-Risk Adolescents in Singapore: A Latent Class Analysis. *Child Psychiatry and Human Development*, *51*(4), 585–596. https://doi.org/10.1007/s10578-019-00941-1

Angold, A., Costello, E. J., & Erkanli, A. (1999). Comorbidity. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *40*(1), 57–87.

Aresi, G., Cleveland, M. J., Vieno, A., Beccaria, F., Turrisi, R., & Marta, E. (2020). A Mixed Methods Cross-Cultural Study to Compare Youth Drinking Cultures in Italy and the USA. *Applied Psychology. Health and Well-Being*, *12*(1), 231–255. https://doi.org/10.1111/aphw.12181

Assanangkornchai, S., Li, J., McNeil, E., & Saingam, D. (2018). Clusters of alcohol and drug use and other health-risk behaviors among Thai secondary school students: A latent class analysis. *BMC Public Health*, *18*(1), 1272. https://doi.org/10.1186/s12889-018-6205-z

Belfer, M. L. (2008). Child and adolescent mental disorders: The magnitude of the problem across the globe. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *49*(3), 226–236. https://doi.org/10.1111/j.1469-7610.2007.01855.x

Bianchi, V., Brambilla, P., Garzitto, M., Colombo, P., Fornasari, L., Bellina, M., Bonivento, C., Tesei, A., Piccin, S., Conte, S., Perna, G., Frigerio, A., Castiglioni, I., Fabbro, F., Molteni, M., & Nobile, M. (2017). Latent classes of emotional and behavioural problems in epidemiological and referred samples and their relations to DSM-IV diagnoses. *European Child & Adolescent Psychiatry*, *26*(5), 549–557. https://doi.org/10.1007/s00787-016-0918-2

Blum, R. W. (2014). Distressed communities as a breeding ground for noncommunicable conditions. *Journal of Adolescent Health*, *55*(6), S4–S5.

Bronfenbrenner, U. (1979). *The Ecology of Human Development: Experiments by Nature and Design*. Harvard University Press.

Cheng, Y., Li, X., Lou, C., Sonenstein, F. L., Kalamar, A., Jejeebhoy, S., Delany-Moretlwe, S., Brahmbhatt, H., Olumide, A. O., & Ojengbede, O. (2014). The association between social support and mental health among vulnerable adolescents in five cities: Findings from the study of the well-being of adolescents in vulnerable environments. *Journal of Adolescent Health*, *55*(6), S31–S38.

Clayborne, Z. M., Varin, M., & Colman, I. (2019). Systematic Review and Meta-Analysis: Adolescent Depression and Long-Term Psychosocial Outcomes. *Journal of the American Academy of Child and Adolescent Psychiatry*, *58*(1), 72–79. https://doi.org/10.1016/j.jaac.2018.07.896

Copeland, W. E., Wolke, D., Angold, A., & Costello, E. J. (2013). Adult Psychiatric Outcomes of Bullying and Being Bullied by Peers in Childhood and Adolescence. *JAMA Psychiatry*, *70*(4), 419–426. https://doi.org/10.1001/jamapsychiatry.2013.504

Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*. Sage Publications.

Cummings, C. M., Caporino, N. E., & Kendall, P. C. (2014). Comorbidity of Anxiety and Depression in Children and Adolescents: 20 Years After. *Psychological Bulletin*, *140*(3), 816–845. https://doi.org/10.1037/a0034733

Doering, S., Lichtenstein, P., Gillberg, C., Middeldorp, C. M., Bartels, M., Kuja-Halkola, R., & Lundström, S. (2019). Anxiety at age 15 predicts psychiatric diagnoses and suicidal

ideation in late adolescence and young adulthood: Results from two longitudinal studies. *BMC Psychiatry*, *19*(1), 1–11. https://doi.org/10.1186/s12888-019-2349-3

Doran, N., Luczak, S. E., Bekman, N., Koutsenok, I., & Brown, S. A. (2012). Adolescent Substance Use and Aggression: A Review. *Criminal Justice and Behavior*. https://doi.org/10.1177/0093854812437022

Dyer, M. L., Easey, K. E., Heron, J., Hickman, M., & Munafò, M. R. (2019). Associations of child and adolescent anxiety with later alcohol use and disorders: A systematic review and meta-analysis of prospective cohort studies. *Addiction*, *114*(6), 968–982. https://doi.org/10.1111/add.14575

Eastman, M., Foshee, V., Ennett, S., Sotres-Alvarez, D., Reyes, H. L. M., Faris, R., & North, K. (2018). Profiles of internalizing and externalizing symptoms associated with bullying victimization. *Journal of Adolescence*, *65*, 101–110. https://doi.org/10.1016/j.adolescence.2018.03.007

Ezpeleta, L., Domènech, J. M., & Angold, A. (2006). A comparison of pure and comorbid CD/ODD and depression. *Journal of Child Psychology and Psychiatry*, *47*(7), 704–712. https://doi.org/10.1111/j.1469-7610.2005.01558.x

Fatusi, A. O., & Hindin, M. J. (2010). Adolescents and youth in developing countries: Health and development issues in context. *Journal of Adolescence*, *33*(4), 499–508.

Gibb, S. J., Horwood, L. J., & Fergusson, D. M. (2011). Bullying victimization/perpetration in childhood and later adjustment: Findings from a 30 year longitudinal study. *Journal of Aggression, Conflict and Peace Research*, *3*(2), 82–88. https://doi.org/10.1108/17596591111132891

Gobbi, G., Atkin, T., Zytynski, T., Wang, S., Askari, S., Boruff, J., Ware, M., Marmorstein, N., Cipriani, A., Dendukuri, N., & Mayo, N. (2019). Association of Cannabis Use in Adolescence and Risk of Depression, Anxiety, and Suicidality in Young Adulthood: A Systematic Review and Meta-analysis. *JAMA Psychiatry*, *76*(4), 426–434. https://doi.org/10.1001/jamapsychiatry.2018.4500

González-Forteza, C., Juárez-López, C. E., Jiménez, A., Montejo-León, L., Rodríguez-Santisbón, U. R., & Wagner, F. A. (2017). Suicide behavior and associated psychosocial factors among adolescents in Campeche, Mexico. *Preventive Medicine*, *105*, 206–211. https://doi.org/10.1016/j.ypmed.2017.09.011

Hale, D. R., & Viner, R. M. (2016). The correlates and course of multiple health risk behaviour in adolescence. *BMC Public Health*, *16*(1), 458.

Haynie, D. L., Nansel, T., Eitel, P., Crump, A. D., Saylor, K., Yu, K., & Simons-Morton, B. (2001). Bullies, Victims, and Bully/Victims: Distinct Groups of At-Risk Youth. *The Journal of Early Adolescence*, *21*(1), 29–49. https://doi.org/10.1177/0272431601021001002

Hellström, L., Persson, L., & Hagquist, C. (2015). Understanding and defining bullying–adolescents' own views. *Archives of Public Health*, *73*(1), 4.

Jessor, R. (1991). Risk behavior in adolescence: A psychosocial framework for understanding and action. *Journal of Adolescent Health*, *12*(8), 597–605. https://doi.org/10.1016/1054-139X(91)90007-K

Jessor, R. (1998). *New perspectives on adolescent risk behavior*. Cambridge University Press.

Jessor, R., & Jessor, S. L. (1977). *Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth*. Academic.

Ji, Y., Xu, H., Zhang, Y., & Liu, Q. (2018). Heterogeneity of adolescent health risk behaviors in rural western China: A latent class analysis. *PloS One*, *13*(6), e0199286. https://doi.org/10.1371/journal.pone.0199286

Johnson, D., Dupuis, G., Piche, J., Clayborne, Z., & Colman, I. (2018). Adult mental health outcomes of adolescent depression: A systematic review. *Depression and Anxiety*, *35*(8), 700–716. https://doi.org/10.1002/da.22777

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, *33*(7), 14–26.

Katainen, A., Lehto, A.-S., & Maunu, A. (2015). Adolescents' sense-making of alcohol-related risks: The role of drinking situations and social settings. *Health*, *19*(5), 542–558.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, *62*(6), 593–602. https://doi.org/10.1001/archpsyc.62.6.593

Kieling, C., Baker-Henningham, H., Belfer, M., Conti, G., Ertem, I., Omigbodun, O., Rohde, L. A., Srinath, S., Ulkuer, N., & Rahman, A. (2011). Child and adolescent mental health worldwide: Evidence for action. *The Lancet*, *378*(9801), 1515–1525.

Lanza, S. T., & Cooper, B. R. (2016). Latent Class Analysis for Developmental Research. *Child Development Perspectives*, *10*(1), 59–64. https://doi.org/10.1111/cdep.12163

Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1995). Adolescent Psychopathology: III. The Clinical Consequences of Comorbidity. *Journal of the American Academy of Child & Adolescent Psychiatry*, *34*(4), 510–519. https://doi.org/10.1097/00004583-199504000-00018

Lowe, S. R., Rhodes, J. E., & Waters, M. C. (2015). Understanding resilience and other trajectories of psychological distress: A mixed-methods study of low-income mothers who survived Hurricane Katrina. *Current Psychology*, *34*(3), 537–550.

Luk, J. W., Wang, J., & Simons-Morton, B. G. (2012). The co-occurrence of substance use and bullying behaviors among U.S. adolescents: Understanding demographic characteristics and social influences. *Journal of Adolescence*, *35*(5), 1351–1360. https://doi.org/10.1016/j.adolescence.2012.05.003

Ma, C., Ma, Y., Wang, Y., & Lan, X. (2019). Empathy and Psychosocial Adjustment in Tibetan and Han Adolescents: A Person-Centered Approach. *Frontiers in Psychology*, *10*, 1896. https://doi.org/10.3389/fpsyg.2019.01896

McCarthy, K., Brady, M., & Hallman, K. (2016). *Investing When It Counts: Reviewing the Evidence and Charting a Course of Research and Action for Very Young Adolescents*. Population Council.

Melton, T. H., Croarkin, P. E., Strawn, J. R., & McClintock, S. M. (2016). Comorbid Anxiety and Depressive Symptoms in Children and Adolescents: A Systematic Review and Analysis. *Journal of Psychiatric Practice*, *22*(2), 84–98. https://doi.org/10.1097/PRA.0000000000000132

Mmari, K., Lantos, H., Blum, R. W., Brahmbhatt, H., Sangowawa, A., Yu, C., & Delany-Moretlwe, S. (2014). A global study on the influence of neighborhood contextual factors on adolescent health. *Journal of Adolescent Health*, *55*(6), S13–S20.

Nelon, J. L., De Pedro, K. T., Gilreath, T. D., Patterson, M. S., Holden, C. B., & Esquivel, C. H. (2019). A latent class analysis of the co-occurrence of sexual violence, substance use, and

mental health in youth. *Substance Use & Misuse*, *54*(12), 1938–1944. https://doi.org/10.1080/10826084.2019.1618337

Olumide, A. O., Robinson, A. C., Levy, P. A., Mashimbye, L., Brahmbhatt, H., Lian, Q., Ojengbede, O., Sonenstein, F. L., & Blum, R. W. (2014). Predictors of substance use among vulnerable adolescents in five cities: Findings from the well-being of adolescents in vulnerable environments study. *Journal of Adolescent Health*, *55*(6), S39–S47.

Oshri, A., Tubman, J. G., & Jaccard, J. (2011). Psychiatric symptom typology in a sample of youth receiving substance abuse treatment services: Associations with self-reported child maltreatment and sexual risk behaviors. *AIDS and Behavior*, *15*(8), 1844–1856. https://doi.org/10.1007/s10461-011-9890-5

Patel, V., Flisher, A. J., Hetrick, S., & McGorry, P. (2007). Mental health of young people: A global public-health challenge. *The Lancet*, *369*(9569), 1302–1313.

Patel, V., Flisher, A. J., Nikapota, A., & Malhotra, S. (2008). Promoting child and adolescent mental health in low and middle income countries. *Journal of Child Psychology and Psychiatry*, *49*(3), 313–334.

Patton, G. C., Coffey, C., Cappa, C., Currie, D., Riley, L., Gore, F., Degenhardt, L., Richardson, D., Astone, N., & Sangowawa, A. O. (2012). Health of the world's adolescents: A synthesis of internationally comparable data. *The Lancet*, *379*(9826), 1665–1675.

Patton, G. C., Sawyer, S. M., Santelli, J. S., Ross, D. A., Afifi, R., Allen, N. B., Arora, M., Azzopardi, P., Baldwin, W., & Bonell, C. (2016). Our future: A Lancet commission on adolescent health and wellbeing. *The Lancet*, *387*(10036), 2423–2478.

Resko, S. M., Reddock, E. C., Ranney, M. L., Epstein-Ngo, Q., Mountain, S. K., Zimmerman, M. A., Cunningham, R. M., & Walton, M. A. (2016). Reasons for fighting among violent

female adolescents: A qualitative investigation from an urban, midwestern community. *Social Work in Public Health*, *31*(3), 99–112.

Romo-Avilés, N., Marcos-Marcos, J., Marquina-Márquez, A., & Gil-García, E. (2016). Intensive alcohol consumption by adolescents in Southern Spain: The importance of friendship. *International Journal of Drug Policy*, *31*, 138–146.

Sawyer, S. M., Afifi, R. A., Bearinger, L. H., Blakemore, S.-J., Dick, B., Ezeh, A. C., & Patton, G. C. (2012). Adolescence: A foundation for future health. *The Lancet*, *379*(9826), 1630–1640.

Silins, E., Horwood, L. J., Najman, J. M., Patton, G. C., Toumbourou, J. W., Olsson, C. A., Hutchinson, D. M., Degenhardt, L., Fergusson, D., Becker, D., Boden, J. M., Borschmann, R., Plotnikova, M., Youssef, G. J., Tait, R. J., Clare, P., Hall, W. D., & Mattick, R. P. (2018). Adverse adult consequences of different alcohol use patterns in adolescence: An integrative analysis of data to age 30 years from four Australasian cohorts. *Addiction*, *113*(10), 1811–1825. https://doi.org/10.1111/add.14263

Sourander, A., Jensen, P., Davies, M., Niemelä, S., Elonheimo, H., Ristkari, T., Helenius, H., Sillanmäki, L., Piha, J., Kumpulainen, K., Tamminen, T., Moilanen, I., & Almqvist, F. (2007). Who is at greatest risk of adverse long-term outcomes? The Finnish From a Boy to a Man study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *46*(9), 1148–1161. https://doi.org/10.1097/chi.0b013e31809861e9

Stapinski, L. A., Bowes, L., Wolke, D., Pearson, R. M., Mahedy, L., Button, K. S., Lewis, G., & Araya, R. (2014). Peer Victimization During Adolescence and Risk for Anxiety Disorders in Adulthood: A Prospective Cohort Study. *Depression and Anxiety*, *31*(7), 574–582. https://doi.org/10.1002/da.22270

Suárez-Orozco, C., Gaytán, F. X., Bang, H. J., Pakes, J., O'Connor, E., & Rhodes, J. (2010). Academic trajectories of newcomer immigrant youth. *Developmental Psychology*, *46*(3), 602.

Sullivan, C. J., Childs, K. K., & O'Connell, D. (2010). Adolescent risk behavior subgroups: An empirical assessment. *Journal of Youth and Adolescence*, *39*(5), 541–562. https://doi.org/10.1007/s10964-009-9445-5

United Nation's Children's Fund. (2012). *Progress for Children: A report card on adolescents. Number 10*. https://www.unicef.org/publications/index_62280.html

Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *The Lancet*, *379*(9826), 1641–1652.

Wilkinson, A. L., Halpern, C. T., & Herring, A. H. (2016). Directions of the relationship between substance use and depressive symptoms from adolescence to young adulthood. *Addictive Behaviors*, *60*, 64–70. https://doi.org/10.1016/j.addbeh.2016.03.036

World Health Organization. (2018). *Helping Adolescents Thrive*. https://www.who.int/mental_health/maternal-child/guidelines_promotive_interventions/en/

Zhao, J., Li, Q., Wang, L., Lin, L., & Zhang, W. (2019). Latent Profile Analysis of Left-behind Adolescents' Psychosocial Adaptation in Rural China. *Journal of Youth and Adolescence*, *48*(6), 1146–1160. https://doi.org/10.1007/s10964-019-00989-1

Chapter 2

Literature Review

2.1 Global Early Adolescence

Early Adolescence

Adolescence has been defined by the World Health Organization (WHO) as the period between ages 10 and 19, and is frequently divided into early adolescence (ages 10-14) and late adolescence (ages 15-19) (WHO, 2014). Adolescence has historically been considered to commence with puberty and culminate with a number of key social role transitions, such as entering the workforce, completing formal education, getting married, and having children (Sawyer et al., 2012). While the biological changes associated with puberty are highly consistent, "adolescence" itself is a socially constructed concept (Sawyer et al., 2012). As such, local definitions of adolescence can vary, with the timing and nature of important social role transitions highly dependent on social, cultural, and environmental factors (Patel et al., 2007). Despite these sociocultural variations, adolescence is now recognized as a critical developmental period worldwide, with the social-emotional skills and health-related behaviors that emerge during this time serving as a foundation for future well-being (Patton et al., 2016; Sawyer et al., 2012).

Early adolescence is marked by dramatic biological, cognitive, social, and emotional changes (McCarthy et al., 2016; Patton et al., 2016; Sawyer et al., 2012). Most of the physiological changes of puberty take place during this period, with a rapid increase in pubertal hormones influencing body morphology, sexual maturation, and brain development (Patton et al., 2016). Cognitively, the remodeling of the brain's reward system can trigger decreases in self-regulation and increases in risk-taking behaviors (Casey et al., 2008; Sawyer et al., 2012). In terms of social-emotional development, early adolescence is characterized by the growing influence of peer

groups, increased desire for autonomy, identity formation, and the development of new interests (Patton et al., 2016; Sawyer et al., 2012). For many, this period is accompanied by a widening in social engagement beyond the immediate family environment, increasing a young person's exposure to risk and protective factors within peer, school, and community domains (Blum et al., 2014). In addition, societal gender differences often become more prominent during this time due to the intensification of gender-related role expectations (Hill & Lynch, 1983; Mmari et al., 2018).

Despite the importance of early adolescence, this unique developmental period has largely been neglected by researchers, program implementers, and policymakers (Blum et al., 2014; McCarthy et al., 2016). One of the drivers of this gap is the fact that early adolescence is generally considered to be one of the healthiest periods within the life course, with lower mortality rates relative to other phases of life in most parts of the world (Patton et al., 2016). Such statistics are misleading, however, as they mask the critical nature of early adolescence in influencing life-long health trajectories. Early adolescents are vulnerable to a range of risky health-related behaviors, including drug and alcohol use, unhealthy dietary practices, physical inactivity, and early sexual activity, and these behaviors can contribute to myriad negative health outcomes later in life (Sawyer et al., 2012). Additionally, mental disorders commonly emerge during this time, and can persist well into adulthood (Patel et al., 2007). Such factors make it clear that early adolescence offers an important window for prevention activities that can help young people successfully transition into adulthood and ultimately shape their future health and well-being.

Adolescents in Low- and Middle-Income Countries

Approximately 90% of the world's adolescents live in low- and middle-income countries (LMICs), where they make up a significant proportion of the population given high fertility rates in these settings (UNICEF, 2012). Compared to those living in high-income countries, these early

adolescents may be particularly vulnerable due to factors such as forced displacement, migration, violence, socioeconomic deprivation, and gender inequality (Fatusi & Hindin, 2010; Patton et al., 2012; WHO, 2018). Indeed, a disproportionate amount of the global mortality among 10- to 14-year-olds occurs in LMICs, with mortality rates more than six times higher than those in high-income countries (Patton et al., 2009). While there is immense variability in the causes of these heightened mortality rates across country settings, these deaths are largely preventable: for example, communicable diseases such as HIV/AIDs drive mortality in sub-Saharan Africa, whereas injuries have the highest contribution to mortality in Southeast Asia, particularly among boys (Patton et al., 2009).

A further issue in many LMICs relates to the pronounced gender differences that crystallize in early adolescence, with boys typically granted greater autonomy, freedom of movement, and access to economic advancement than girls (Fatusi & Hindin, 2010). While this may provide boys with valuable opportunities, however, it also increases their exposure to harmful substance use, interpersonal violence, and unintentional injuries (Kaul & Irwin, 2018; Patton et al., 2018). By contrast, girls experience heightened sexual and reproductive health risks during early adolescence due to such factors as limited access to contraception, unplanned pregnancy, unsafe abortions, early marriage, and gender-based violence (Bearinger et al., 2007; Fatusi & Hindin, 2010). These factors also contribute to gaps in educational attainment between boys and girls, which have persisted in many LMICs despite increasing rates of education worldwide (Psaki et al., 2018). In addition, such disparities can be exacerbated following menarche due to cultural restrictions related to menstruation and insufficient hygiene facilities in schools (Sommer et al., 2016).

2.2 Adolescent Psychosocial Development

Epidemiology of Psychosocial Risks

Mental health issues affect up to 20% of adolescents worldwide, and represent a leading cause of health-related disability among this age group (Kieling et al., 2011). With a substantial proportion of lifetime mental health problems manifesting by age 14 (Kessler et al., 2005), poor psychosocial adjustment during early adolescence can set the stage for impairment throughout the life course (Patel et al., 2007; Patton et al., 2016). The most widespread emergent emotional problems in early adolescence are symptoms of depression and anxiety, with rates increasing dramatically during this period (Rapee et al., 2019). While there is substantial heterogeneity in prevalence estimates between countries (Merikangas & Nakamura, 2011; Polanczyk et al., 2015), one large cross-national investigation among European early adolescents found that 39.7% had elevated depressive symptoms and 37.8% had elevated anxiety symptoms (Balázs et al., 2013). On the behavioral side, the initiation of alcohol, tobacco, and other substances is very common during this period (Chassin et al., 2004). In addition, many early adolescents report involvement in interpersonal aggression: for instance, one multi-country study reported that 26% of participants were involved in bullying as a victim and/or perpetrator (Craig et al., 2009). To note, it is well-established that there are substantial gender differences in these psychosocial risks, with girls generally demonstrating more emotional problems and boys generally demonstrating more behavioral problems (Zahn-Waxler et al., 2015).

A growing number of longitudinal studies have captured the negative life-long consequences associated with emotional and behavioral problems in adolescence. For instance, two recent systematic reviews found that depressive symptoms in adolescence increase the likelihood of adult mental health problems (D. Johnson et al., 2018), and are also associated with

low educational attainment and unemployment (Clayborne et al., 2019). Similarly, early symptoms of anxiety have been linked with subsequent depression, anxiety, suicidality, and harmful substance use (Doering et al., 2019; Dyer et al., 2019). Further, adolescent behavioral problems, including involvement in interpersonal aggression as a victim and/or perpetrator (Copeland et al., 2013; Gibb et al., 2011; Moore et al., 2014; Sigurdson et al., 2015; Stapinski et al., 2014) and drug and alcohol use (Gobbi et al., 2019; Hall et al., 2016; Silins et al., 2018; Wilkinson et al., 2016), are predictive of a range of negative mental health and psychosocial outcomes in adulthood. Such findings underscore the potential of utilizing targeted strategies to prevent long-term adjustment issues among this developmentally susceptible age group.

While studies focusing on individual psychosocial risks in adolescence have utility in uncovering etiologic pathways for specific mental disorders, such approaches overlook the common co-occurrence of emotional and behavioral problems during this developmental period. A substantial body of literature has found that these problems are rarely found in isolation: adolescents with emotional distress often exhibit symptoms of both depression and anxiety (Cummings et al., 2014; Melton et al., 2016); those involved in interpersonal aggression frequently report victimization as well as perpetration experiences (Haynie et al., 2001; Nansel et al., 2001; Schwartz et al., 2001); behavioral problems, including aggression and substance use, typically cluster together (Doran et al., 2012; Hale & Viner, 2016; Luk et al., 2012a); and emotional problems may be found alongside behavioral ones (Angold et al., 1999; Boylan et al., 2007). While a range of theoretical models have been used to explain these complex patterns of psychosocial development (e.g., Cummings et al., 2014; Jessor & Jessor, 1977; Khantzian, 1997; Patalay et al., 2015), research has generally agreed that such co-occurrence confers additional vulnerability for

adolescents (Angold et al., 1999; Copeland et al., 2013; Ezpeleta et al., 2006; Lewinsohn et al., 1995; Sourander et al., 2007).

Risk and Protective Factors

Decades of research have illuminated the overlapping environmental spheres that shape adolescent health, with social determinants at the family, peer, school, and neighborhood levels (Patton et al., 2016; Viner et al., 2012). There is robust evidence that risk and protective factors within these social environments play a central role in psychosocial development throughout childhood and adolescence, although this evidence has largely been drawn from studies conducted in high-income countries (Kieling et al., 2011; Patel et al., 2007, 2008). To note, the multifactorial nature of emotional and behavioral problems makes it infeasible to fully elucidate the mechanistic pathways that lead to emergent psychosocial challenges (Patel et al., 2007). Risk and protective factors often co-occur and interact both within and across social environments, and this restricts the identification of specific factors that are responsible for emotional and behavioral problems (Kieling et al., 2011). Nevertheless, studies focused on individual risk and protective factors have wide utility in the identification of salient entry points for prevention activities targeting psychosocial distress.

Given the centrality of families to human development, much of the research into adolescent psychosocial adjustment has focused on risk and protective factors within the family environment (W. Collins & Laursen, 2004). Unsurprisingly, some of the strongest family-level risk factors for the development of emotional and behavioral problems are exposures to adverse conditions, including parental mental illness (Connell & Goodman, 2002; Reupert et al., 2013), parental substance abuse (Obot & Anthony, 2004; Richter & Richter, 2001), family discord and violence (S. Evans et al., 2008; Yap et al., 2014), abuse and neglect (Chen et al., 2010; Norman et

al., 2012), and economic deprivation (Reiss, 2013). Studies have found that not only are these adversities highly interrelated (Dong et al., 2004; Kessler et al., 2010), but that they also have a cumulative impact on mental health throughout the life course (Edwards et al., 2003; Turner & Lloyd, 1995). Conversely, stable family functioning and secure parental attachment are robust protective factors in psychosocial adjustment among adolescents worldwide (Bornstein & Putnick, 2018; Patel et al., 2008). Further, there is evidence that parenting styles heavily influence psychosocial development, with parental warmth, authoritative parenting, parental monitoring, consistent discipline, and strong communication serving as buffers against emergent emotional and behavioral issues (Labella & Masten, 2018; Yap et al., 2014).

The increasing salience of peer relationships during adolescence amplifies the influence that risk and protective factors within peer environments assert on psychosocial development. Strong connections with peers can protect adolescents against a range of negative outcomes, including heightened stress, depression, anxiety, and suicidality (Roach, 2018). Notably, one systematic review found that youth mental health may be more closely tied to social support from an individual's general peer group as opposed to that from close specific friendships (Rueger et al., 2016); despite these nuances, however, it is clear that peer support plays an essential role in youth well-being (Chu et al., 2010). At the same time, this mounting reliance on peers can also heighten adolescents' vulnerability. For instance, a lack of acceptance by peers has repeatedly been shown to increase the risk of developing symptoms of anxiety and depression (Epkins & Heckler, 2011; Platt et al., 2013), with those who experience rejection more likely to be the target of relational aggression through exclusion, rumors, and manipulation (Casper et al., 2020). Further, a substantial body of literature has established that peer participation in risky health-related behaviors can elevate adolescents' adoption of these behaviors, including drug use (Montgomery

et al., 2020; Seo & Huang, 2012), alcohol use (Leung et al., 2014), interpersonal aggression (Dishion & Tipsord, 2011; Thomas et al., 2018), and suicidal behaviors (Quigley et al., 2017).

Outside of their homes, the majority of adolescents spend more time in school than any other setting, and a growing body of research conducted primarily in the United States has focused on the social, instructional, and organizational factors within schools that can influence psychosocial development (Eccles, 2004). One such factor is school connectedness, with adolescents who feel included, respected, and supported by their schools less likely to develop internalizing symptoms, demonstrate suicidal behaviors, initiate substance use, and engage in interpersonal aggression (Bond et al., 2007; Chapman et al., 2011; Joyce & Early, 2014; Kidger et al., 2012; Marraccini & Brier, 2017). Likewise, there is some evidence that having a supportive teacher is predictive of emotional well-being among students (Joyce & Early, 2014; Kidger et al., 2012), and that attitudes towards bullying among teachers and other school personnel may act on mental health by both reducing incidences of interpersonal aggression and increasing the likelihood that students will seek support when it occurs (Espelage et al., 2014; Troop-Gordon & Ladd, 2015). By contrast, it has been shown that feeling unsafe at school is a key determinant of both emotional and behavioral problems among students (Gower et al., 2015; Nijs et al., 2014; Olcoń et al., 2017).

While there are still gaps in the literature regarding the influence of neighborhood environments on adolescent psychosocial development, emerging evidence points to several potential risk and protective factors. For instance, one systematic review aimed to identify neighborhood-level factors in adolescent depression, and found that neighborhood safety and discrimination against minority groups significantly increased risk (Stirling et al., 2015). In addition, there was some indication that community connectedness may act as an important

protective factor, although few high-quality studies had examined this relationship. These findings align with an earlier review, which examined the influence of community violence on youth mental health, and uncovered substantial impacts on post-traumatic stress disorder and externalizing symptoms, with smaller impacts on internalizing symptoms (Fowler et al., 2009). Finally, there is evidence that neighborhood disadvantage – as characterized by factors such as poverty, unemployment, and low education rates – can negatively impact psychosocial adjustment, although findings in this area have been decidedly inconsistent (Chang et al., 2016; Jackson et al., 2014; Leventhal & Brooks-Gunn, 2000).

Global Perspectives

Despite the disproportionate number of adolescents living in LMICs, only a fraction of the research (<6%) on adolescent psychosocial development has been conducted in these settings (Patel et al., 2008), and even less has focused specifically on early adolescent populations (McCarthy et al., 2016). While existing research suggests that the prevalence of mental health problems in LMICs may be similar to that of high-income countries, studies have yielded immense heterogeneity in estimates (Belfer, 2008; Kieling et al., 2011). Such heterogeneity is likely driven by a combination of several factors: methodological differences related to study design and measurement; contextual variations in exposures to specific risk and protective factors; and divergent cultural orientations regarding the expression, experience, and interpretation of psychosocial risks (Kieling et al., 2011; Kirmayer, 1989; Polanczyk et al., 2015).

While these drivers are difficult to disentangle, there is reason to believe that adolescents living in LMICs may be particularly vulnerable to psychosocial adjustment issues. Globally, an estimated 420 million children and adolescents reside in areas affected by armed conflict, the majority of which are in LMICs, and another 34 million have been forcibly displaced (Graham et

al., 2019; UNHCR, 2020). Armed conflict and forced displacement threaten youth's mental health and well-being both through direct exposure to war-related violence, as well as through daily stressors that are exacerbated by conflict situations, such as increased poverty and diminished access to basic services (Miller & Rasmussen, 2010; Reed et al., 2012). Beyond conflict settings, growing international evidence has established the deleterious effects of socioeconomic deprivation on life course mental health problems in LMICs, although few studies have focused specifically on adolescent populations (Lund et al., 2010; Patel & Kleinman, 2003). These issues are compounded by the acute gaps in policies and services targeting adolescent mental health in LMICs, fueled by shortages of mental health specialists, insufficient financial resources, and a lack of governmental prioritization (Babatunde et al., 2019; Zhou et al., 2020).

2.3 Methodological Approaches

Person-Centered Approaches

Person-centered statistical approaches such as latent class analysis (LCA) and latent profile analysis (LPA) are increasingly used to examine heterogeneity in psychosocial development among adolescent populations (Lanza & Cooper, 2016). These approaches identify distinct subgroups (i.e., classes) of individuals who are similar to each other but different from members of other subgroups based on their patterns of endorsement across a set of indicator variables (L. Collins & Lanza, 2010). In the context of adolescent psychosocial development, LCA/LPA can be used to identify subgroups of adolescents who share similar patterns of emotional and behavioral problems, which can ultimately aid in targeting those who may particularly benefit from early intervention efforts (Lanza & Rhoades, 2013; Nylund-Gibson & Hart, 2014). In addition, these methods have broad utility in cross-cultural research, as they allow for flexible comparisons of model similarities and differences across diverse populations (Kankaraš et al., 2010).

While a growing number of studies have used LCA/LPA to examine patterns of psychosocial risks among adolescents living in high-income countries (e.g., Bianchi et al., 2017; Eastman et al., 2018; Luk et al., 2012; Nelon et al., 2019; van Lang et al., 2006), few have applied these methods to those living in LMICs (e.g., Abbasi-Ghahramanloo et al., 2018; Assanangkornchai et al., 2018; González-Forteza et al., 2017; Ma et al., 2019; Zhao et al., 2019). Further, studies have generally been restricted to either emotional or behavioral problems rather than simultaneously examining a broader spectrum of psychosocial risks, and have rarely focused exclusively on early adolescent populations. Notably, existing studies that *have* investigated co-occurring emotional and behavioral problems among early adolescents have uncovered strikingly similar results. For instance, two studies from Italy (Bianchi et al., 2017; n = 3,418) and the Netherlands (Kretschmer et al., 2015; n = 2,149) used person-centered approaches to classify early adolescents based on an analogous set of internalizing (e.g., depression, anxiety, somatic complaints) and externalizing (e.g., rule-breaking, aggression) symptoms, and uncovered four distinct subgroups: an internalizing class, an externalizing class, a low problem normative class, and a comorbid problem dysfunctional class.

An additional limitation of the extant literature is a lack of multi-country studies which employ person-centered approaches to assess the contextual generalizability of developmental subgroups in adolescence. Nearly all existing analyses have been conducted within a single population, and this precludes an understanding of whether patterns of psychosocial risks differ in meaningful ways across diverse geographic settings. Further, as many existing studies have been implemented among subpopulations with specific vulnerabilities (e.g., criminal-justice-involved youth, youth diagnosed with a mental disorder, substance users) (Dembo et al., 2012; Vaughn et al., 2012; Williams et al., 2013), findings may have limited general applicability. One notable

exception is Jordan et al. (2016), who used LCA among 38,070 adolescents from population-based samples in 34 societies to determine the cross-cultural existence and prevalence of youth belonging to a "dysregulation profile," characterized by co-occurring internalizing symptoms, attention issues, and aggressive behaviors. While the authors found some evidence that this subgroup exists across different environments, there was substantial variation in their results. Further, Ethiopia was the only low-income country included in their analysis.

Finally, while recent investigations have used person-centered approaches to examine risk and protective factors for co-occurring psychosocial risks among adolescents from a range of diverse contexts (Ang et al., 2020; Assanangkornchai et al., 2018; González-Forteza et al., 2017; Ji et al., 2018; Luk et al., 2012b; Oshri et al., 2011; Sullivan et al., 2010), most have focused exclusively on family- or peer-level factors, precluding their ability to disentangle the relative influence of a broader range of social determinants. A better understanding of risk and protective factors across social environments is essential for identifying mechanisms enhancing resiliency among vulnerable youth and tailoring health promotion efforts at multiple levels.

Qualitative and Mixed Methods Approaches

While quantitative studies have provided insights into behavioral problems in adolescence that increase psychosocial vulnerability, the individual motivations, perceptions, and beliefs underlying such behaviors often remain unclear. This underscores the need for investigations that utilize qualitative methods to illuminate adolescents' own views on key risk behaviors (Creswell, 2007; Denzin & Lincoln, 2011). Such studies can complement quantitative research by allowing for a deeper and more contextual understanding of behavioral problems, and can ultimately be used to inform appropriate assessment tools, prevention strategies, and intervention approaches (Narring, 2001; Nelson & Quintana, 2005; Rich & Ginsburg, 1999). A growing number of studies

have investigated these issues among adolescents living in high-income countries. For instance, in the case of bullying involvement, qualitative research has been used to shed light on adolescents' perspectives on definitions of bullying (Frisén et al., 2008; Guerin & Hennessy, 2002; Hellström et al., 2015; Land, 2003; Vaillancourt et al., 2008), gender differences in bullying (Athanasiades & Deliyanni-Kouimtzis, 2010; Hellström & Beckman, 2020), causes and consequences of bullying (Albdour et al., 2017; AlBuhairan et al., 2016; Bell et al., 2014; Pister, 2014), and central coping strategies (C. Evans et al., 2017; Tenenbaum et al., 2011). Despite the value of qualitative information, however, few studies have attempted to replicate such efforts among youth living in LMICs.

These types of investigations may be even more powerful when conducted within a mixed methods framework (Creswell & Clark, 2017; R. Johnson & Onwuegbuzie, 2004). Researchers have suggested that mixed methods approaches are particularly valuable in developmental science, as they allow for a more nuanced understanding of developmental complexities than either quantitative or qualitative data can yield alone (Yoshikawa et al., 2008). Specifically, mixed methods can be used to contextualize developmentally normative behaviors, to shed light on both the prevalence of particular practices and the meanings underlying these practices, and to explore the social environmental factors that influence developmental changes (Yoshikawa et al., 2008). Within a latent class analytic framework, mixed methods could help elucidate the meanings that adolescents with differing profiles of psychosocial risks ascribe to their own behaviors as well as the behaviors of their peers. Further, mixed methods could yield insights into the validity of latent classes by providing qualitative information on the underlying distinctions between subgroups. Despite the potential of this type of mixed methods approach (Aresi et al., 2020; Lowe et al., 2015;

Suárez-Orozco et al., 2010), few existing studies of adolescent psychosocial risks have combined latent class analysis with qualitative interviews.

2.4 Country Information

Democratic Republic of Congo

The Democratic Republic of Congo (DRC) is one of the poorest countries in the world, with approximately 76.6% of the population living in extreme poverty as measured by daily income (<$1.90 per day) (UNDP, 2019). Over the past three decades, the country has experienced protracted social and political turmoil, including recent waves of violence and civil unrest in the eastern and central provinces (World Bank, 2018a). While DRC's abundant natural resources signify its economic potential, the country's growth has been hampered by the impacts of its prolonged conflict, including weak governance, poor infrastructure, economic disparities, and widespread gender inequalities (World Bank, 2018a). The GEAS takes places in Kinshasa, DRC's capital and largest city, with over 12 million inhabitants. The city's population has expanded rapidly in recent years, largely due to conflict-related migration and inadequate infrastructure in rural areas (World Bank, 2018b). While living standards are higher on average in Kinshasa compared to the rest of the country, life for many in the city is beset by a number of complex challenges including high rates of unemployment, limited access to essential services, cramped living conditions, and poor access to water and sanitation (World Bank, 2018b).

Given DRC's turbulent history, it is unsurprising that existing research on adolescent psychosocial development has largely focused on conflict-affected populations. The majority of these studies center either on conflict-related risk factors that increase psychosocial vulnerability (e.g., displacement, war-related trauma, sexual violence) (Cherewick et al., 2016; Glass et al., 2018; Kohli et al., 2018; Mels et al., 2010; Verelst et al., 2014), or intervention strategies that

bolster resiliency and improve well-being among conflict-affected youth (Kohli et al., 2018; Lokuge et al., 2013; McMullen et al., 2013; O'Callaghan et al., 2014). To date, however, there have been few studies that examine similar issues among the general youth population in DRC.

Malawi

While Malawi has enjoyed a history of relative stability, it ranks just above DRC in terms of its economic development, with an estimated 70.3% of the population living in extreme poverty (UNDP, 2019). As approximately 83% of the population live in rural areas (UNDESA, 2019), the economy is largely driven by agriculture, making Malawi extraordinarily vulnerable to climate-related shocks including droughts and flooding (World Bank, 2018c). Although rates of urbanization have been slower in Malawi relative to other countries in Sub-Saharan Africa, in recent years, rapid population growth combined with limited economic prospects in rural areas have driven increasing numbers of people into the country's cities (Choi et al., 2016). Blantyre, the site of the GEAS in Malawi, is home to around 800,000 people, of whom 37.3% are aged 14 or younger (National Statistical Office, 2019). Blantyre is the center of commerce and industry in Malawi, making it a particularly attractive destination for rural-to-urban migrants (Maoulidi, 2013). The city is characterized by a number of health challenges, however, including disproportionately high rates of HIV/AIDS, malaria, tuberculosis, and maternal mortality (Maoulidi, 2013).

Some of the most robust data on adolescent psychosocial development in Malawi comes from the Malawi Longitudinal Study of Families and Health (MLSFH), a 14-year intergenerational study which has followed several cohorts of adolescents living in rural areas of the country (Kohler et al., 2015). Recent analyses from this study have found links between poor mental health in adolescence and adverse childhood experiences (Kidman et al., 2020) as well as intimate partner

violence victimization (Kidman & Kohler, 2020). In addition to the MLSFH, the Global School-based Student Health Survey (GSHS), which includes a nationally representative sample of 11-16 year-old students, has found strong links between substance use, bullying, suicidality, and symptoms of anxiety (Y. Kim et al., 2018; Kubwalo et al., 2013; Shaikh et al., 2016). Finally, given that Malawi is an HIV endemic country with a prevalence of 9.2% among adults (UNAIDS, 2020), it is unsurprising that a number of studies have focused on mental health among HIV-affected adolescents (Carbone et al., 2019; M. Kim et al., 2014, 2015; Wright et al., 2007)

Indonesia

Indonesia is the fourth most populated country in the world, with a population of 264 million people as of 2017 (World Bank Group, 2020). It is also the largest Muslim majority country, with around 87.5% of the population identifying as Muslim (Ananta et al., 2015). Comprised of approximately 17,500 islands, Indonesia is characterized by immense ethnic, cultural, and linguistic diversity. While the country has enjoyed notable economic development over the past several decades, this development has been accompanied by rising interregional disparities in health, education, and income (World Health Organization, 2017). These disparities are particularly pronounced in the country's urban areas, where infrastructure strain driven by rapid population growth has contributed to increasing marginalization among the urban poor (Fink et al., 2014; Jones, 2017). In Indonesia, the GEAS includes three distinct study sites: Semarang, Java; Bandar Lampung, Sumatra; and Denpasar, Bali. These sites were selected so as to explore the potential influences of cultural and contextual diversity on Indonesian early adolescents. For instance, Bandar Lampung has a more conservative Muslim population than Semarang, whereas Denpasar has a majority Hindu population (Wilopo et al., 2020).

Like Malawi, Indonesia has participated in the GSHS, which provides nationally representative data on mental, behavioral, and physical health among school-going adolescents. Analyses of these data have documented robust associations between substance use, bullying victimization, anxiety, loneliness, and suicidality (Balogun et al., 2014; Pengpid & Peltzer, 2019; Putra et al., 2019; Q. Wang et al., 2020; Yusuf et al., 2019). In addition, given the high prevalence of youth tobacco use in Indonesia, with a reported 20.3% of 13-15 year-olds using tobacco (36.2% of boys and 4.3% of girls) (WHO, 2015), a number of studies have focused on the psychosocial correlates of tobacco use among Indonesian adolescents (Bigwanto et al., 2017, 2019; French et al., 2019; Herawati et al., 2017; Kusumawardani et al., 2018; Ng et al., 2007; Nurmansyah et al., 2019). Finally, several longitudinal studies have found evidence that engagement in religious practices is associated with psychosocial adjustment among Muslim youth (French et al., 2008, 2011, 2013, 2014; Sallquist et al., 2010).

China

China is the world's second largest economy, a status it has achieved through four decades of rapid economic growth and social transformation (WHO, 2016). A key facilitator of this growth has been an unprecendent level of urbanization: over 260 million migrants have moved from rural to urban areas, and a projected 70% of the population is expected to live in cities by 2030 (World Bank, 2014). While life in China's cities confers substantial social, economic, and educational benefits, there are also notable disparities. This is particularly true for migrant workers, who often lack official registration in the urban *hukou* system which regulates access to public services and social security (World Bank, 2014). For instance, in the GEAS study site of Shanghai, studies have found that rural-to-urban migrants have greater employment and wage discrimination (Cheng et al., 2013), decreased access to health services (Lu et al., 2008; Wei et al., 2009; Xi et al., 2020),

and poorer mental health (Z. Li et al., 2019; J. Wang et al., 2019) than their non-migrant counterparts. In order to better understand the impact of such challenges on adolescent development, the GEAS was carried out in a working class neighborhood in Shanghai that is home to a large number of migrant families.

Compared to the other included GEAS countries, there is a much richer body of evidence on adolescent psychosocial development in China. Recent systematic reviews have established that up to 24.3% of youth exhibit depressive symptoms (J. Li et al., 2019; Tang et al., 2019; Xu et al., 2018), with poor parent-child communication, poor family functioning, poor family cohesion, abuse, negative life events, academic pressure, and bullying acting as particularly strong risk factors (Tang et al., 2020). Other reviews have focused on alcohol use (Feng & Newman, 2016) tobacco use (Han & Chen, 2015), suicidality (Y. Li et al., 2012; Liu et al., 2019), non-suicidal self-injury (J. Lang & Yao, 2018; X. Yang & Feldman, 2017), and post-traumatic stress (Gordon-Hollingsworth et al., 2018). In addition, several recent studies have used person-centered analytic approaches to examine heterogeneity in patterns of emotional and behavioral problems among Chinese adolescents (Ji et al., 2018; Ma et al., 2019; R. Yang et al., 2019; Zhao et al., 2019).

2.5 References

Abbasi-Ghahramanloo, A., Heshmat, R., Safiri, S., Esmaeil Motlagh, M., Ardalan, G., Mahdavi-Gorabi, A., Asayesh, H., Qorbani, M., & Kelishadi, R. (2018). Risk-Taking Behaviors in Iranian Children and Adolescents: A Latent Class Analysis Approach: Caspian IV Study. *Journal of Research in Health Sciences*, *18*(4), e00428.

Albdour, M., Lewin, L., Kavanaugh, K., Hong, J. S., & Wilson, F. (2017). Arab American Adolescents' Perceived Stress and Bullying Experiences: A Qualitative Study. *Western Journal of Nursing Research*, *39*(12), 1567–1588. https://doi.org/10.1177/0193945916678214

AlBuhairan, F. S., Al Eissa, M., Alkufeidy, N., & Almuneef, M. (2016). Bullying in early adolescence: An exploratory study in Saudi Arabia. *International Journal of Pediatrics & Adolescent Medicine*, *3*(2), 64–70. https://doi.org/10.1016/j.ijpam.2016.01.002

Ananta, A., Arifin, E. N., Hasbullah, M. S., Handayani, N. B., & Pramono, A. (2015). *Demography of Indonesia's ethnicity*. Institute of Southeast Asian Studies.

Ang, R. P., Li, X., Huan, V. S., Liem, G. A. D., Kang, T., Wong, Q., & Yeo, J. Y. P. (2020). Profiles of Antisocial Behavior in School-Based and At-Risk Adolescents in Singapore: A Latent Class Analysis. *Child Psychiatry and Human Development*, *51*(4), 585–596. https://doi.org/10.1007/s10578-019-00941-1

Angold, A., Costello, E. J., & Erkanli, A. (1999). Comorbidity. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *40*(1), 57–87.

Aresi, G., Cleveland, M. J., Vieno, A., Beccaria, F., Turrisi, R., & Marta, E. (2020). A Mixed Methods Cross-Cultural Study to Compare Youth Drinking Cultures in Italy and the USA.

Applied Psychology. Health and Well-Being, *12*(1), 231–255. https://doi.org/10.1111/aphw.12181

Assanangkornchai, S., Li, J., McNeil, E., & Saingam, D. (2018). Clusters of alcohol and drug use and other health-risk behaviors among Thai secondary school students: A latent class analysis. *BMC Public Health*, *18*(1), 1272. https://doi.org/10.1186/s12889-018-6205-z

Athanasiades, C., & Deliyanni-Kouimtzis, V. (2010). The experience of bullying among secondary school students. *Psychology in the Schools*, *47*(4), 328–341. https://doi.org/10.1002/pits.20473

Babatunde, G. B., van Rensburg, A. J., Bhana, A., & Petersen, I. (2019). Barriers and Facilitators to Child and Adolescent Mental Health Services in Low-and-Middle-Income Countries: A Scoping Review. *Global Social Welfare*, 1–18. https://doi.org/10.1007/s40609-019-00158-z

Balázs, J., Miklósi, M., Keresztény, A., Hoven, C. W., Carli, V., Wasserman, C., Apter, A., Bobes, J., Brunner, R., Cosman, D., Cotter, P., Haring, C., Iosue, M., Kaess, M., Kahn, J.-P., Keeley, H., Marusic, D., Postuvan, V., Resch, F., … Wasserman, D. (2013). Adolescent subthreshold-depression and anxiety: Psychopathology, functional impairment and increased suicide risk. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *54*(6), 670–677. https://doi.org/10.1111/jcpp.12016

Balogun, O., Koyanagi, A., Stickley, A., Gilmour, S., & Shibuya, K. (2014). Alcohol consumption and psychological distress in adolescents: A multi-country study. *The Journal of Adolescent Health*, *54*(2), 228–234. https://doi.org/10.1016/j.jadohealth.2013.07.034

Bearinger, L. H., Sieving, R. E., Ferguson, J., & Sharma, V. (2007). Global perspectives on the sexual and reproductive health of adolescents: Patterns, prevention, and potential. *Lancet*, *369*(9568), 1220–1231. https://doi.org/10.1016/S0140-6736(07)60367-5

Belfer, M. L. (2008). Child and adolescent mental disorders: The magnitude of the problem across the globe. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *49*(3), 226–236. https://doi.org/10.1111/j.1469-7610.2007.01855.x

Bell, R., Arnold, E., Golden, S., Langdon, S., Anderson, A., & Bryant, A. (2014). Perceptions and psychosocial correlates of bullying among Lumbee Indian youth. *American Indian and Alaska Native Mental Health Research*, *21*(1), 1–17.

Bianchi, V., Brambilla, P., Garzitto, M., Colombo, P., Fornasari, L., Bellina, M., Bonivento, C., Tesei, A., Piccin, S., Conte, S., Perna, G., Frigerio, A., Castiglioni, I., Fabbro, F., Molteni, M., & Nobile, M. (2017). Latent classes of emotional and behavioural problems in epidemiological and referred samples and their relations to DSM-IV diagnoses. *European Child & Adolescent Psychiatry*, *26*(5), 549–557. https://doi.org/10.1007/s00787-016-0918-2

Bigwanto, M., Mongkolcharti, A., Peltzer, K., & Laosee, O. (2017). Determinants of cigarette smoking among school adolescents on the island of Java, Indonesia. *International Journal of Adolescent Medicine and Health*, *29*(2). https://doi.org/10.1515/ijamh-2015-0036

Bigwanto, M., Nurmansyah, M. I., Orlan, E., Farradika, Y., & Purnama, T. B. (2019). Determinants of e-cigarette use among a sample of high school students in Jakarta, Indonesia. *International Journal of Adolescent Medicine and Health*. https://doi.org/10.1515/ijamh-2019-0172

Blum, R. W., Astone, N. M., Decker, M. R., & Mouli, V. C. (2014). A conceptual framework for early adolescence: A platform for research. *International Journal of Adolescent Medicine and Health*, *26*(3), 321–331. https://doi.org/10.1515/ijamh-2013-0327

Bond, L., Butler, H., Thomas, L., Carlin, J., Glover, S., Bowes, G., & Patton, G. (2007). Social and school connectedness in early secondary school as predictors of late teenage substance use, mental health, and academic outcomes. *The Journal of Adolescent Health*, *40*(4), 357.e9-18. https://doi.org/10.1016/j.jadohealth.2006.10.013

Bornstein, M. H., & Putnick, D. L. (2018). Parent-Adolesent Relationships in Global Perspective. In B. Prerna & J. E. Lansford (Eds.), *Handbook of Adolescent Development Research and Its Impact on Global Policy* (pp. 107–129). Oxford University Press.

Boylan, K., Vaillancourt, T., Boyle, M., & Szatmari, P. (2007). Comorbidity of internalizing disorders in children with oppositional defiant disorder. *European Child & Adolescent Psychiatry*, *16*(8), 484–494. https://doi.org/10.1007/s00787-007-0624-1

Carbone, N. B., Njala, J., Jackson, D. J., Eliya, M. T., Chilangwa, C., Tseka, J., Zulu, T., Chinkonde, J. R., Sherman, J., Zimba, C., Mofolo, I. A., & Herce, M. E. (2019). "I would love if there was a young woman to encourage us, to ease our anxiety which we would have if we were alone": Adapting the Mothers2Mothers Mentor Mother Model for adolescent mothers living with HIV in Malawi. *PloS One*, *14*(6), e0217693. https://doi.org/10.1371/journal.pone.0217693

Casey, B. J., Jones, R. M., & Hare, T. A. (2008). The Adolescent Brain. *Annals of the New York Academy of Sciences*, *1124*, 111–126. https://doi.org/10.1196/annals.1440.010

Casper, D. M., Card, N. A., & Barlow, C. (2020). Relational aggression and victimization during adolescence: A meta-analytic review of unique associations with popularity, peer

acceptance, rejection, and friendship characteristics. *Journal of Adolescence*, *80*, 41–52. https://doi.org/10.1016/j.adolescence.2019.12.012

Chang, L.-Y., Wang, M.-Y., & Tsai, P.-S. (2016). Neighborhood disadvantage and physical aggression in children and adolescents: A systematic review and meta-analysis of multilevel studies. *Aggressive Behavior*, *42*(5), 441–454. https://doi.org/10.1002/ab.21641

Chapman, R. L., Buckley, L., Sheehan, M. C., Shochet, I. M., & Romaniuk, M. (2011). The impact of school connectedness on violent behavior, transport risk-taking behavior, and associated injuries in adolescence. *Journal of School Psychology*, *49*(4), 399–410. https://doi.org/10.1016/j.jsp.2011.04.004

Chassin, L., Hussong, A., Barrera, M., Molina, B. S. G., Trim, R., & Ritter, J. (2004). Adolescent Substance Use. In *Handbook of Adolescent Psychology* (pp. 665–696). John Wiley & Sons, Ltd. https://doi.org/10.1002/9780471726746.ch21

Chen, L. P., Murad, M. H., Paras, M. L., Colbenson, K. M., Sattler, A. L., Goranson, E. N., Elamin, M. B., Seime, R. J., Shinozaki, G., Prokop, L. J., & Zirakzadeh, A. (2010). Sexual Abuse and Lifetime Diagnosis of Psychiatric Disorders: Systematic Review and Meta-analysis. *Mayo Clinic Proceedings*, *85*(7), 618–629. https://doi.org/10.4065/mcp.2009.0583

Cheng, Z., Guo, F., Hugo, G., & Yuan, X. (2013). Employment and wage discrimination in the Chinese cities: A comparative study of migrants and locals. *Habitat International*, *39*, 246–255. https://doi.org/10.1016/j.habitatint.2012.11.007

Cherewick, M., Doocy, S., Tol, W., Burnham, G., & Glass, N. (2016). Potentially traumatic events, coping strategies and associations with mental health and well-being measures among conflict-affected youth in Eastern Democratic Republic of Congo. *Global Health Research and Policy*, *1*, 8. https://doi.org/10.1186/s41256-016-0007-6

Choi, N., Lall, S. V., White, R., Webster, M. J., & Wang, H. G. (2016). *Malawi urbanization review: Leveraging urbanization for national growth and development* (No. AUS10133; pp. 1–93). The World Bank. http://documents.worldbank.org/curated/en/913881468045241225/Malawi-urbanization-review-leveraging-urbanization-for-national-growth-and-development

Chu, P. S., Saucier, D. A., & Hafner, E. (2010). Meta-Analysis of the Relationships Between Social Support and Well-Being in Children and Adolescents. *Journal of Social and Clinical Psychology*, *29*(6), 624–645. https://doi.org/10.1521/jscp.2010.29.6.624

Clayborne, Z. M., Varin, M., & Colman, I. (2019). Systematic Review and Meta-Analysis: Adolescent Depression and Long-Term Psychosocial Outcomes. *Journal of the American Academy of Child and Adolescent Psychiatry*, *58*(1), 72–79. https://doi.org/10.1016/j.jaac.2018.07.896

Collins, L. M., & Lanza, S. T. (2010). *Latent class and latent transition analysis: With applications in the social, behavioral, and health sciences*. John Wiley & Sons.

Collins, W. A., & Laursen, B. (2004). Parent-Adolescent Relationships and Influences. In *Handbook of Adolescent Psychology* (pp. 331–361). John Wiley & Sons, Ltd. https://doi.org/10.1002/9780471726746.ch11

Connell, A. M., & Goodman, S. H. (2002). The association between psychopathology in fathers versus mothers and children's internalizing and externalizing behavior problems: A meta-analysis. *Psychological Bulletin*, *128*(5), 746–773. https://doi.org/10.1037/0033-2909.128.5.746

Copeland, W. E., Wolke, D., Angold, A., & Costello, E. J. (2013). Adult Psychiatric Outcomes of Bullying and Being Bullied by Peers in Childhood and Adolescence. *JAMA Psychiatry*, *70*(4), 419–426. https://doi.org/10.1001/jamapsychiatry.2013.504

Craig, W., Harel-Fisch, Y., Fogel-Grinvald, H., Dostaler, S., Hetland, J., Simons-Morton, B., Molcho, M., de Mato, M. G., Overpeck, M., Due, P., & Pickett, W. (2009). A cross-national profile of bullying and victimization among adolescents in 40 countries. *International Journal of Public Health*, *54*(Suppl 2), 216–224. https://doi.org/10.1007/s00038-009-5413-9

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). Sage Publications.

Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*. Sage Publications.

Cummings, C. M., Caporino, N. E., & Kendall, P. C. (2014). Comorbidity of Anxiety and Depression in Children and Adolescents: 20 Years After. *Psychological Bulletin*, *140*(3), 816–845. https://doi.org/10.1037/a0034733

Dembo, R., Briones, R., Gulledge, L., Karas, L., Winters, K. C., Belenko, S., & Greenbaum, P. E. (2012). Stress, Mental Health and Substance Abuse Problems In a Sample of Diversion Program Youth: An Exploratory Latent Class Analysis. *Journal of Child & Adolescent Substance Abuse*, *21*(2), 130–155. https://doi.org/10.1080/1067828X.2012.662115

Denzin, N. K., & Lincoln, Y. S. (Eds.). (2011). *The Sage handbook of qualitative research* (4th ed). Sage Publications.

Dishion, T. J., & Tipsord, J. M. (2011). Peer contagion in child and adolescent social and emotional development. *Annual Review of Psychology*, *62*, 189–214. https://doi.org/10.1146/annurev.psych.093008.100412

Doering, S., Lichtenstein, P., Gillberg, C., Middeldorp, C. M., Bartels, M., Kuja-Halkola, R., & Lundström, S. (2019). Anxiety at age 15 predicts psychiatric diagnoses and suicidal ideation in late adolescence and young adulthood: Results from two longitudinal studies. *BMC Psychiatry*, *19*(1), 1–11. https://doi.org/10.1186/s12888-019-2349-3

Dong, M., Anda, R. F., Felitti, V. J., Dube, S. R., Williamson, D. F., Thompson, T. J., Loo, C. M., & Giles, W. H. (2004). The interrelatedness of multiple forms of childhood abuse, neglect, and household dysfunction. *Child Abuse & Neglect*, *28*(7), 771–784. https://doi.org/10.1016/j.chiabu.2004.01.008

Doran, N., Luczak, S. E., Bekman, N., Koutsenok, I., & Brown, S. A. (2012). Adolescent Substance Use and Aggression: A Review. *Criminal Justice and Behavior*. https://doi.org/10.1177/0093854812437022

Dyer, M. L., Easey, K. E., Heron, J., Hickman, M., & Munafò, M. R. (2019). Associations of child and adolescent anxiety with later alcohol use and disorders: A systematic review and meta-analysis of prospective cohort studies. *Addiction*, *114*(6), 968–982. https://doi.org/10.1111/add.14575

Eastman, M., Foshee, V., Ennett, S., Sotres-Alvarez, D., Reyes, H. L. M., Faris, R., & North, K. (2018). Profiles of internalizing and externalizing symptoms associated with bullying victimization. *Journal of Adolescence*, *65*, 101–110. https://doi.org/10.1016/j.adolescence.2018.03.007

Eccles, J. S. (2004). Schools, Academic Motivation, and Stage-Environment Fit. In *Handbook of Adolescent Psychology* (pp. 125–153). John Wiley & Sons, Ltd. https://doi.org/10.1002/9780471726746.ch5

Edwards, V. J., Holden, G. W., Felitti, V. J., & Anda, R. F. (2003). Relationship between multiple forms of childhood maltreatment and adult mental health in community respondents: Results from the adverse childhood experiences study. *The American Journal of Psychiatry*, *160*(8), 1453–1460. https://doi.org/10.1176/appi.ajp.160.8.1453

Epkins, C. C., & Heckler, D. R. (2011). Integrating Etiological Models of Social Anxiety and Depression in Youth: Evidence for a Cumulative Interpersonal Risk Model. *Clinical Child and Family Psychology Review*, *14*(4), 329–376. https://doi.org/10.1007/s10567-011-0101-8

Espelage, D. L., Polanin, J. R., & Low, S. K. (2014). Teacher and staff perceptions of school environment as predictors of student aggression, victimization, and willingness to intervene in bullying situations. *School Psychology Quarterly*, *29*(3), 287–305. https://doi.org/10.1037/spq0000072

Evans, C. B. R., Cotter, K. L., & Smokowski, P. R. (2017). Giving Victims of Bullying a Voice: A Qualitative Study of Post Bullying Reactions and Coping Strategies. *Child and Adolescent Social Work Journal*, *34*(6), 543–555. https://doi.org/10.1007/s10560-017-0492-6

Evans, S. E., Davies, C., & DiLillo, D. (2008). Exposure to domestic violence: A meta-analysis of child and adolescent outcomes. *Aggression and Violent Behavior*, *13*(2), 131–140. https://doi.org/10.1016/j.avb.2008.02.005

Ezpeleta, L., Domènech, J. M., & Angold, A. (2006). A comparison of pure and comorbid CD/ODD and depression. *Journal of Child Psychology and Psychiatry*, *47*(7), 704–712. https://doi.org/10.1111/j.1469-7610.2005.01558.x

Fatusi, A. O., & Hindin, M. J. (2010). Adolescents and youth in developing countries: Health and development issues in context. *Journal of Adolescence*, *33*(4), 499–508.

Feng, Y., & Newman, I. M. (2016). Estimate of adolescent alcohol use in China: A meta-analysis. *Archives of Public Health*, *74*, 45. https://doi.org/10.1186/s13690-016-0157-5

Fink, G., Günther, I., & Hill, K. (2014). Slum residence and child health in developing countries. *Demography*, *51*(4), 1175–1197.

Fowler, P. J., Tompsett, C. J., Braciszewski, J. M., Jacques-Tiura, A. J., & Baltes, B. B. (2009). Community violence: A meta-analysis on the effect of exposure and mental health outcomes of children and adolescents. *Development and Psychopathology*, *21*(1), 227–259. https://doi.org/10.1017/S0954579409000145

French, D. C., Christ, S., Lu, T., & Purwono, U. (2014). Trajectories of Indonesian adolescents' religiosity, problem behavior, and friends' religiosity: Covariation and sequences. *Child Development*, *85*(4), 1634–1646. https://doi.org/10.1111/cdev.12234

French, D. C., Eisenberg, N., Sallquist, J., Purwono, U., Lu, T., & Christ, S. (2013). Parent-adolescent relationships, religiosity, and the social adjustment of Indonesian Muslim adolescents. *Journal of Family Psychology*, *27*(3), 421–430. https://doi.org/10.1037/a0032858

French, D. C., Eisenberg, N., Vaughan, J., Purwono, U., & Suryanti, T. A. (2008). Religious involvement and the social competence and adjustment of Indonesian Muslim adolescents. *Developmental Psychology*, *44*(2), 597–611. https://doi.org/10.1037/0012-1649.44.2.597

French, D. C., Purwono, U., & Triwahyuni, A. (2011). Friendship and the religiosity of Indonesian Muslim adolescents. *Journal of Youth and Adolescence*, *40*(12), 1623–1633. https://doi.org/10.1007/s10964-011-9645-7

French, D. C., Purwono, U., Zhao, S., Shen, M., & Eisenberg, N. (2019). Religiosity and Effortful Control as Predictors of Indonesian Adolescents' Tobacco and Alcohol Use: Moderation and Mediation. *Journal of Research on Adolescence*, *29*(2), 321–333. https://doi.org/10.1111/jora.12446

Frisén, A., Holmqvist, K., & Oscarsson, D. (2008). 13-year-olds' perception of bullying: Definitions, reasons for victimisation and experience of adults' response. *Educational Studies*, *34*(2), 105–117. https://doi.org/10.1080/03055690701811149

Gibb, S. J., Horwood, L. J., & Fergusson, D. M. (2011). Bullying victimization/perpetration in childhood and later adjustment: Findings from a 30 year longitudinal study. *Journal of Aggression, Conflict and Peace Research*, *3*(2), 82–88. https://doi.org/10.1108/17596591111132891

Glass, N., Kohli, A., Surkan, P. J., Remy, M. M., & Perrin, N. (2018). The relationship between parent mental health and intimate partner violence on adolescent behavior, stigma and school attendance in families in rural Democratic Republic of Congo. *Global Mental Health*, *5*, e20. https://doi.org/10.1017/gmh.2018.10

Gobbi, G., Atkin, T., Zytynski, T., Wang, S., Askari, S., Boruff, J., Ware, M., Marmorstein, N., Cipriani, A., Dendukuri, N., & Mayo, N. (2019). Association of Cannabis Use in Adolescence and Risk of Depression, Anxiety, and Suicidality in Young Adulthood: A Systematic Review and Meta-analysis. *JAMA Psychiatry*, *76*(4), 426–434. https://doi.org/10.1001/jamapsychiatry.2018.4500

González-Forteza, C., Juárez-López, C. E., Jiménez, A., Montejo-León, L., Rodríguez-Santisbón, U. R., & Wagner, F. A. (2017). Suicide behavior and associated psychosocial factors among adolescents in Campeche, Mexico. *Preventive Medicine*, *105*, 206–211. https://doi.org/10.1016/j.ypmed.2017.09.011

Gordon-Hollingsworth, A. T., Yao, N., Chen, H., Qian, M., & Chen, S. (2018). Understanding the Impact of Natural Disasters on Psychological Outcomes in Youth from Mainland China: A Meta-Analysis of Risk and Protective Factors for Post-Traumatic Stress Disorder Symptoms. *Journal of Child & Adolescent Trauma*, *11*(2), 205–226. https://doi.org/10.1007/s40653-015-0051-2

Gower, A. L., McMorris, B. J., & Eisenberg, M. E. (2015). School-level contextual predictors of bullying and harassment experiences among adolescents. *Social Science & Medicine*, *147*, 47–53. https://doi.org/10.1016/j.socscimed.2015.10.036

Graham, G., Kirollos, M., Fylkesnes, G. K., Salarkia, K., & Wong, N. (2019). *Stop the war on children: Protecting children in 21st century conflict*. Save the Children. https://www.stopwaronchildren.org/reports/

Guerin, S., & Hennessy, E. (2002). Pupils' definitions of bullying. *European Journal of Psychology of Education*, *17*(3), 249–261. https://doi.org/10.1007/BF03173535

Hale, D. R., & Viner, R. M. (2016). The correlates and course of multiple health risk behaviour in adolescence. *BMC Public Health*, *16*(1), 458.

Hall, W. D., Patton, G., Stockings, E., Weier, M., Lynskey, M., Morley, K. I., & Degenhardt, L. (2016). Why young people's substance use matters for global health. *The Lancet. Psychiatry*, *3*(3), 265–279. https://doi.org/10.1016/S2215-0366(16)00013-4

Han, J., & Chen, X. (2015). A Meta-Analysis of Cigarette Smoking Prevalence among Adolescents in China: 1981-2010. *International Journal of Environmental Research and Public Health*, *12*(5), 4617–4630. https://doi.org/10.3390/ijerph120504617

Haynie, D. L., Nansel, T., Eitel, P., Crump, A. D., Saylor, K., Yu, K., & Simons-Morton, B. (2001). Bullies, Victims, and Bully/Victims: Distinct Groups of At-Risk Youth. *The Journal of Early Adolescence*, *21*(1), 29–49. https://doi.org/10.1177/0272431601021001002

Hellström, L., & Beckman, L. (2020). Adolescents' perception of gender differences in bullying. *Scandinavian Journal of Psychology*, *61*(1), 90–96. https://doi.org/10.1111/sjop.12523

Hellström, L., Persson, L., & Hagquist, C. (2015). Understanding and defining bullying–adolescents' own views. *Archives of Public Health*, *73*(1), 4.

Herawati, L., Budiman, J. A., Haryono, W., & Mulyani, W. (2017). Jayapura Teenagers Smoking Behavior. *Journal of Community Health*, *42*(1), 78–82. https://doi.org/10.1007/s10900-016-0232-4

Hill, J. P., & Lynch, M. E. (1983). The Intensification of Gender-Related Role Expectations during Early Adolescence. In J. Brooks-Gunn & A. C. Petersen (Eds.), *Girls at Puberty: Biological and Psychosocial Perspectives* (pp. 201–228). Springer US. https://doi.org/10.1007/978-1-4899-0354-9_10

Jackson, N., Denny, S., & Ameratunga, S. (2014). Social and socio-demographic neighborhood effects on adolescent alcohol use: A systematic review of multi-level studies. *Social Science & Medicine (1982)*, *115*, 10–20. https://doi.org/10.1016/j.socscimed.2014.06.004

Jessor, R., & Jessor, S. L. (1977). *Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth*. Academic.

Ji, Y., Xu, H., Zhang, Y., & Liu, Q. (2018). Heterogeneity of adolescent health risk behaviors in rural western China: A latent class analysis. *PloS One*, *13*(6), e0199286. https://doi.org/10.1371/journal.pone.0199286

Johnson, D., Dupuis, G., Piche, J., Clayborne, Z., & Colman, I. (2018). Adult mental health outcomes of adolescent depression: A systematic review. *Depression and Anxiety*, *35*(8), 700–716. https://doi.org/10.1002/da.22777

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, *33*(7), 14–26.

Jones, P. (2017). Formalizing the informal: Understanding the position of informal settlements and slums in sustainable urbanization policies and strategies in Bandung, Indonesia. *Sustainability*, *9*(8), 1436.

Jordan, P., Rescorla, L. A., Althoff, R. R., & Achenbach, T. M. (2016). International Comparisons of the Youth Self-Report Dysregulation Profile: Latent Class Analyses in 34 Societies. *Journal of the American Academy of Child and Adolescent Psychiatry*, *55*(12), 1046–1053. https://doi.org/10.1016/j.jaac.2016.08.012

Joyce, H. D., & Early, T. J. (2014). The Impact of School Connectedness and Teacher Support on Depressive Symptoms in Adolescents: A Multilevel Analysis. *Children and Youth Services Review*, *39*, 101–107. https://doi.org/10.1016/j.childyouth.2014.02.005

Kankaraš, M., Moors, G., & Vermunt, J. K. (2010). Testing for measurement invariance with latent class analysis. In E. Davidov, P. Schmidt, J. Billiet, & B. Meuleman (Eds.), *Cross-cultural analysis: Methods and applications* (pp. 359–384). Routledge.

Kaul, P., & Irwin, C. E. (2018). Serving the Underserved: The Health and Well-Being of Adolescent and Young Adult Males. *Journal of Adolescent Health*, *62*(3, Supplement), S1–S2. https://doi.org/10.1016/j.jadohealth.2017.12.008

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, *62*(6), 593–602. https://doi.org/10.1001/archpsyc.62.6.593

Kessler, R. C., McLaughlin, K. A., Green, J. G., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., Aguilar-Gaxiola, S., Alhamzawi, A. O., Alonso, J., Angermeyer, M., Benjet, C., Bromet, E., Chatterji, S., de Girolamo, G., Demyttenaere, K., Fayyad, J., Florescu, S., Gal, G., Gureje, O., … Williams, D. R. (2010). Childhood adversities and adult psychopathology in the WHO World Mental Health Surveys. *The British Journal of Psychiatry*, *197*(5), 378–385. https://doi.org/10.1192/bjp.bp.110.080499

Khantzian, E. J. (1997). The self-medication hypothesis of substance use disorders: A reconsideration and recent applications. *Harvard Review of Psychiatry*, *4*(5), 231–244. https://doi.org/10.3109/10673229709030550

Kidger, J., Araya, R., Donovan, J., & Gunnell, D. (2012). The effect of the school environment on the emotional health of adolescents: A systematic review. *Pediatrics*, *129*(5), 925–949. https://doi.org/10.1542/peds.2011-2248

Kidman, R., & Kohler, H.-P. (2020). Emerging partner violence among young adolescents in a low-income country: Perpetration, victimization and adversity. *PloS One*, *15*(3), e0230085. https://doi.org/10.1371/journal.pone.0230085

Kidman, R., Piccolo, L. R., & Kohler, H.-P. (2020). Adverse Childhood Experiences: Prevalence and Association With Adolescent Health in Malawi. *American Journal of Preventive Medicine*, *58*(2), 285–293. https://doi.org/10.1016/j.amepre.2019.08.028

Kieling, C., Baker-Henningham, H., Belfer, M., Conti, G., Ertem, I., Omigbodun, O., Rohde, L. A., Srinath, S., Ulkuer, N., & Rahman, A. (2011). Child and adolescent mental health worldwide: Evidence for action. *The Lancet*, *378*(9801), 1515–1525.

Kim, M. H., Mazenga, A. C., Devandra, A., Ahmed, S., Kazembe, P. N., Yu, X., Nguyen, C., & Sharp, C. (2014). Prevalence of depression and validation of the Beck Depression Inventory-II and the Children's Depression Inventory-Short amongst HIV-positive adolescents in Malawi. *Journal of the International AIDS Society*, *17*, 18965. https://doi.org/10.7448/IAS.17.1.18965

Kim, M. H., Mazenga, A. C., Yu, X., Devandra, A., Nguyen, C., Ahmed, S., Kazembe, P. N., & Sharp, C. (2015). Factors associated with depression among adolescents living with HIV in Malawi. *BMC Psychiatry*, *15*, 264. https://doi.org/10.1186/s12888-015-0649-9

Kim, Y. K., Okumu, M., Small, E., Nikolova, S. P., & Mengo, C. (2018). The association between school bullying victimization and substance use among adolescents in Malawi: The mediating effect of loneliness. *International Journal of Adolescent Medicine and Health*. https://doi.org/10.1515/ijamh-2017-0229

Kirmayer, L. J. (1989). Cultural variations in the response to psychiatric disorders and emotional distress. *Social Science & Medicine (1982)*, *29*(3), 327–339.

Kohler, H.-P., Watkins, S. C., Behrman, J. R., Anglewicz, P., Kohler, I. V., Thornton, R. L., Mkandawire, J., Honde, H., Hawara, A., Chilima, B., Bandawe, C., Mwapasa, V., Fleming, P., & Kalilani-Phiri, L. (2015). Cohort Profile: The Malawi Longitudinal Study of Families

and Health (MLSFH). *International Journal of Epidemiology*, *44*(2), 394–404. https://doi.org/10.1093/ije/dyu049

Kohli, A., Remy, M. M., Binkurhorhwa, A. K., Mitima, C. M., Mirindi, A. B., Mwinja, N. B., Banyewesize, J. H., Ntakwinja, G. M., Perrin, N. A., & Glass, N. (2018). Preventing risky behaviours among young adolescents in eastern Democratic Republic of Congo: A qualitative study. *Global Public Health*, *13*(9), 1241–1253. https://doi.org/10.1080/17441692.2017.1317009

Kretschmer, T., Barker, E. D., Dijkstra, J. K., Oldehinkel, A. J., & Veenstra, R. (2015). Multifinality of peer victimization: Maladjustment patterns and transitions from early to mid-adolescence. *European Child & Adolescent Psychiatry*, *24*(10), 1169–1179. https://doi.org/10.1007/s00787-014-0667-z

Kubwalo, H. W., Muula, A. S., Siziya, S., Pasupulati, S., & Rudatsikira, E. (2013). Prevalence and correlates of being bullied among in-school adolescents in Malawi: Results from the 2009 Global School-Based Health Survey. *Malawi Medical Journal*, *25*(1), 12–14.

Kusumawardani, N., Tarigan, I., Suparmi, & Schlotheuber, A. (2018). Socio-economic, demographic and geographic correlates of cigarette smoking among Indonesian adolescents: Results from the 2013 Indonesian Basic Health Research (RISKESDAS) survey. *Global Health Action*, *11*(sup1), 1467605. https://doi.org/10.1080/16549716.2018.1467605

Labella, M. H., & Masten, A. S. (2018). Family influences on the development of aggression and violence. *Current Opinion in Psychology*, *19*, 11–16.

Land, D. (2003). Teasing apart secondary students' conceptualizations of peer teasing, bullying and sexual harassment. *School Psychology International*, *24*(2), 147–165. https://doi.org/10.1177/0143034303024002002

Lang, J., & Yao, Y. (2018). Prevalence of nonsuicidal self-injury in Chinese middle school and high school students: A meta-analysis. *Medicine*, *97*(42), e12916. https://doi.org/10.1097/MD.0000000000012916

Lanza, S. T., & Cooper, B. R. (2016). Latent Class Analysis for Developmental Research. *Child Development Perspectives*, *10*(1), 59–64. https://doi.org/10.1111/cdep.12163

Lanza, S. T., & Rhoades, B. L. (2013). Latent class analysis: An alternative perspective on subgroup analysis in prevention and treatment. *Prevention Science*, *14*(2), 157–168. https://doi.org/10.1007/s11121-011-0201-1

Leung, R. K., Toumbourou, J. W., & Hemphill, S. A. (2014). The effect of peer influence and selection processes on adolescent alcohol use: A systematic review of longitudinal studies. *Health Psychology Review*, *8*(4), 426–457. https://doi.org/10.1080/17437199.2011.587961

Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin*, *126*(2), 309–337. https://doi.org/10.1037/0033-2909.126.2.309

Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1995). Adolescent Psychopathology: III. The Clinical Consequences of Comorbidity. *Journal of the American Academy of Child & Adolescent Psychiatry*, *34*(4), 510–519. https://doi.org/10.1097/00004583-199504000-00018

Li, J.-Y., Li, J., Liang, J.-H., Qian, S., Jia, R.-X., Wang, Y.-Q., & Xu, Y. (2019). Depressive Symptoms Among Children and Adolescents in China: A Systematic Review and Meta-Analysis. *Medical Science Monitor*, *25*, 7459–7470. https://doi.org/10.12659/MSM.916774

Li, Y., Li, Y., & Cao, J. (2012). Factors associated with suicidal behaviors in mainland China: A meta-analysis. *BMC Public Health*, *12*(1), 1–13. https://doi.org/10.1186/1471-2458-12-524

Li, Z., Dai, J., Wu, N., Gao, J., & Fu, H. (2019). The mental health and depression of rural-to-urban migrant workers compared to non-migrant workers in Shanghai: A cross-sectional study. *International Health*, *11*(S1), S55–S63. https://doi.org/10.1093/inthealth/ihz081

Liu, J.-W., Tu, Y.-K., Lai, Y.-F., Lee, H.-C., Tsai, P.-S., Chen, T.-J., Huang, H.-C., Chen, Y.-T., & Chiu, H.-Y. (2019). Associations between sleep disturbances and suicidal ideation, plans, and attempts in adolescents: A systematic review and meta-analysis. *Sleep*, *42*(6). https://doi.org/10.1093/sleep/zsz054

Lokuge, K., Shah, T., Pintaldi, G., Thurber, K., Martínez-Viciana, C., Cristobal, M., Palacios, L., Dear, K., & Banks, E. (2013). Mental health services for children exposed to armed conflict: Médecins Sans Frontières' experience in the Democratic Republic of Congo, Iraq and the occupied Palestinian territory. *Paediatrics and International Child Health*, *33*(4), 259–272. https://doi.org/10.1179/2046905513Y.0000000098

Lowe, S. R., Rhodes, J. E., & Waters, M. C. (2015). Understanding resilience and other trajectories of psychological distress: A mixed-methods study of low-income mothers who survived Hurricane Katrina. *Current Psychology*, *34*(3), 537–550.

Lu, M., Zhang, J., Ma, J., Li, B., & Quan, H. (2008). Child health insurance coverage: A survey among temporary and permanent residents in Shanghai. *BMC Health Services Research*, *8*, 238. https://doi.org/10.1186/1472-6963-8-238

Luk, J. W., Wang, J., & Simons-Morton, B. G. (2012a). The co-occurrence of substance use and bullying behaviors among US adolescents: Understanding demographic characteristics and social influences. *Journal of Adolescence*, *35*(5), 1351–1360.

Luk, J. W., Wang, J., & Simons-Morton, B. G. (2012b). The co-occurrence of substance use and bullying behaviors among U.S. adolescents: Understanding demographic characteristics and social influences. *Journal of Adolescence*, *35*(5), 1351–1360. https://doi.org/10.1016/j.adolescence.2012.05.003

Lund, C., Breen, A., Flisher, A. J., Kakuma, R., Corrigall, J., Joska, J. A., Swartz, L., & Patel, V. (2010). Poverty and common mental disorders in low and middle income countries: A systematic review. *Social Science & Medicine (1982)*, *71*(3), 517–528. https://doi.org/10.1016/j.socscimed.2010.04.027

Ma, C., Ma, Y., Wang, Y., & Lan, X. (2019). Empathy and Psychosocial Adjustment in Tibetan and Han Adolescents: A Person-Centered Approach. *Frontiers in Psychology*, *10*, 1896. https://doi.org/10.3389/fpsyg.2019.01896

Maoulidi, M. (2013). *Health Needs Assessment for Blantyre City, Malawi* (No. 29/2013). Millennium Cities Initiative. https://academiccommons.columbia.edu/doi/10.7916/D8NS0SPB

Marraccini, M. E., & Brier, Z. M. F. (2017). School connectedness and suicidal thoughts and behaviors: A systematic meta-analysis. *School Psychology Quarterly*, *32*(1), 5–21. https://doi.org/10.1037/spq0000192

McCarthy, K., Brady, M., & Hallman, K. (2016). *Investing When It Counts: Reviewing the Evidence and Charting a Course of Research and Action for Very Young Adolescents*. Population Council.

McMullen, J., O'Callaghan, P., Shannon, C., Black, A., & Eakin, J. (2013). Group trauma-focused cognitive-behavioural therapy with former child soldiers and other war-affected boys in the DR Congo: A randomised controlled trial. *Journal of Child Psychology and Psychiatry*, *54*(11), 1231–1241. https://doi.org/10.1111/jcpp.12094

Mels, C., Derluyn, I., Broekaert, E., & Rosseel, Y. (2010). The psychological impact of forced displacement and related risk factors on Eastern Congolese adolescents affected by war. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *51*(10), 1096–1104. https://doi.org/10.1111/j.1469-7610.2010.02241.x

Melton, T. H., Croarkin, P. E., Strawn, J. R., & McClintock, S. M. (2016). Comorbid Anxiety and Depressive Symptoms in Children and Adolescents: A Systematic Review and Analysis. *Journal of Psychiatric Practice*, *22*(2), 84–98. https://doi.org/10.1097/PRA.0000000000000132

Merikangas, K. R., & Nakamura, E. F. (2011). The epidemiology of depression and anxiety in children and adolescents. *Textbook in Psychiatric Epidemiology*, *Ed. 3*, 435–448.

Miller, K. E., & Rasmussen, A. (2010). War exposure, daily stressors, and mental health in conflict and post-conflict settings: Bridging the divide between trauma-focused and psychosocial frameworks. *Social Science & Medicine (1982)*, *70*(1), 7–16. https://doi.org/10.1016/j.socscimed.2009.09.029

Mmari, K., Moreau, C., Gibbs, S. E., De Meyer, S., Michielsen, K., Kabiru, C. W., Bello, B., Fatusi, A., Lou, C., Zuo, X., Yu, C., Al-Attar, G. S. T., & El-Gibaly, O. (2018). "Yeah,

I've grown; I can't go out anymore": Differences in perceived risks between girls and boys entering adolescence. *Culture, Health & Sexuality*, *20*(7), 787–798. https://doi.org/10.1080/13691058.2017.1382718

Montgomery, S. C., Donnelly, M., Bhatnagar, P., Carlin, A., Kee, F., & Hunter, R. F. (2020). Peer social network processes and adolescent health behaviors: A systematic review. *Preventive Medicine*, *130*, 105900. https://doi.org/10.1016/j.ypmed.2019.105900

Moore, S. E., Norman, R. E., Sly, P. D., Whitehouse, A. J. O., Zubrick, S. R., & Scott, J. (2014). Adolescent peer aggression and its association with mental health and substance use in an Australian cohort. *Journal of Adolescence*, *37*(1), 11–21. https://doi.org/10.1016/j.adolescence.2013.10.006

Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B., & Scheidt, P. (2001). Bullying Behaviors Among US Youth: Prevalence and Association With Psychosocial Adjustment. *JAMA*, *285*(16), 2094–2100. https://doi.org/10.1001/jama.285.16.2094

Narring, F. (2001). Qualitative research methodology: A critical review of its application to adolescents. *International Journal of Adolescent Medicine and Health*, *13*(1), 25–30. https://doi.org/10.1515/IJAMH.2001.13.1.25

National Statistical Office. (2019). *2018 Malawi Population and Housing Census: Main Report*. http://www.nsomalawi.mw/index.php%3Foption%3Dcom_content%26view%3Darticle%26id%3D226:2018-malawi-population-and-housing-census%26catid%E2%80%89%3D%E2%80%898:reports%26Itemid%E2%80%89%3D%E2%80%896

Nelon, J. L., De Pedro, K. T., Gilreath, T. D., Patterson, M. S., Holden, C. B., & Esquivel, C. H. (2019). A latent class analysis of the co-occurrence of sexual violence, substance use, and

mental health in youth. *Substance Use & Misuse*, *54*(12), 1938–1944. https://doi.org/10.1080/10826084.2019.1618337

Nelson, M. L., & Quintana, S. M. (2005). Qualitative clinical research with children and adolescents. *Journal of Clinical Child and Adolescent Psychology*, *34*(2), 344–356. https://doi.org/10.1207/s15374424jccp3402_14

Ng, N., Weinehall, L., & Ohman, A. (2007). "If I don't smoke, I'm not a real man'—Indonesian teenage boys" views about smoking. *Health Education Research*, *22*(6), 794–804. https://doi.org/10.1093/her/cyl104

Nijs, M. M., Bun, C. J. E., Tempelaar, W. M., de Wit, N. J., Burger, H., Plevier, C. M., & Boks, M. P. M. (2014). Perceived school safety is strongly associated with adolescent mental health problems. *Community Mental Health Journal*, *50*(2), 127–134. https://doi.org/10.1007/s10597-013-9599-1

Norman, R. E., Byambaa, M., De, R., Butchart, A., Scott, J., & Vos, T. (2012). The Long-Term Health Consequences of Child Physical Abuse, Emotional Abuse, and Neglect: A Systematic Review and Meta-Analysis. *PLoS Medicine*, *9*(11). https://doi.org/10.1371/journal.pmed.1001349

Nurmansyah, M. I., Umniyatun, Y., Jannah, M., Syiroj, A. T., & Hidayat, D. N. (2019). Knowledge, attitude and practice of cigarette smoking among senior secondary school students in Depok, Indonesia. *International Journal of Adolescent Medicine and Health*. https://doi.org/10.1515/ijamh-2018-0124

Nylund-Gibson, K., & Hart, S. R. (2014). Latent Class Analysis in Prevention Science. In Z. Sloboda & H. Petras (Eds.), *Defining Prevention Science* (pp. 493–511). Springer US. https://doi.org/10.1007/978-1-4899-7424-2_21

Obot, I. S., & Anthony, J. C. (2004). Mental Health Problems in Adolescent Children of Alcohol Dependent Parents: Epidemiologic Research with a Nationally Representative Sample. *Journal of Child & Adolescent Substance Abuse*, *13*(4), 83–96. https://doi.org/10.1300/J029v13n04_06

O'Callaghan, P., Branham, L., Shannon, C., Betancourt, T. S., Dempster, M., & McMullen, J. (2014). A pilot study of a family focused, psychosocial intervention with war-exposed youth at risk of attack and abduction in north-eastern Democratic Republic of Congo. *Child Abuse & Neglect*, *38*(7), 1197–1207. https://doi.org/10.1016/j.chiabu.2014.02.004

Olcoń, K., Kim, Y., & Gulbas, L. E. (2017). Sense of Belonging and Youth Suicidal Behaviors: What Do Communities and Schools Have to Do with It? *Social Work in Public Health*, *32*(7), 432–442. https://doi.org/10.1080/19371918.2017.1344602

Oshri, A., Tubman, J. G., & Jaccard, J. (2011). Psychiatric symptom typology in a sample of youth receiving substance abuse treatment services: Associations with self-reported child maltreatment and sexual risk behaviors. *AIDS and Behavior*, *15*(8), 1844–1856. https://doi.org/10.1007/s10461-011-9890-5

Patalay, P., Fonagy, P., Deighton, J., Belsky, J., Vostanis, P., & Wolpert, M. (2015). A general psychopathology factor in early adolescence. *The British Journal of Psychiatry*, *207*(1), 15–22. https://doi.org/10.1192/bjp.bp.114.149591

Patel, V., Flisher, A. J., Hetrick, S., & McGorry, P. (2007). Mental health of young people: A global public-health challenge. *The Lancet*, *369*(9569), 1302–1313.

Patel, V., Flisher, A. J., Nikapota, A., & Malhotra, S. (2008). Promoting child and adolescent mental health in low and middle income countries. *Journal of Child Psychology and Psychiatry*, *49*(3), 313–334.

Patel, V., & Kleinman, A. (2003). Poverty and common mental disorders in developing countries. *Bulletin of the World Health Organization*, *81*(8), 609–615.

Patton, G. C., Coffey, C., Cappa, C., Currie, D., Riley, L., Gore, F., Degenhardt, L., Richardson, D., Astone, N., & Sangowawa, A. O. (2012). Health of the world's adolescents: A synthesis of internationally comparable data. *The Lancet*, *379*(9826), 1665–1675.

Patton, G. C., Coffey, C., Sawyer, S. M., Viner, R. M., Haller, D. M., Bose, K., Vos, T., Ferguson, J., & Mathers, C. D. (2009). Global patterns of mortality in young people: A systematic analysis of population health data. *The Lancet*, *374*(9693), 881–892. https://doi.org/10.1016/S0140-6736(09)60741-8

Patton, G. C., Darmstadt, G. L., Petroni, S., & Sawyer, S. M. (2018). A Gender Lens on the Health and Well-being of Young Males. *Journal of Adolescent Health*, *62*(3, Supplement), S6–S8. https://doi.org/10.1016/j.jadohealth.2017.06.020

Patton, G. C., Sawyer, S. M., Santelli, J. S., Ross, D. A., Afifi, R., Allen, N. B., Arora, M., Azzopardi, P., Baldwin, W., & Bonell, C. (2016). Our future: A Lancet commission on adolescent health and wellbeing. *The Lancet*, *387*(10036), 2423–2478.

Pengpid, S., & Peltzer, K. (2019). Early Substance Use Initiation And Psychological Distress Among Adolescents In Five ASEAN Countries: A Cross-Sectional Study. *Psychology Research and Behavior Management*, *12*, 1003–1008. https://doi.org/10.2147/PRBM.S223624

Pister, R. (2014). Understanding Bullying Through the Eyes of Youth. *Journal of Ethnographic & Qualitative Research*, *9*(1), 27–43.

Platt, B., Kadosh, K. C., & Lau, J. Y. F. (2013). The Role of Peer Rejection in Adolescent Depression. *Depression and Anxiety*, *30*(9), 809–821. https://doi.org/10.1002/da.22120

Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *56*(3), 345–365. https://doi.org/10.1111/jcpp.12381

Psaki, S. R., McCarthy, K. J., & Mensch, B. S. (2018). Measuring Gender Equality in Education: Lessons from Trends in 43 Countries. *Population and Development Review*, *44*(1), 117–142. https://doi.org/10.1111/padr.12121

Putra, I. G. N. E., Karin, P. A. E. S., & Ariastuti, N. L. P. (2019). Suicidal ideation and suicide attempt among Indonesian adolescent students. *International Journal of Adolescent Medicine and Health*. https://doi.org/10.1515/ijamh-2019-0035

Quigley, J., Rasmussen, S., & McAlaney, J. (2017). The Associations Between Children's and Adolescents' Suicidal and Self-Harming Behaviors, and Related Behaviors Within Their Social Networks: A Systematic Review. *Archives of Suicide Research*, *21*(2), 185–236. https://doi.org/10.1080/13811118.2016.1193075

Rapee, R. M., Oar, E. L., Johnco, C. J., Forbes, M. K., Fardouly, J., Magson, N. R., & Richardson, C. E. (2019). Adolescent development and risk for the onset of social-emotional disorders: A review and conceptual model. *Behaviour Research and Therapy*, *123*, 103501. https://doi.org/10.1016/j.brat.2019.103501

Reed, R. V., Fazel, M., Jones, L., Panter-Brick, C., & Stein, A. (2012). Mental health of displaced and refugee children resettled in low-income and middle-income countries: Risk and protective factors. *The Lancet*, *379*(9812), 250–265. https://doi.org/10.1016/S0140-6736(11)60050-0

Reiss, F. (2013). Socioeconomic inequalities and mental health problems in children and adolescents: A systematic review. *Social Science & Medicine (1982)*, *90*, 24–31. https://doi.org/10.1016/j.socscimed.2013.04.026

Reupert, A. E., J Maybery, D., & Kowalenko, N. M. (2013). Children whose parents have a mental illness: Prevalence, need and treatment. *The Medical Journal of Australia*, *199*(3), S7–S9. https://doi.org/10.5694/mja11.11200

Rich, M., & Ginsburg, K. R. (1999). The reason and rhyme of qualitative research: Why, when, and how to use qualitative methods in the study of adolescent health. *Journal of Adolescent Health*, *25*(6), 371–378. https://doi.org/10.1016/S1054-139X(99)00068-3

Richter, L., & Richter, D. M. (2001). Exposure to parental tobacco and alcohol use: Effects on children's health and development. *The American Journal of Orthopsychiatry*, *71*(2), 182–203. https://doi.org/10.1037/0002-9432.71.2.182

Roach, A. (2018). Supportive Peer Relationships and Mental Health in Adolescence: An Integrative Review. *Issues in Mental Health Nursing*, *39*(9), 723–737. https://doi.org/10.1080/01612840.2018.1496498

Rueger, S. Y., Malecki, C. K., Pyun, Y., Aycock, C., & Coyle, S. (2016). A meta-analytic review of the association between perceived social support and depression in childhood and adolescence. *Psychological Bulletin*, *142*(10), 1017–1067. https://doi.org/10.1037/bul0000058

Sallquist, J., Eisenberg, N., French, D. C., Purwono, U., & Suryanti, T. A. (2010). Indonesian adolescents' spiritual and religious experiences and their longitudinal relations with socioemotional functioning. *Developmental Psychology*, *46*(3), 699–716. https://doi.org/10.1037/a0018879

Sawyer, S. M., Afifi, R. A., Bearinger, L. H., Blakemore, S.-J., Dick, B., Ezeh, A. C., & Patton, G. C. (2012). Adolescence: A foundation for future health. *The Lancet*, *379*(9826), 1630–1640.

Schwartz, D., Proctor, L. J., & Chien, D. H. (2001). The aggressive victim of bullying: Emotional and behavioral dysregulation as a pathway to victimization by peers. In J. Juvonen & S. Graham (Eds.), *Peer harassment in school: The plight of the vulnerable and victimized* (pp. 147–174). The Guilford Press.

Seo, D.-C., & Huang, Y. (2012). Systematic review of social network analysis in adolescent cigarette smoking behavior. *The Journal of School Health*, *82*(1), 21–27. https://doi.org/10.1111/j.1746-1561.2011.00663.x

Shaikh, M. A., Lloyd, J., Acquah, E., Celedonia, K. L., & L Wilson, M. (2016). Suicide attempts and behavioral correlates among a nationally representative sample of school-attending adolescents in the Republic of Malawi. *BMC Public Health*, *16*(1), 843. https://doi.org/10.1186/s12889-016-3509-8

Sigurdson, J. F., Undheim, A. M., Wallander, J. L., Lydersen, S., & Sund, A. M. (2015). The long-term effects of being bullied or a bully in adolescence on externalizing and internalizing mental health problems in adulthood. *Child and Adolescent Psychiatry and Mental Health*, *9*(1), 42.

Silins, E., Horwood, L. J., Najman, J. M., Patton, G. C., Toumbourou, J. W., Olsson, C. A., Hutchinson, D. M., Degenhardt, L., Fergusson, D., Becker, D., Boden, J. M., Borschmann, R., Plotnikova, M., Youssef, G. J., Tait, R. J., Clare, P., Hall, W. D., & Mattick, R. P. (2018). Adverse adult consequences of different alcohol use patterns in adolescence: An

integrative analysis of data to age 30 years from four Australasian cohorts. *Addiction*, *113*(10), 1811–1825. https://doi.org/10.1111/add.14263

Sommer, M., Caruso, B. A., Sahin, M., Calderon, T., Cavill, S., Mahon, T., & Phillips-Howard, P. A. (2016). A Time for Global Action: Addressing Girls' Menstrual Hygiene Management Needs in Schools. *PLoS Medicine*, *13*(2), e1001962. https://doi.org/10.1371/journal.pmed.1001962

Sourander, A., Jensen, P., Davies, M., Niemelä, S., Elonheimo, H., Ristkari, T., Helenius, H., Sillanmäki, L., Piha, J., Kumpulainen, K., Tamminen, T., Moilanen, I., & Almqvist, F. (2007). Who is at greatest risk of adverse long-term outcomes? The Finnish From a Boy to a Man study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *46*(9), 1148–1161. https://doi.org/10.1097/chi.0b013e31809861e9

Stapinski, L. A., Bowes, L., Wolke, D., Pearson, R. M., Mahedy, L., Button, K. S., Lewis, G., & Araya, R. (2014). Peer Victimization During Adolescence and Risk for Anxiety Disorders in Adulthood: A Prospective Cohort Study. *Depression and Anxiety*, *31*(7), 574–582. https://doi.org/10.1002/da.22270

Stirling, K., Toumbourou, J. W., & Rowland, B. (2015). Community factors influencing child and adolescent depression: A systematic review and meta-analysis. *The Australian and New Zealand Journal of Psychiatry*, *49*(10), 869–886. https://doi.org/10.1177/0004867415603129

Suárez-Orozco, C., Gaytán, F. X., Bang, H. J., Pakes, J., O'Connor, E., & Rhodes, J. (2010). Academic trajectories of newcomer immigrant youth. *Developmental Psychology*, *46*(3), 602.

Sullivan, C. J., Childs, K. K., & O'Connell, D. (2010). Adolescent risk behavior subgroups: An empirical assessment. *Journal of Youth and Adolescence*, *39*(5), 541–562. https://doi.org/10.1007/s10964-009-9445-5

Tang, X., Tang, S., Ren, Z., & Wong, D. F. K. (2019). Prevalence of depressive symptoms among adolescents in secondary school in mainland China: A systematic review and meta-analysis. *Journal of Affective Disorders*, *245*, 498–507. https://doi.org/10.1016/j.jad.2018.11.043

Tang, X., Tang, S., Ren, Z., & Wong, D. F. K. (2020). Psychosocial risk factors associated with depressive symptoms among adolescents in secondary schools in mainland china: A systematic review and meta-analysis. *Journal of Affective Disorders*, *263*, 155–165. https://doi.org/10.1016/j.jad.2019.11.118

Tenenbaum, L. S., Varjas, K., Meyers, J., & Parris, L. (2011). Coping strategies and perceived effectiveness in fourth through eighth grade victims of bullying. *School Psychology International*, *32*(3), 263–287. https://doi.org/10.1177/0143034311402309

Thomas, H. J., Connor, J. P., & Scott, J. G. (2018). Why do children and adolescents bully their peers? A critical review of key theoretical frameworks. *Social Psychiatry and Psychiatric Epidemiology*, *53*(5), 437–451. https://doi.org/10.1007/s00127-017-1462-1

Troop-Gordon, W., & Ladd, G. W. (2015). Teachers' victimization-related beliefs and strategies: Associations with students' aggressive behavior and peer victimization. *Journal of Abnormal Child Psychology*, *43*(1), 45–60. https://doi.org/10.1007/s10802-013-9840-y

Turner, R. J., & Lloyd, D. A. (1995). Lifetime traumas and mental health: The significance of cumulative adversity. *Journal of Health and Social Behavior*, *36*(4), 360–376.

United Nations Program on HIV/AIDS. (2020). *Country Factsheets: Malawi 2018*. https://www.unaids.org/en/regionscountries/countries/malawi

United Nations High Commissioner for Refugees. (2020). *Global Trends: Forced Displacement in 2019*. United Nations High Commissioner for Refugees. https://www.unhcr.org/globaltrends2019/

United Nations Children's Fund. (2012). *Progress for Children: A report card on adolescents. Number 10*. https://www.unicef.org/publications/index_62280.html

United Nations, Department of Economic and Social Affairs, Population Division. (2019). *World Urbanization Prospects: The 2018 Revision*. United Nations.

United Nations Development Program. (2019). *Human Development Report 2019*. http://www.hdr.undp.org/en/2019-report

Vaillancourt, T., McDougall, P., Hymel, S., Krygsman, A., Miller, J., Stiver, K., & Davis, C. (2008). Bullying: Are researchers and children/youth talking about the same thing?: *International Journal of Behavioral Development*. https://doi.org/10.1177/0165025408095553

van Lang, N. D. J., Ferdinand, R. F., Ormel, J., & Verhulst, F. C. (2006). Latent class analysis of anxiety and depressive symptoms of the Youth Self-Report in a general population sample of young adolescents. *Behaviour Research and Therapy*, *44*(6), 849–860. https://doi.org/10.1016/j.brat.2005.06.004

Vaughn, M. G., Fu, Q., Perron, B. E., & Wu, L.-T. (2012). Risk profiles among adolescent nonmedical opioid users in the United States. *Addictive Behaviors*, *37*(8), 974–977. https://doi.org/10.1016/j.addbeh.2012.03.015

Verelst, A., De Schryver, M., De Haene, L., Broekaert, E., & Derluyn, I. (2014). The mediating role of stigmatization in the mental health of adolescent victims of sexual violence in Eastern Congo. *Child Abuse & Neglect*, *38*(7), 1139–1146. https://doi.org/10.1016/j.chiabu.2014.04.003

Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *The Lancet*, *379*(9826), 1641–1652.

Wang, J., Gu, S., Ye, B., Gao, J., Wang, F., Dai, J., & Fu, H. (2019). The effect of migration and the hukou registration system on psychosocial domains and family functioning of children in Shanghai, China. *International Health*, *11*(S1), S24–S32. https://doi.org/10.1093/inthealth/ihz076

Wang, Q., Liu, Y., & Mati, K. (2020). Bully victimization is a correlate of sleep loss over worry (SLOW) among adolescents in four South-East Asian countries. *Sleep Medicine*, *69*, 179–188. https://doi.org/10.1016/j.sleep.2020.01.022

Wei, X., Chen, J., Chen, P., Newell, J. N., Li, H., Sun, C., Mei, J., & Walley, J. D. (2009). Barriers to TB care for rural-to-urban migrant TB patients in Shanghai: A qualitative study. *Tropical Medicine & International Health: TM & IH*, *14*(7), 754–760. https://doi.org/10.1111/j.1365-3156.2009.02286.x

Wilkinson, A. L., Halpern, C. T., & Herring, A. H. (2016). Directions of the relationship between substance use and depressive symptoms from adolescence to young adulthood. *Addictive Behaviors*, *60*, 64–70. https://doi.org/10.1016/j.addbeh.2016.03.036

Williams, S., Dahan, J., Silverman, W. K., & Pettit, J. W. (2013). Heterogeneous classes of co-occurring externalizing symptoms in a sample of youth referred for anxiety disorders.

Journal of Anxiety Disorders, *27*(3), 340–346. https://doi.org/10.1016/j.janxdis.2013.02.014

Wilopo, S. A., Choiriyah, I., Pinandari, A. W., Setiawan, A., Nugroho, A., Perestroika, G. D., & Astrini, Y. P. (2020). *Early Adolescent's Health in Indonesia: Evidence Base from GEAS-Indonesia: Baseline 2019*. UGM Center for Reproductive Health.

World Bank. (2014). *Urban China: Toward Efficient, Inclusive, and Sustainable Urbanization*. World Bank. https://www.worldbank.org/en/country/china/publication/urban-china-toward-efficient-inclusive-sustainable-urbanization

World Bank. (2018a). *Democratic Republic of Congo Systematic Country Diagnostic: Policy Priorities for Poverty Reduction and Shared Prosperity in a Post-Conflict Country and Fragile State*. http://documents.worldbank.org/curated/en/171101529346675751/Congo-Democratic-Republic-of-Systematic-country-diagnostic

World Bank. (2018b). *Democratic Republic of Congo Urbanization Review: Productive and Inclusive Cities for an Emerging Democratic Republic of Congo*. World Bank.

World Bank. (2018c). *Malawi Systematic Country Diagnostic: Breaking the Cycle of Low Growth and Slow Poverty Reduction*. World Bank Group.

World Bank Group. (2020). *World Development Indicators*. https://databank.worldbank.org/source/world-development-indicators

World Health Organization. (2014). *Health for the World's Adolescents: A second chance in the second decade*. https://www.who.int/maternal_child_adolescent/topics/adolescence/second-decade/en/

World Health Organization. (2016). *CHINA-WHO Country Cooperation Strategy 2016–2020*. WHO Regional Office for the Western Pacific. https://apps.who.int/iris/handle/10665/206614?locale=en

World Health Organization. (2017). *State of health inequality: Indonesia*. World Health Organization.

World Health Organization. (2018). *Helping Adolescents Thrive*. https://www.who.int/mental_health/maternal-child/guidelines_promotive_interventions/en/

World Health Organization, Regional Office for South-East Asia. (2015). *Global Youth Tobacco Survey (GYTS): Indonesia report, 2014*. WHO-SEARO. https://apps.who.int/iris/handle/10665/205148

Wright, J., Lubben, F., & Mkandawire, M. B. (2007). Young Malawians on the interaction between mental health and HIV/AIDS. *African Journal of AIDS Research: AJAR*, *6*(3), 297–304. https://doi.org/10.2989/16085900709490425

Xi, S., Song, Y., Li, X., Li, M., Lu, Z., Yang, Y., & Wang, Y. (2020). Local-Migrant Gaps in Healthcare Utilization Between Older Migrants and Local Residents in China. *Journal of the American Geriatrics Society*. https://doi.org/10.1111/jgs.16421

Xu, D.-D., Rao, W.-W., Cao, X.-L., Wen, S.-Y., Che, W.-I., Ng, C. H., Ungvari, G. S., Du, Y., Zhang, L., & Xiang, Y.-T. (2018). Prevalence of major depressive disorder in children and adolescents in China: A systematic review and meta-analysis. *Journal of Affective Disorders*, *241*, 592–598. https://doi.org/10.1016/j.jad.2018.07.083

Yang, R., Li, D., Hu, J., Tian, R., Wan, Y., Tao, F., Fang, J., & Zhang, S. (2019). Association between Health Literacy and Subgroups of Health Risk Behaviors among Chinese

Adolescents in Six Cities: A Study Using Regression Mixture Modeling. *International Journal of Environmental Research and Public Health*, *16*(19). https://doi.org/10.3390/ijerph16193680

Yang, X., & Feldman, M. W. (2017). A reversed gender pattern? A meta-analysis of gender differences in the prevalence of non-suicidal self-injurious behaviour among Chinese adolescents. *BMC Public Health*, *18*(1), 66. https://doi.org/10.1186/s12889-017-4614-z

Yap, M. B. H., Pilkington, P. D., Ryan, S. M., & Jorm, A. F. (2014). Parental factors associated with depression and anxiety in young people: A systematic review and meta-analysis. *Journal of Affective Disorders*, *156*, 8–23. https://doi.org/10.1016/j.jad.2013.11.007

Yoshikawa, H., Weisner, T. S., Kalil, A., & Way, N. (2008). Mixing qualitative and quantitative research in developmental science: Uses and methodological choices. *Developmental Psychology*, *44*(2), 344–354. https://doi.org/10.1037/0012-1649.44.2.344

Yusuf, A., Habibie, A. N., Efendi, F., Kurnia, I. D., & Kurniati, A. (2019). Prevalence and correlates of being bullied among adolescents in Indonesia: Results from the 2015 Global School-based Student Health Survey. *International Journal of Adolescent Medicine and Health*. https://doi.org/10.1515/ijamh-2019-0064

Zahn-Waxler, C., Crick, N. R., Shirtcliff, E. A., & Woods, K. E. (2015). The Origins and Development of Psychopathology in Females and Males. In *Developmental Psychopathology* (pp. 76–138). John Wiley & Sons, Ltd. https://doi.org/10.1002/9780470939383.ch4

Zhao, J., Li, Q., Wang, L., Lin, L., & Zhang, W. (2019). Latent Profile Analysis of Left-behind Adolescents' Psychosocial Adaptation in Rural China. *Journal of Youth and Adolescence*, *48*(6), 1146–1160. https://doi.org/10.1007/s10964-019-00989-1

Zhou, W., Ouyang, F., Nergui, O.-E., Bangura, J. B., Acheampong, K., Massey, I. Y., & Xiao, S. (2020). Child and Adolescent Mental Health Policy in Low- and Middle-Income Countries: Challenges and Lessons for Policy Development and Implementation. *Frontiers in Psychiatry*, *11*, 150. https://doi.org/10.3389/fpsyt.2020.00150

Chapter 3

A latent class approach to understanding patterns of emotional and behavioral problems among early adolescents across four low- and middle-income countries

3.1 Abstract

Introduction: Early adolescents (ages 10-14) living in low- and middle-income countries (LMICs) have heightened vulnerability to psychosocial risks, but available evidence from these settings is limited. This study used data from the Global Early Adolescent Study to characterize prototypical patterns of emotional and behavioral problems among early adolescents living in four LMICs and explore the extent to which these patterns varied by country and sex.

Methods: Participants included 10,437 early adolescents from six low-resource urban settings in the Democratic Republic of Congo (DRC), Malawi, Indonesia, and China. Latent class analysis (LCA) was used to identify and classify patterns of emotional and behavioral problems separately by country. LCA models utilized ten indicators related to depressive and anxiety symptoms, aggressive behaviors, peer victimization, and substance use. Within each country, measurement invariance by sex was evaluated.

Results: LCA supported a four-class solution in DRC, Malawi, and Indonesia, and a three-class solution in China. Across countries, early adolescents fell into the following groups: *Well-Adjusted* (40-62%), *Emotional Problems* (14-29%), *Behavioral Problems* (15-22%; not present in China), and *Maladjusted* (4-15%). Despite the consistency of these patterns, there were notable contextual differences. Further, tests of measurement invariance indicated that the prevalence and nature of these classes differed by sex within each country.

Conclusions: This study found striking similarities in patterns of emotional and behavioral problems during early adolescence. Findings can be used to support the tailoring of interventions

targeting psychosocial adjustment, and suggest that such programs may have wide utility across diverse cross-national settings.

3.2 Background

Early adolescence (ages 10-14) is a critical developmental period, with the social-emotional skills and health-related behaviors that emerge during this time serving as a foundation for future well-being (McCarthy et al., 2016; Sawyer et al., 2012). With a substantial proportion of lifetime mental health problems manifesting by age 14, poor psychosocial adjustment during early adolescence can set the stage for impairment throughout the life course (Kessler et al., 2005; Patel et al., 2007; Patton et al., 2016). While approximately 90% of the world's adolescents live in low- and middle-income countries (LMICs) (UNICEF, 2012) only a fraction of the research (<6%) on adolescent psychosocial development has been conducted in these settings (Patel et al., 2008), and even less has focused specifically on early adolescent populations (McCarthy et al., 2016). This represents a serious gap in evidence, as early adolescents living in LMICs are disproportionately vulnerable due to factors such as forced displacement, migration, violence, socioeconomic deprivation, and gender inequality (Fatusi & Hindin, 2010; Patton et al., 2012; WHO, 2018).

The nature of early adolescence as a sensitive period for psychosocial development underscores the importance of improving strategies for identifying youth at risk of experiencing long-term adjustment issues. Longitudinal studies conducted in high-income countries have identified a number of emotional and behavioral indicators during adolescence that are predictive of negative outcomes later in life. For instance, two recent systematic reviews found that depressive symptoms in adolescence increase the likelihood of adult mental health problems (Johnson et al., 2018), and are also associated with low educational attainment and unemployment

(Clayborne et al., 2019). Similarly, early symptoms of anxiety have been linked with subsequent anxiety, depression, suicidality, and harmful substance use (Doering et al., 2019; Dyer et al., 2019). In addition, adolescent behavioral problems, including involvement in interpersonal aggression as a victim or perpetrator (Copeland et al., 2013; Gibb et al., 2011; Moore et al., 2014; Sigurdson et al., 2015; Stapinski et al., 2014) and drug and alcohol use (Gobbi et al., 2019; Hall et al., 2016; Silins et al., 2018; Wilkinson et al., 2016), are predictive of a range of negative mental health and psychosocial outcomes in adulthood.

While studies focused on individual psychosocial risks in adolescence have utility in uncovering etiologic pathways for specific mental disorders, such approaches overlook the common co-occurrence of emotional and behavioral problems during this developmental period. A substantial body of literature has found that these problems are rarely found in isolation: adolescents with emotional distress often exhibit symptoms of both depression and anxiety (Cummings et al., 2014; Melton et al., 2016); those involved in interpersonal aggression frequently report victimization as well as perpetration experiences (Haynie et al., 2001; Nansel et al., 2001; Schwartz et al., 2001); behavioral problems, including aggression and substance use, typically cluster together (Doran et al., 2012; Hale & Viner, 2016; Luk et al., 2012); and emotional problems may be found alongside behavioral ones (Angold et al., 1999; Boylan et al., 2007). While a range of theoretical models have been used to explain these complex patterns of psychosocial development (e.g., Cummings et al., 2014; Jessor & Jessor, 1977; Khantzian, 1997; Patalay et al., 2015), research has generally agreed that such co-occurrence confers additional vulnerability for adolescents (e.g., Angold et al., 1999; Copeland et al., 2013; Ezpeleta et al., 2006; Lewinsohn et al., 1995; Sourander et al., 2007).

In order to address these complexities, person-centered statistical approaches such as latent class analysis (LCA) and latent profile analysis (LPA) are increasingly used to examine heterogeneity in psychosocial development among adolescent populations (Lanza & Cooper, 2016). These approaches identify distinct subgroups (i.e., classes) of individuals who are similar to each other but different from members of other subgroups based on their patterns of endorsement across a set of indicator variables (Collins & Lanza, 2010). In the context of adolescent psychosocial development, LCA/LPA can be used to identify subgroups of adolescents who share similar patterns of emotional and behavioral problems, which can ultimately aid in targeting those who may particularly benefit from early intervention efforts (Lanza & Rhoades, 2013; Nylund-Gibson & Hart, 2014). In addition, these methods have broad utility in cross-cultural research, as they allow for flexible comparisons of model similarities and differences across diverse populations (Kankaraš et al., 2010).

While a growing number of studies have used LCA/LPA to examine patterns of psychosocial risks among adolescents living in high-income countries (e.g., Bianchi et al., 2017; Eastman et al., 2018; Luk et al., 2012; Nelon et al., 2019; van Lang et al., 2006), few have applied these methods to those living in LMICs (e.g., Abbasi-Ghahramanloo et al., 2018; Assanangkornchai et al., 2018; González-Forteza et al., 2017; Ma et al., 2019; Zhao et al., 2019). Further, studies have generally been restricted to either emotional or behavioral problems rather than simultaneously examining a broader spectrum of psychosocial risks, and have rarely focused exclusively on early adolescent populations. Existing studies that *have* investigated co-occurring emotional and behavioral problems among early adolescents have uncovered strikingly similar results. For instance, two studies from Italy (Bianchi et al., 2017; $N = 3,418$) and the Netherlands (Kretschmer et al., 2015; $N = 2,149$) used person-centered approaches to classify early adolescents

based on an analogous set of internalizing (e.g., depression, anxiety, somatic complaints) and externalizing (e.g., rule-breaking, aggression) symptoms, and uncovered four distinct subgroups: an internalizing class, an externalizing class, a low problem normative class, and a comorbid problem dysfunctional class.

An additional limitation of the extant literature is the lack of multi-country studies which employ person-centered approaches to assess the contextual generalizability of developmental subgroups in adolescence. Nearly all existing analyses have been conducted within a single population, precluding an understanding of whether patterns of psychosocial risks differ in meaningful ways across diverse settings. Further, as many existing studies have been implemented among subpopulations with specific vulnerabilities (e.g., criminal-justice-involved youth, youth diagnosed with a mental disorder, substance users) (Dembo et al., 2012; Vaughn et al., 2012; Williams et al., 2013), findings may have limited general applicability. One notable exception is Jordan et al. (2016), who used LCA among 38,070 adolescents from population-based samples in 34 societies to determine the cross-cultural existence and prevalence of youth belonging to a "dysregulation profile," characterized by co-occurring internalizing symptoms, attention issues, and aggressive behaviors. While the authors found some evidence that this subgroup exists across different environments, there was substantial variation in their results. Further, Ethiopia was the only low-income country included in their analysis.

Finally, none of these studies has investigated potential sex differences within psychosocial risk subgroups through an examination of sex-related measurement invariance. In the context of LCA/LPA, measurement invariance holds if individuals from different subpopulations (e.g., boys and girls) but within the same class have identical patterns of endorsement across the included indicator variables; a lack of measurement invariance is an indication of qualitative differences in

the interpretation of classes between subpopulations (Collins & Lanza, 2010). It is well-established that psychosocial risks differ between adolescent girls and boys, with girls generally demonstrating more emotional and boys more behavioral problems (Zahn-Waxler et al., 2015). While most existing studies using LCA/LPA have addressed these discrepancies by including sex as a covariate in their analyses, this approach can only account for sex differences in the likelihood of class membership; it cannot uncover important interpretive distinctions. Ignoring these differences can result in model misspecification and biased scientific conclusions (Collins & Lanza, 2010; Masyn, 2017); as such, there is a need for studies that formally evaluate measurement invariance by sex when considering psychosocial risk profiles.

The current study seeks to address these gaps by investigating variations in psychosocial development among early adolescents living in four LMICs across three continents. LCA was used to identify and characterize prototypical patterns of emotional and behavioral problems among 10- to 14-year-olds from six low-income urban settings in the Democratic Republic of Congo (DRC), Malawi, Indonesia, and China. The study had two primary aims: 1) to explore similarities and differences in psychosocial risk patterns across countries; and 2) to determine the extent to which these patterns varied between boys and girls within each country.

3.3 Methods

Participants

Participants were drawn from the Global Early Adolescent Study (GEAS), an international collaboration between the Johns Hopkins Bloomberg School of Public Health (JHSPH), the World Health Organization (WHO), and research institutions in ten participating countries (Mmari et al., 2017). The GEAS is a longitudinal study which seeks to understand risk and protective factors for healthy development among early adolescents living in low-resource urban settings around the

world. The current study used cross-sectional baseline data from Kinshasa, DRC (n = 2,006; 51.5% girls); Blantyre, Malawi (n = 2,016; 49.6% girls); Semarang, Bandar Lampung, and Denpasar, Indonesia (n = 4,657; 53.0% girls); and Shanghai, China (n = 1,758; 48.6% girls). This analytic sample of 10,437 adolescents excluded 33 GEAS participants who were missing data across all of the emotional and behavioral problems.

Procedures

Detailed site-specific study procedures for the GEAS have been described elsewhere (Mmari et al., Unpublished). In brief, early adolescents were sampled from participating schools in each country. These schools were purposively selected to target students living in low-resource urban areas, and included 66 schools in Kinshasa; 4 schools Blantyre; 6 schools each in Semarang, Bandar Lampung, and Denpasar; and 3 schools in Shanghai. Eligible adolescents from each school were recruited by the country's research team in collaboration with school personnel. Prior to data collection, informed consent was obtained from adolescents' primary caregivers and assent was obtained from adolescents. Ethical approval was given by the Institutional Review Board (IRB) of the primary research institution in each participating country, as well as the JHSPH IRB.

Data collection took place at each participating school during or after regular school hours. Questionnaires were largely self-administered via mobile tablets through the use of computer-assisted self-interview (CASI) for increased privacy. For participants with low literacy, trained data collectors administered questionnaires through the use of computer-assisted personal interview (CAPI). In DRC and Indonesia, primary caregivers were also interviewed in the same manner in order to provide sociodemographic and household information. Cross-sectional baseline data collection was completed between 2017 and 2018.

Measures

Each GEAS study country used a standardized assessment instrument containing information on domains relevant to adolescent development, including mental health, substance use, and interpersonal aggression. This instrument was developed during a three-year formative study which used a mixed methods approach to formulate a set of cross-culturally appropriate questions for assessing key domains of health and development among early adolescents living in diverse settings. Prior to data collection, the instrument was translated into the local language(s) in each country, and back-translated by separate translators to ensure comparability of meaning. It then underwent two phases of pilot-testing: first, among 1,944 adolescents in 14 countries, and after revision, among 434 adolescents in 6 countries. Further details regarding instrument development and validation have been published previously (Blum et al., 2019; Mmari et al., 2017; Moreau et al., 2019; Zimmerman et al., 2019), and the standardized assessment instrument is available from http://www.geastudy.org/.

Emotional problems. Emotional problems were measured using five indicators capturing symptoms of depression and anxiety: 1) "I blame myself when things go wrong," 2) "I worry for no good reason," 3) "I am so unhappy I can't sleep at night," 4) "I feel sad," and 5) "I am so unhappy I think of harming myself." Adolescents rated how much they agreed with each item on a five-point scale, where response options included "agree a lot," "agree a little," "neither agree nor disagree," "disagree a little," and "disagree a lot." In order to increase analytic interpretability, all indicators were dichotomized, with those who agreed a little or a lot coded as positively endorsing the symptom.

Behavioral problems. Behavioral problems were measured using five indicators capturing interpersonal aggression and substance use. Two indicators assessed past-six month perpetration of interpersonal aggression: 1) "Bullied or threatened another boy or girl for any reason," and 2) "Slapped, hit, or otherwise physically hurt another boy or girl." Two assessed past-six month experiences of peer victimization: 1) "Been teased or called names by someone," and 2) "Been slapped, hit, or otherwise physically hurt by a boy or girl." Finally, one captured lifetime use of one or more substances, including alcohol, tobacco, marijuana, and/or illicit drugs. While questions assessed each of these substances individually, given cross-cultural differences related the use of specific substances (e.g., alcohol use in the predominately Muslim country of Indonesia), they were considered collectively for the purposes of this analysis.

Sociodemographic characteristics. The assessment instrument also collected basic sociodemographic information including age, household size, migration status (born outside of the current city or not), primary caregiver (mother, father, grandparent, or other), primary caregiver's marital status (married/living together or unmarried/separated/widowed), primary caregiver's education (completed primary school or less, completed some or all secondary school, or completed some or all vocational school/university), and primary caregiver's employment status (employed/retired or unemployed). In DRC and Indonesia, primary caregiver-reported information included household size, marital status, education, and employment status. In Malawi, migration status as well as primary caregiver's marital status, education, and employment status were not reported.

Data Analysis

LCA was conducted within each country to identify participants with similar patterns of responses on included psychosocial risk indicators. This type of model produces two sets of parameters: 1) latent class probabilities, which reflect the prevalence of each class; and 2) item-response probabilities, which represent the probability of endorsing a particular indicator given membership in a class. The procedure for conducting LCA involves class enumeration, whereby models are tested with an increasing number of classes, and fit indices are compared to determine the best fitting model (Collins & Lanza, 2010). Model fit was evaluated using a number of fit indices, including the Akaike Information Criterion (AIC) (Akaike, 1987), Bayesian Information Criterion (BIC) (Schwarz, 1978), sample-size adjusted BIC (aBIC) (Sclove, 1987), and Vuong-Lo-Mendell-Rubin Likelihood Ratio Test (VLMR) (Lo et al., 2001). Particular weight was given to the BIC, as prior simulations have found it to be among the most accurate in suggesting the appropriate number of classes (Nylund et al., 2007). Goodness of fit was further assessed through entropy scores, which indicate classification quality. Finally, the theoretical interpretability of classes was considered. Across all models, missing indicator data was addressed through the use of full information maximum likelihood estimation (B. Muthén & Shedden, 1999; Schafer & Graham, 2002). Due to the multilevel data structure, with adolescents nested within schools, standard errors were adjusted for clustering through the use of sandwich estimators. As this adjustment makes the VLMR uninterpretable, however, models were rerun without clustered standard errors for the purposes of fit evaluation. All analyses were performed in *Mplus* version 8.1.6 (Muthén & Muthén, 1998-2017).

Following initial class enumeration procedures, measurement invariance by sex was evaluated within each country using a multiple-group approach (Collins & Lanza, 2010; Kankaraš

et al., 2010). First, class enumeration procedures were performed separately for boys and girls within each country in order to establish whether the general latent structure (i.e., number of classes) was similar across sex. Second, an omnibus test of measurement invariance was conducted, comparing a model in which all parameters (i.e., latent class probabilities and item-response probabilities) were allowed to vary by sex to a model in which item-response probabilities were constrained to be equal for boys and girls. Assuming evidence for significant measurement variance, a series of nested models were then tested comparing the fully unconstrained model to a model in which one indicator at a time was constrained to be equal across groups. The logic behind this stepwise approach is that it allows for the identification of specific indicators with differential functioning by sex (Masyn, 2017). Next, the fully unconstrained model was compared to a series of models in which multiple indicators with reasonable evidence for measurement invariance were constrained to be equal for boys and girls. Lastly, the final partially invariant model was compared to an equivalent model in which latent class probabilities were also constrained to be equal across groups. All nested models were compared using likelihood-ratio tests (G^2_Δ).

3.4 Results

Sample Characteristics

Sociodemographic characteristics for the sample are presented in Table 3.1, alongside descriptive statistics for each of the psychosocial risk indicators. The average age of participants was roughly comparable, ranging from 11.9 (*SD* = 1.4) years old in DRC to 12.5 (*SD* = 1.0) years old in China. The majority of participants in three countries listed their mother as their primary caregiver: Malawi (73.7%), Indonesia (70.2%), and China (70.9%); in DRC, the father was the

primary caregiver for 57.0% of respondents. Across DRC, Indonesia, and China, the majority of primary caregivers had attended at least secondary school (DRC: 89.1%; Indonesia: 81.7%; China: 82.7%), and most were employed or retired (DRC: 75.6%; Indonesia: 58.0%; China: 85.0%). Among the same countries, China had the highest levels of migration, with 15.0% of participants reporting that they had been born outside of Shanghai.

The prevalence of emotional and behavioral problems varied widely across countries. Among the symptoms of depression and anxiety, the highest reported prevalences were for *self-blame*, which ranged from 60.8% in Indonesia to 70.2% in China, and the lowest were for *thinking of self-harm*, which ranged from 4.7% in DRC to 29.6% in Malawi. For emotional problems other than *self-blame*, among the study countries DRC consistently had the lowest prevalences and Malawi the highest. For aggressive behaviors and peer victimization, China had the lowest prevalences, ranging from 4.4% for *slapping/hitting/hurting* to 31.8% for *being teased/called names*. Malawi had the highest prevalences for the same indicators, ranging from 24.1% for *bullying/threatening* to 52.7% for *being teased/called names*. The prevalence of lifetime *substance use* ranged from 10.4% in DRC to 27.0% in China.

Table 3.1. Adolescent sociodemographic characteristics and psychosocial risks by country

	DRC (*n* = 2,006)	**Malawi (*n* = 2,016)**	**Indonesia (*n* = 4,657)**	**China (*n* = 1,758)**
Girls: N (%)	1,033 (51.5)	999 (49.6)	2,469 (53.0)	855 (48.6)
Age: M ± SD	11.9 ± 1.4	12.1 ± 1.1	12.2 ± 0.5	12.5 ± 1.0
Household size	7.3 ± 2.6	5.7 ± 1.9	4.8 ± 1.3	3.7 ± 1.1
Migrated to current city: N (%)	291 (14.5)	-	491 (10.5)	263 (15.0)
Primary caregiver: N (%)				
Mother	503 (25.1)	1,485 (73.7)	3,267 (70.2)	1,246 (70.9)
Father	1,144 (57.0)	128 (6.4)	1,018 (21.9)	256 (14.6)
Grandparent	131 (6.5)	140 (6.9)	74 (1.6)	217 (12.3)
Other	161 (8.0)	252 (12.5)	85 (1.8)	30 (1.7)
Primary caregiver's marital status: N (%)				
Married/living together	942 (47.0)	-	4,159 (89.3)	1,530 (87.0)
Unmarried/separated/widowed	996 (49.7)	-	272 (5.8)	190 (10.8)
Primary caregiver's education: N (%)				
Primary school or less	118 (5.9)	-	631 (13.6)	78 (4.4)
Some or all secondary school	1,045 (52.1)	-	2,309 (49.6)	340 (19.3)
Some or all vocational school or university	742 (37.0)	-	1,493 (32.1)	1,115 (63.4)
Primary caregiver's employment status				
Employed/retired	1,516 (75.6)	-	2,701 (58.0)	1,495 (85.0)
Unemployed	423 (21.1)	-	1,601 (34.4)	199 (11.3)
Emotional problems: N (%)				
Blame myself when things go wrong	1,419 (70.7)	1,485 (73.7)	2,830 (60.8)	1,322 (75.2)
Worry for no good reason	274 (13.7)	1,131 (56.1)	2,275 (48.9)	749 (42.6)
So unhappy I can't sleep at night	288 (14.4)	804 (39.9)	1,435 (30.8)	502 (28.6)
Feel sad	360 (18.0)	1,213 (60.2)	1,419 (30.5)	510 (29.0)
So unhappy I think of self-harm	95 (4.7)	597 (29.6)	924 (19.8)	285 (16.2)
Behavioral problems: N (%)				
Bullied/threatened	489 (24.4)	485 (24.1)	517 (11.1)	81 (4.6)
Slapped/hit/physically hurt	493 (24.6)	583 (28.9)	581 (12.5)	77 (4.4)
Been teased/called names	723 (36.0)	1,062 (52.7)	2,253 (48.4)	559 (31.8)
Been slapped/hit/physically hurt	450 (22.4)	823 (40.8)	751 (16.1)	240 (13.7)
Used substance	208 (10.4)	421 (20.9)	520 (11.2)	474 (27.0)

Note. In DRC and Indonesia, household size, primary caregiver, primary caregiver's marital status, primary caregiver's education, and primary caregiver's employment status are based on caregiver-reported data. In Malawi, migration status, primary caregiver's marital status, primary caregiver's education, and primary caregiver's employment status are not reported.

Initial Class Enumeration

A series of latent class models ranging from one to seven classes were estimated within each country. Fit indices used for model selection are presented in Table 3.2. In DRC, the BIC and aBIC both supported a four-class solution; in Malawi, they supported five- and six-class solutions, respectively; in Indonesia, they supported a seven-class solution; and in China, they supported

three- and four-class solutions. While the VLMR did not indicate the best-fitting model in China or Indonesia, it favored a four-class solution in both DRC and Malawi, as this was the greatest number of classes for which the test remained statistically significant. This suggests that in DRC and Malawi, the four-class model significantly improved fit over the three-class model, but the five-class model did not improve fit over the four-class model. Given that all of these fit statistics are sensitive to sample size (Collins & Lanza, 2010), the Indonesia data was rerun separately by city (i.e., Semarang, Bandar Lampung, and Denpasar) to provide further information on an appropriate solution: fit indices suggested that a four-, five-, or six-class model would be acceptable (Table 3.3). An examination of the plotted BIC and aBIC values in each city revealed a plateau in values after the four-class model in each case, indicating that improvements in model fit from adding additional classes were relatively insubstantial. Finally, an investigation of item-response and latent class probability patterns showed that four-class solutions were clearly interpretable across DRC, Malawi, and Indonesia, and that they also had acceptable classification quality, with entropy ≥ 0.72. In China, however, the four-class solution was marked by estimability issues, as it resulted in one class with a low class prevalence (3%) and several bounded item-response probabilities (i.e., probability = 1.00). Taking the above criteria as a whole, and in the interest of model parsimony and substantive interpretability, a four-class model was selected as being appropriate in DRC, Malawi, and Indonesia, and a three-class model was selected as being appropriate in China.

Table 3.2. Latent class analysis fit statistics by country

Number of classes	LL	AIC	BIC	aBIC	VLMR	Entropy
DRC (n = 2,006)						
1	-9425.06	18870.13	18926.17	18894.40	-	-
2	-8594.14	17230.27	17347.95	17281.24	<0.001	0.80
3	-8439.98	16943.95	17123.28	17021.61	<0.001	0.78
4	-8380.42	16846.85	**17087.81**	**16951.20**	0.001	0.77
5	-8363.11	16834.23	17136.84	16965.28	0.538	0.72
6	-8347.75	16825.50	17189.75	16983.24	0.079	0.64
7	-8332.93	16817.86	17243.76	17002.30	0.084	0.69
Malawi (n = 2,016)						
1	-12150.47	24320.94	24377.03	24345.26	-	-
2	-11209.29	22460.57	22578.36	22511.64	0.002	0.70
3	-10866.74	21797.48	21976.96	21875.30	<0.001	0.75
4	-10689.89	21465.78	21706.96	21570.35	<0.001	0.72
5	-10640.46	21388.92	**21691.80**	21520.23	0.056	0.69
6	-10604.64	21339.28	21703.86	**21497.35**	0.176	0.69
7	-10581.73	21315.46	21741.74	21500.28	0.001	0.70
Indonesia (n = 4,657)						
1	-23817.74	47655.48	47719.95	47688.17	-	-
2	-21894.86	43831.72	43967.09	43900.36	<0.001	0.71
3	-21110.09	42284.17	42490.45	42388.76	<0.001	0.75
4	-20798.93	41683.85	41961.04	41824.40	<0.001	0.74
5	-20642.32	41392.63	41740.72	41569.13	0.002	0.70
6	-20589.85	41309.71	41728.71	41522.16	0.005	0.71
7	-20539.99	41231.98	**41721.89**	**41480.39**	0.018	0.69
China (n = 1,758)						
1	-8416.46	16852.92	16907.64	16875.87	-	-
2	-7767.71	15324.31	15692.33	15625.61	<0.001	0.71
3	-7630.16	15266.84	**15499.41**	15397.75	<0.001	0.75
4	-7590.42	15249.36	15502.14	**15365.53**	0.003	0.77
5	-7570.68	15235.78	15544.84	15373.29	0.039	0.75
6	-7552.89	15324.31	15591.46	15384.96	0.006	0.78
7	-7535.20	15222.40	15638.26	15396.82	0.004	0.82

Note. LL = log likelihood; AIC = Akaike Information Criteria; BIC = Bayesian Information Criteria; aBIC = sample size-adjusted Bayesian Information Criteria; VLMR = Vuong-Lo-Mendell-Rubin Likelihood Ratio Test. VLMR based on latent class models without clustered standard errors. Bold indicates best-fitting model as suggested by the BIC and aBIC.

Table 3.3. Latent class analysis fit statistics for Indonesian study sites

Number of classes	LL	AIC	BIC	aBIC	VLMR	Entropy
Semarang (n = 1,517)						
1	-7790.06	15600.11	15653.36	15621.59	-	-
2	-7322.81	14687.61	14799.42	14732.71	0.011	0.66
3	-7107.29	14278.58	14448.97	14347.31	<0.001	0.72
4	-7023.37	14132.74	**14361.70**	14225.10	0.396	0.67
5	-6983.82	14075.64	14363.17	14191.62	<0.001	0.70
6	-6959.36	14048.72	14394.81	**14188.32**	0.387	0.69
7	-6944.38	14040.75	14445.41	14203.98	0.554	0.70
Bandar Lampung (n = 1,391)						
1	-7083.36	14186.72	14239.10	14207.34	-	-
2	-6338.14	12718.29	12828.28	12761.57	<0.001	0.74
3	-6017.11	12098.23	12265.84	12164.19	<0.001	0.78
4	-5920.27	11926.54	12151.77	12015.17	0.056	0.78
5	-5877.61	11863.23	**12146.07**	11974.53	0.106	0.69
6	-5848.85	11827.71	12168.16	**11961.68**	0.165	0.68
7	-5827.59	11807.18	12205.26	11963.83	0.449	0.68
Denpasar (n = 1,749)						
1	-8827.43	17674.87	17729.53	17697.76	-	-
2	-8088.38	16218.75	16333.55	16266.84	<0.001	0.72
3	-7809.30	15682.59	15857.53	15755.87	<0.001	0.77
4	-7698.90	15483.81	15718.88	15582.27	<0.001	0.76
5	-7617.20	15342.39	**15637.60**	**15466.04**	<0.001	0.73
6	-7594.85	15319.70	15675.04	15468.55	0.129	0.74
7	-7581.65	15315.30	15730.78	15489.34	0.336	0.74

Note. LL = log likelihood; AIC = Akaike Information Criteria; BIC = Bayesian Information Criteria; aBIC = sample size-adjusted Bayesian Information Criteria; VLMR = Vuong-Lo-Mendell-Rubin Likelihood Ratio Test. VLMR based on latent class models without clustered standard errors. Bold indicates best-fitting model as suggested by the BIC and aBIC.

Class Descriptions

Parameter estimates for the latent class models in each country, including latent class prevalences and item-response probabilities, are illustrated in Figure 3.1. While there were some cross-country variations, four relatively consistent patterns emerged among early adolescents. Most adolescents were in the *Well-Adjusted* class (DRC: 60%; Malawi: 40%; Indonesia: 49%; China: 62%), which included those with a low likelihood (item-response probabilities <0.25) of endorsing almost all of the emotional and behavioral problems. The greatest exception to this was

self-blame, which had much higher item-response probabilities (0.46-0.67) across all of the countries. In addition, adolescents in this class in Malawi and Indonesia had a somewhat higher likelihood of endorsing *worrying* (0.35 and 0.28, respectively) and *being teased/called names* (0.27 and 0.36) compared to those in DRC and China. Conversely, adolescents in this class in China had a moderately elevated probability of endorsing substance use (0.22).

Adolescents in the *Emotional Problems* class (DRC: 14%; Malawi: 24%; Indonesia: 29%; China: 28%) were generally likely (item-response probabilities >0.50) to endorse emotional but not behavioral problems. While *thinking of self-harm* was elevated among adolescents in this class, item-response probabilities across all of the countries were lower than those of the other depressive and anxiety symptoms (0.16-0.57). In addition, across all of the countries, adolescents in this class had a moderate likelihood of endorsing *being teased/called names* (0.38-0.56).

While the *Behavioral Problems* class did not emerge in China, adolescents in this class across the other three countries (DRC: 22%; Malawi: 21%; Indonesia: 15%) were generally likely (item-response probabilities >0.50) to endorse behavioral but not emotional problems. As in the *Well-Adjusted* class, the exception to this was *self-blame*, which had elevated item-response probabilities (0.51-0.69) across the three included countries. In addition, levels of *substance use* among adolescents in this class were somewhat lower than the other behavioral problems (0.20-0.31).

The least prevalent class across countries was the *Maladjusted* class (DRC: 4%; Malawi: 15%; Indonesia: 6%; China: 10%), which included those with a high likelihood (item response probabilities >0.50) of endorsing almost all of the emotional *and* behavioral problems. This class had some of the most marked cross-national differences. Specifically, adolescents in this class in DRC and China had a lower likelihood of endorsing all of the emotional problems other than *self-*

blame (item-response probabilities of 0.33-0.69, compared to those ≥0.74 in Malawi and Indonesia). In addition, adolescents in this class in China had a lower likelihood of endorsing both aggression indicators (item-response probabilities of 0.39-0.42, compared to those ≥0.72 in the other countries). By contrast, levels of *substance use* were higher among adolescents in China (item-response probability of 0.50, compared to 0.31-0.44 in the other countries).

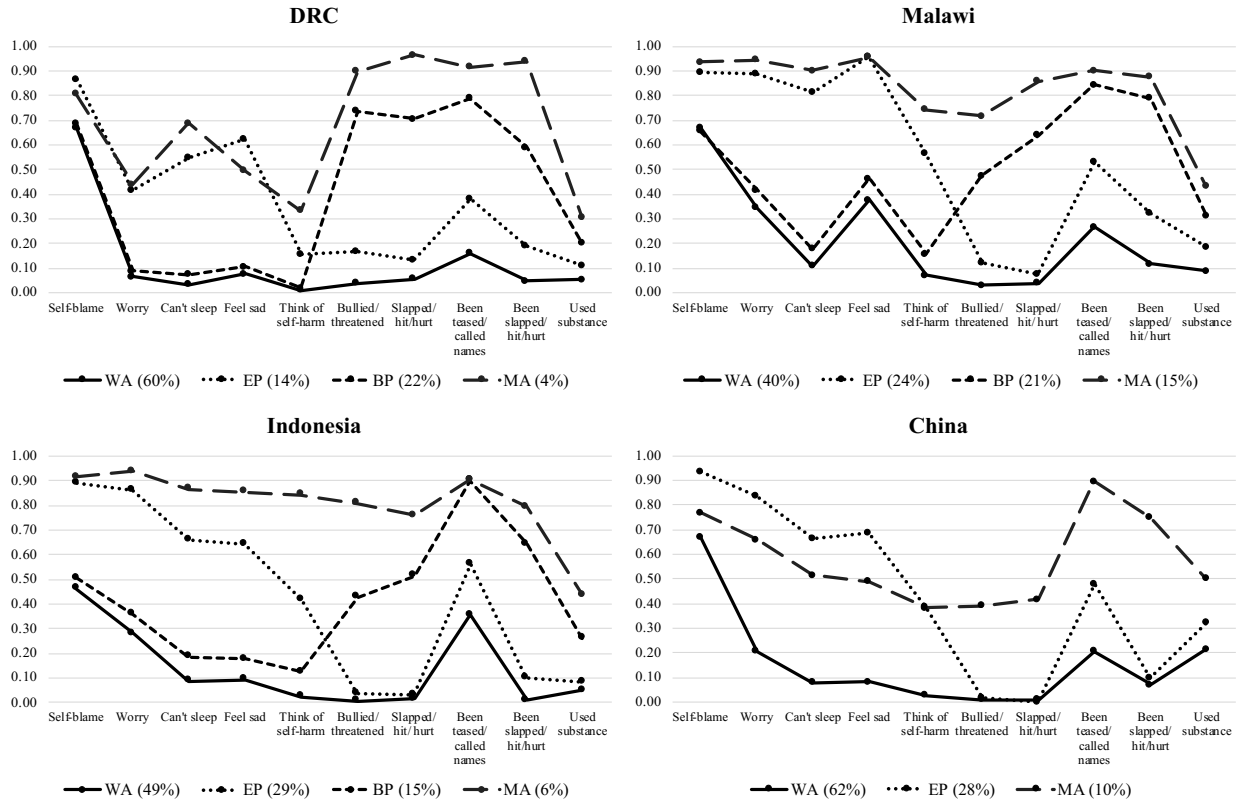


Figure 3.1. Estimated item-response probabilities for the latent class models in each country

Note. WA = Well-Adjusted; EP = Emotional Problems; BP = Behavioral Problems; MA = Maladjusted.

Measurement Invariance Testing

Prior to formal measurement invariance testing, sex-specific latent class models ranging from one to six classes were estimated within each country (Table 3.4). Class enumeration procedures confirmed that four-class solutions were appropriate for both boys and girls in DRC, Malawi, and Indonesia, and three-class solutions were appropriate for both boys and girls in China.

Results from the comparisons of nested multi-group models in each country are laid out in Table 3.5, and parameter estimates for the fully unconstrained models in each country are represented in Figure 3.2. Across countries, omnibus tests of measurement invariance by sex were highly significant, indicating that constraining the item-response probabilities to be equal for boys and girls decreased model fit relative to the fully unconstrained model (DRC: $G^2_\Delta = 119.37$, df = 40, $p < 0.001$; Malawi: $G^2_\Delta = 102.36$, df = 40, $p < 0.001$; Indonesia: $G^2_\Delta = 386.82$, df = 40, $p < 0.001$; China: $G^2_\Delta = 78.86$, df = 30, $p < 0.001$). Testing for differential functioning of individual indicators among boys and girls yielded mixed results in each country. In DRC, there was evidence for measurement invariance of the indicators capturing *sleeplessness*, *thinking of self-harm*, *bullying/threatening*, *slapping/hitting/hurting*, and *substance use*. In Malawi, there was evidence for measurement invariance of the indicators capturing *feeling sad* and *thinking of self-harm*; in addition, an examination of the fully unconstrained four-class model revealed only minor differences between boys and girls in the item-response probabilities for *self-blame*, *worrying*, and *sleeplessness* across classes. In Indonesia, there was evidence for measurement invariance of the indicators capturing *self-blame*, *worrying*, *feeling sad*, *slapping/hitting/hurting*, and *being teased/called names*. In China, there was evidence for measurement invariance of the indicators capturing *self-blame*, *sleeplessness*, *bullying/threatening*, *slapping/hitting/hurting*, and *substance*

use; and further inspection revealed few substantive differences in the item-response probabilities for *worrying and feeling sad* across classes.

Following this initial process, partially invariant models were specified in each country which constrained the item-response probabilities of the above-mentioned indicators; formal tests of these models indicated no significant differences in model fit from the fully unconstrained model (DRC: $G^2_\Delta = 23.89$, df = 20, $p = 0.247$; Malawi = 28.28, df = 20, $p = 0.103$; Indonesia: $G^2_\Delta = 31.15$, df = 20, $p = 0.053$; China: $G^2_\Delta = 25.72$, df = 21, $p = 0.217$). As a final step, these partially invariant models were compared to equivalent models in which latent class probabilities were also constrained; results showed that this significantly decreased model fit in each country. As such, partially invariant models were selected as the final models across study countries as these models were more parsimonious than the fully unconstrained models while still allowing specific indicators with significant differential functioning to vary by sex.

Table 3.4. Latent class analysis fit statistics by country and sex

Number of classes	LL	AIC	BIC	aBIC	VLMR	Entropy
DRC boys (n = 973)						
1	-4799.64	9619.28	9668.08	9636.32	-	-
2	-4339.86	8721.72	8824.21	8757.51	<0.001	0.81
3	-4257.18	8578.35	8734.52	8632.89	<0.001	0.79
4	-4216.81	8519.61	**8729.47**	8592.90	0.006	0.79
5	-4196.38	8500.75	8764.29	**8592.79**	0.436	0.74
6	-4183.26	8496.51	8813.74	8607.30	0.020	0.76
DRC girls (n = 1,033)						
1	-4541.63	9103.25	9152.657	9120.90	-	-
2	-4190.74	8423.49	8527.23	8460.53	<0.001	0.79
3	-4108.60	8281.20	**8439.29**	8337.65	0.001	0.78
4	-4081.26	8248.52	8460.95	**8324.38**	0.041	0.77
5	-4066.05	8240.09	8506.86	8335.35	0.366	0.67
6	-4053.02	8236.04	8557.15	8350.71	0.129	0.71
Malawi boys (n = 1,017)						
1	-6270.22	12560.44	12609.69	12577.93	-	-
2	-5778.59	11599.18	11702.59	11635.90	<0.001	0.71
3	-5593.28	11250.55	11408.14	11306.50	<0.001	0.78
4	-5509.46	11104.92	**11316.68**	11180.10	<0.001	0.75
5	-5478.36	11064.71	11330.64	**11159.13**	0.228	0.70
6	-5457.84	11045.68	11365.77	11159.33	0.134	0.74
Malawi girls (n = 999)						
1	-5837.54	11695.08	11744.14	11712.38	-	-
2	-5371.33	10784.65	10887.69	10821.00	<0.001	0.72
3	-5212.98	10489.95	10646.97	10545.33	<0.001	0.74
4	-5124.99	10335.98	**10546.97**	10410.40	<0.001	0.73
5	-5103.63	10315.25	10580.21	10408.71	0.512	0.71
6	-5081.81	10293.62	10612.56	**10406.12**	0.326	0.68
Indonesia boys (n = 2,188)						
1	-12199.11	24418.22	24475.13	24443.35	-	-
2	-11152.69	22347.38	22466.88	22400.16	<0.001	0.76
3	-10723.46	21510.92	21693.03	21591.36	<0.001	0.78
4	-10519.55	21125.10	21369.80	21233.18	<0.001	0.75
5	-10434.78	20977.56	**21284.86**	21113.30	0.151	0.72
6	-10395.42	20920.84	21290.74	**21084.22**	<0.001	0.75
Indonesia girls (n = 2,469)						
1	-11097.23	22214.46	22272.58	22240.81	-	-
2	-10263.89	20569.78	20691.82	20625.10	<0.001	0.68
3	-9995.88	20055.75	20241.72	20140.05	<0.001	0.72
4	-9897.89	19881.77	20131.67	19995.05	0.012	0.73
5	-9820.55	19749.09	**20062.92**	19891.34	<0.001	0.68
6	-9792.63	19715.27	20093.02	**19886.50**	0.135	0.69
China boys (n = 903)						
1	-4409.80	8839.60	8887.66	8855.90	-	-
2	-4068.81	8179.62	8280.54	8213.84	<0.001	0.71
3	-3990.05	8044.09	**8197.87**	8096.25	<0.001	0.77
4	-3960.37	8006.74	8213.38	**8076.82**	0.021	0.77
5	-3946.37	8000.74	8260.25	8088.75	0.145	0.75
6	-3933.98	7997.97	8310.34	8103.91	0.718	0.75
China girls (n = 855)						
1	-3950.17	7920.34	7967.85	7936.10	-	-
2	-3631.24	7304.48	7404.25	7337.56	<0.001	0.72
3	-3575.59	7215.17	**7367.21**	**7265.58**	<0.001	0.75
4	-3561.02	7208.03	7412.33	7275.77	0.463	0.65
5	-3545.96	7199.92	7456.48	7284.99	0.316	0.78
6	-3533.20	7196.40	7505.22	7298.80	0.196	0.77

Note: LL = log likelihood; AIC = Akaike Information Criteria; BIC = Bayesian Information Criteria; aBIC = sample size-adjusted Bayesian Information Criteria; VLMR = Vuong-Lo-Mendell-Rubin Likelihood Ratio Test. VLMR based on latent class models without clustered standard errors. Bold indicates best-fitting model as suggested by the BIC and aBIC.

Table 3.5. Model comparisons for measurement invariance testing by sex for the multi-group models in each country

Model	Description	LL	Npar	SC	Comparison	df	LRTS	*p* value
DRC								
1.0	Fully unconstrained	-9687.62	87	1.10	-	-	-	-
1.1	Item-response probabilities constrained	-9751.44	47	1.12	1.1 vs. 1.0	40	119.37	<0.001
2.1	Self-blame (1) constrained	-9695.10	83	1.11	2.1 vs. 1.0	4	18.84	0.001
2.2	Worry (2) constrained	-9692.35	83	1.11	2.2 vs. 1.0	4	11.36	0.023
2.3	Can't sleep (3) constrained	-9693.01	83	1.07	2.3 vs. 1.0	4	6.20	0.185
2.4	Feel sad (4) constrained	-9692.26	83	1.11	2.4 vs. 1.0	4	10.40	0.034
2.5	Think of self-harm (5) constrained	-9689.02	83	1.10	2.5 vs. 1.0	4	2.73	0.605
2.6	Bullied/threatened (6) constrained	-9690.00	83	1.12	2.6 vs. 1.0	4	8.55	0.073
2.7	Slapped/hit/hurt (7) constrained	-9690.39	83	1.11	2.7 vs. 1.0	4	7.06	0.132
2.8	Been teased/called names (8) constrained	-9698.87	83	1.15	2.8 vs. 1.0	4	214.67	<0.001
2.9	Been slapped/hit/ hurt (9) constrained	-9703.14	83	1.10	2.9 vs. 1.0	4	28.36	<0.001
2.10	Substance use (10) constrained	-9691.51	83	1.11	2.10 vs. 1.0	4	9.20	0.056
3.1	Indicators 3 & 5 constrained	-9693.23	79	1.07	3.1 vs. 1.0	8	0.442	7.91
3.2	Indicators 3, 5, & 6 constrained	-9695.95	75	1.09	3.2 vs. 1.0	12	14.55	0.267
3.3	Indicators 3, 5, 6, & 7 constrained	-9698.19	71	1.08	3.3 vs. 1.0	16	17.88	0.331
3.4	**Indicators 3, 5, 6, 7, & 10 constrained**	**-9700.95**	**67**	**1.09**	**3.4 vs. 1.0**	20	**23.89**	**0.247**
4.1	Class prevalences constrained	-9713.69	64	1.14	5.1 vs. 3.4	3	148.13	<0.001
Malawi								
1.0	Fully unconstrained	-12031.75	87	1.17	-	-	-	-
1.1	Item-response probabilities constrained	-12076.94	47	1.42	1.1 vs. 1.0	40	102.36	<0.001
2.1	Self-blame (1) constrained	-12036.33	83	1.21	2.1 vs. 1.0	4	22.90	<0.001
2.2	Worry (2) constrained	-12035.79	83	1.22	2.2 vs. 1.0	4	50.67	<0.001
2.3	Can't sleep (3) constrained	-12034.79	83	1.23	2.3 vs. 1.0	4	331.57	<0.001
2.4	Feel sad (4) constrained	-12033.10	83	1.17	2.4 vs. 1.0	4	2.16	0.706
2.5	Think of self-harm (5) constrained	-12032.67	83	1.16	2.5 vs. 1.0	4	1.20	0.879
2.6	Bullied/threatened (6) constrained	-12040.52	83	1.28	2.6 vs. 1.0	4	-16.79	-
2.7	Slapped/hit/hurt (7) constrained	-12035.80	83	1.24	2.7 vs. 1.0	4	-56.41	-
2.8	Been teased/called names (8) constrained	-12038.80	83	1.32	2.8 vs. 1.0	4	-7.57	-
2.9	Been slapped/hit/ hurt (9) constrained	-12037.17	83	1.29	2.9 vs. 1.0	4	-8.72	-
2.10	Substance use (10) constrained	-12051.49	83	1.41	2.10 vs. 1.0	4	-10.59	-
3.1	Indicators 4 & 5 constrained	-12033.83	79	1.17	3.1 vs. 1.0	8	3.29	0.915
3.2	Indicators 3, 4, & 5 constrained	-12038.33	75	1.22	3.2 vs. 1.0	12	15.06	0.238
3.3	Indicators 2, 3, 4, & 5 constrained	-12042.70	71	1.21	3.3 vs. 1.0	16	21.22	0.170
3.4	**Indicators 1, 2, 3, 4, & 5 constrained**	**-12047.10**	**67**	**1.20**	**3.4 vs. 1.0**	**20**	**28.28**	**0.103**
4.1	Class prevalences constrained	-12052.26	64	1.26	5.1 vs. 3.4	3	-89.10	-
Indonesia								
1.0	Fully unconstrained	-23636.94	87	1.60	-	-	-	-
1.1	Item-response probabilities constrained	-23871.07	47	1.93	1.1 vs. 1.0	40	386.82	<0.001
2.1	Self-blame (1) constrained	-23640.23	83	1.61	2.1 vs. 1.0	4	4.71	0.318
2.2	Worry (2) constrained	-23639.40	83	1.61	2.2 vs. 1.0	4	3.46	0.485
2.3	Can't sleep (3) constrained	-23653.48	83	1.65	2.3 vs. 1.0	4	62.36	<0.001
2.4	Feel sad (4) constrained	-23640.24	83	1.62	2.4 vs. 1.0	4	5.88	0.209
2.5	Think of self-harm (5) constrained	-23653.61	83	1.63	2.5 vs. 1.0	4	33.93	<0.001
2.6	Bullied/threatened (6) constrained	-23647.95	83	1.60	2.6 vs. 1.0	4	14.43	0.006
2.7	Slapped/hit/hurt (7) constrained	-23639.87	83	1.58	2.7 vs. 1.0	4	2.93	0.570
2.8	Been teased/called names (8) constrained	-23642.67	83	1.61	2.8 vs. 1.0	4	8.32	0.080
2.9	Been slapped/hit/ hurt (9) constrained	-23658.37	83	1.62	2.9 vs. 1.0	4	36.72	<0.001
2.10	Substance use (10) constrained	-23784.29	83	1.72	2.10 vs. 1.0	4	-346.95	-
3.1	Indicators 1 & 2 constrained	-23644.50	79	1.62	3.1 vs. 1.0	8	11.14	0.194
3.2	Indicators 1, 2, & 4 constrained	-23648.42	75	1.65	3.2 vs. 1.0	12	17.99	0.116
3.3	Indicators 1, 2, 4, & 7 constrained	-23650.98	71	1.61	3.3 vs. 1.0	16	18.18	0.314
3.4	**Items 1, 2, 4, 7, & 8 constrained**	**-23659.91**	**67**	**1.64**	**3.4 vs. 1.0**	**20**	**31.15**	**0.053**
4.1	Class prevalences constrained	-23710.47	64	1.65	5.1 vs. 3.4	3	73.95	<0.001

China								
1.0	Fully unconstrained	-8783.53	65	1.22	-	-	-	-
1.1	Item-response probabilities constrained	-8826.64	35	1.33	1.1 vs. 1.0	30	78.86	<0.001
2.1	Self-blame (1) constrained	-8784.12	62	1.24	2.1 vs. 1.0	3	1.59	0.661
2.2	Worry (2) constrained	-8787.22	62	1.28	2.2 vs. 1.0	3	-105.30	-
2.3	Can't sleep (3) constrained	-8784.22	62	1.26	2.3 vs. 1.0	3	3.24	0.356
2.4	Feel sad (4) constrained	-8785.16	62	1.26	2.4 vs. 1.0	3	9.48	0.024
2.5	Think of self-harm (5) constrained	-8791.79	62	1.29	2.5 vs. 1.0	3	-86.04	-
2.6	Bullied/threatened (6) constrained	-8784.19	62	1.25	2.6 vs. 1.0	3	1.98	0.576
2.7	Slapped/hit/hurt (7) constrained	-8788.86	62	1.13	2.7 vs. 1.0	3	3.49	0.322
2.8	Been teased/called names (8) constrained	-8790.78	62	1.24	2.8 vs. 1.0	3	16.74	0.001
2.9	Been slapped/hit/ hurt (9) constrained	-8798.40	62	1.26	2.9 vs. 1.0	3	80.39	<0.001
2.10	Substance use (10) constrained	-8784.00	62	1.17	2.10 vs. 1.0	3	0.43	0.934
3.1	Indicators 1 & 3 constrained	-8784.77	59	1.30	3.1 vs. 1.0	6	5.28	0.509
3.2	Indicators 1, 3, & 6 constrained	-8785.56	56	1.32	3.2 vs. 1.0	9	6.56	0.683
3.3	Indicators 1, 3, 6, & 7 constrained	-8792.75	53	1.21	3.3 vs. 1.0	12	14.75	0.255
3.4	Indicators 1, 3, 6, 7, & 10 constrained	-8793.17	50	1.15	3.4 vs. 1.0	15	13.44	0.569
3.5	Indicators 1, 3, 4, 6, 7, & 10 constrained	-8794.72	47	1.20	3.5 vs. 1.0	18	17.54	0.486
3.6	**Indicators 1, 2, 3, 4, 6, 7, & 10 constrained**	**-8798.51**	**44**	**1.25**	**3.6 vs. 1.0**	**21**	**25.72**	**0.217**
4.1	Class prevalences constrained	-8818.20	42	1.13	4.1 vs. 3.6	2	10.46	0.005

Note. LL = log likelihood; Npar = number of parameters; SC = scaling correction factor; LRTS = likelihood ratio test statistic. Bold indicates best-fitting model as suggested by the LRTS. No *p* values reported for model comparisons with a negative LRTS

Final Model Results

Parameter estimates for the final sex-specific models in each country are illustrated in Figure 3.2. While the same patterned subgroups emerged among boys and girls as outlined above, there were sex differences between equivalent classes within each country. In DRC, boys were more likely than girls to be in all of the high-risk classes, with 16% of boys compared to 12% of girls in the *Emotional Problems* class, 25% of boys compared to 18% of girls in the *Behavioral Problems* class, and 5% of boys compared to 3% of girls in the *Maladjusted* class. Girls in the *Maladjusted* class were less likely than their male counterparts to endorse *worrying* and *feeling sad*, and those in the *Behavioral Problems* class were less likely to endorse *being slapped/hit/hurt*; those in the *Emotional Problems* class were more likely to endorse *feeling sad*. In Malawi, boys were more likely to be in the *Maladjusted* class (16% boys, 14% girls), but girls were more likely to be in the *Emotional Problems* (21% boys, 27% girls) and *Behavioral Problems* (19% boys, 21% girls) classes. Girls in the *Behavioral Problems* class were less likely to endorse

bullying/threatening, *slapping/hitting/hurting*, and *substance use*. In Indonesia, boys were more likely to be in the *Behavioral Problems* (21% boys, 10% girls) and *Maladjusted* (8% boys, 5% girls) classes, whereas girls were more likely to be in the *Emotional Problems* class (24% boys, 33% girls). Boys in Indonesia had a substantially higher likelihood of reporting lifetime *substance use* across all of the classes, as well as *sleeplessness* in the *Emotional Problems* and *Maladjusted* classes, *bullying/threatening* in the *Behavioral Problems* and *Maladjusted* classes, *thinking of self-harm* in the *Emotional Problems* class, and *being slapped/hit/hurt* in the *Behavioral Problems* class. In China, boys were more likely to be in the *Maladjusted* class (13% boys, 7% girls), but girls were more likely to be in the *Emotional Problems* class (23% boys, 33% girls). Girls in the *Maladjusted* class were more likely to endorse *thinking of self-harm*, and less likely to endorse *being slapped/hit/hurt*. Boys in the *Emotional Problems* class had a higher likelihood of reporting *thinking of self-harm*, *being teased/called names*, and *being slapped/hit/hurt*.

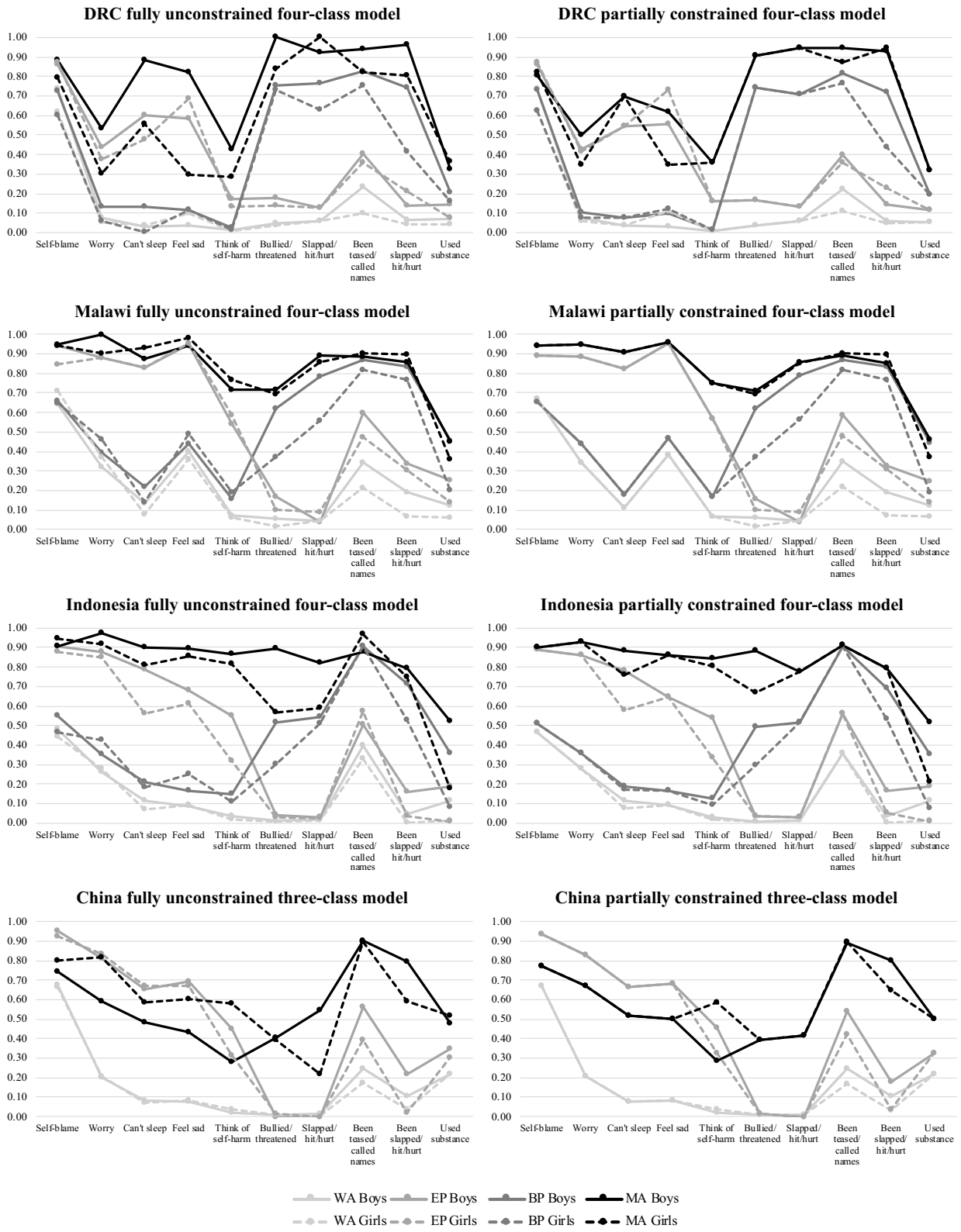


Figure 3.2. Estimated item-response probabilities for the fully unconstrained and partially constrained multi-group latent class models in each country

Note. WA = Well-Adjusted; EP = Emotional Problems; BP = Behavioral Problems; MA = Maladjusted.

3.5 Discussion

The current study used a person-centered analytic approach to investigate variations in psychosocial development during early adolescence (ages 10-14), with a specific focus on youth living in low-resource urban settings in DRC, Malawi, Indonesia, and China. Despite immense cultural and contextual variability across the four study countries, we found striking similarities in patterns of emotional and behavioral problems. Results supported the existence of four general subgroups: a *Well-Adjusted* class, with very few problems; an *Emotional Problems* class, with heightened symptoms of depression and anxiety; a *Behavioral Problems* class (not present in China), with elevated involvement in aggressive behaviors, peer victimization, and substance use; and a *Maladjusted* class, with co-occurring emotional and behavioral problems. These findings align with prior research conducted in Italy and the Netherlands, which uncovered very similar four-class results among community samples of early adolescents (Bianchi et al., 2017; Kretschmer et al., 2015); equivalent subgroups have also emerged in studies including older adolescents in the United States, New Zealand, and China (Bonadio et al., 2016; Brinkman et al., 2016; Ma et al., 2019; Noel et al., 2013). Notably, a recent systemic review of studies utilizing LCA to investigate patterns of mental health problems in children found that for those examining both emotional and behavioral problems, the most common outcome was a four-class solution including asymptomatic, purely emotional, purely behavioral, and comorbid classes (Petersen et al., 2019). Together, these findings suggest that not only are these psychosocial risk patterns widespread among early adolescents across diverse global settings – including low-, middle-, and high-income country contexts – but that they also may have stability from childhood through adolescence.

A further notable finding relates to the existence of a *Maladjusted* class (4-15%) across countries, characterized by elevated levels of depressive symptoms, anxiety symptoms, aggressive behaviors, peer victimization, and substance use. This aligns with the work of Althoff et al. (2010), who first utilized the term "dysregulation profile" to describe a subgroup of children and adolescents with co-occurring internalizing symptoms, attention issues, and aggressive behaviors. Prior research on the dysregulation profile has found evidence for its existence among adolescents in a diverse set of countries around the globe, including a number of LMICs, with prevalences varying between 1% and 26% in community samples (Jordan et al., 2016; Rescorla et al., 2020). While we included a broader spectrum of emotional and behavioral indicators than those traditionally comprising the dysregulation profile, our findings lend support for the presence of this subgroup among adolescents living in situations of adversity worldwide. Moreover, our inclusion of a wider range of psychosocial indicators – including those related to bullying and substance use – aligns with prior studies suggesting that adolescents who exhibit dysregulation are likely to do so across multiple emotional and behavioral domains (Biederman et al., 2012; Deutz et al., 2016; Haltigan et al., 2018; Masi et al., 2015). This has particular relevance to early intervention efforts, as it suggests that adolescents who fall within this vulnerable subgroup may especially benefit from targeted services meeting both their emotional and behavioral needs.

Despite the overall consistency in patterns of emotional and behavioral problems across countries, we uncovered several important differences that merit further discussion. In particular, the lack of a clear *Behavioral Problems* class in China is noteworthy, as it speaks to the influence of cultural factors in the expression of psychosocial risk among early adolescents. In China, we hypothesize that traditional cultural values around social harmony may inhibit the development and expression of aggressive and delinquent behaviors, diminishing the likelihood that youth

without any underlying emotional issues would engage in such behaviors (Chen, 2010). To note, two prior studies have utilized LPA to examine co-occurring emotional and behavioral problems among Chinese adolescents: one focused on *left-behind* adolescents in rural eastern China (Zhao et al., 2019), and one comparing Tibetan and Han adolescents in the north (Ma et al., 2019). In both studies, a subgroup emerged that was characterized by heightened behavioral issues (e.g., aggressive, rule-breaking, and antisocial behaviors), which the authors labeled as an "externalizing problems" profile. In both cases, however, adolescents belonging to this subgroup *also* had moderate-to-high levels of emotional issues (e.g., depressive symptoms, loneliness, and negative affect); as such, they more closely resemble those that we have classified as "maladjusted." This strengthens our hypothesis that there may be unique factors in China which diminish the likelihood of a purely behavioral class among adolescents.

A further difference is present in the country-specific nuances within these latent classes. In particular, while the overall class structures were relatively consistent across countries, the conditional probabilities of emotional and behavioral indicators within equivalent classes demonstrated marked variability. This manifested most strongly in the *Maladjusted* class, which had comparatively lower probabilities of depressive and anxiety symptoms in DRC and China, and lower endorsement of aggressive behaviors in China. Likewise, in the *Well-Adjusted* class, there were notably higher levels of substance use in China compared to the other countries, and there were somewhat elevated levels of *worrying* and *being teased/called names* in Malawi and Indonesia. While such results can partially be explained by empirical differences between samples – for instance, the lower overall prevalence of reported emotional problems in the DRC sample – they are again suggestive of the role that cultural factors can play in the manifestation of psychosocial risk. For example, prior research has found the use of alcohol to be relatively

normative among Chinese youth, with high rates of alcohol initiation before the age of 13 (Feng & Newman, 2016; Xing et al., 2006). Qualitative studies have suggested that moderate drinking in social settings is widely accepted among adolescents (Yoon et al., 2015, 2017), and may be facilitated by a traditional drinking culture that values alcohol for its promotion of sociability and conviviality (Cochrane et al., 2003). Thus, we might expect a subset of "well-adjusted" Chinese adolescents to report experiences of lifetime substance use, as was observed in the current study. Similarly, in both Indonesia and Malawi, it is possible that being teased or called names is part of the habitual juvenile interactions between youth, and therefore does not always carry the serious consequences associated with more severe forms of bullying (Kubwalo et al., 2013; Yusuf et al., 2019).

Finally, through tests of measurement invariance, we found that both the prevalence and nature of psychosocial risk classes differed significantly by sex within each country, emphasizing the importance of explicitly testing for measurement invariance by sex within person-centered analyses rather than simply controlling for sex as a covariate. While this is not a surprising finding given the well-established differences in emotional and behavioral challenges between boys and girls in this age group (Zahn-Waxler et al., 2015), some of the specific results run counter to our expectations. In particular, there was little consistency across countries in terms of which indicators exhibited sex-specific invariance: in Malawi, there was invariance in the emotional but not behavioral indicators, whereas in DRC, Indonesia, and China, there was invariance in a divergent set of emotional and behavioral indicators. While gender norms are greatly influenced by cultural environments, normative values around masculinity in many settings encourage the adoption of behaviors such as interpersonal violence and substance use (Ragonese et al., 2019). These gender norms often crystalize in early adolescence (Chandra-Mouli et al., 2018; Hill &

Lynch, 1983), and may help explain the outsized prevalence of behavioral issues among adolescent boys (Patton et al., 2018). In the context of the current study, we might expect such underlying gender norms to manifest through measurement noninvariance of behavioral indicators, as was observed in Malawi: this would indicate that boys and girls with equivalent levels of underlying psychosocial risk were outwardly expressing this risk in different ways. Our findings, however, tell a more nuanced story: besides *being slapped/hit/hurt*, no single psychosocial indicator demonstrated noninvariance across countries. This suggests a complex relationship in the translation of gender norms into behaviors that defies simple explanations or interventions (Courtenay, 2000).

The sex-specific models in each country also suggested that there may be especially heightened vulnerability among boys in this age group. Boys were more likely to be in the *Maladjusted* class across countries, with class prevalences of up to 6% higher than their female counterparts. Further, boys within this subgroup in DRC and Indonesia had a higher likelihood of endorsing a number of emotional and behavioral indicators (i.e., *worrying* and *feeling sad* in DRC; *sleeplessness*, *bullying/threatening*, and *substance use* in Indonesia). These findings align with an emerging body of research which suggests that adolescent boys and young men face disproportionately high mental health challenges compared to their female peers (Rice et al., 2018). These challenges are thought to stem from a confluence of related factors – including a greater disconnection from health services, the stigmatization of emotional vulnerability, and a lack of recognition of masculine variants of distress – and ultimately contribute to elevated rates of violence, substance abuse, suicide, and premature death among men throughout the life course (Bell et al., 2013; Cavanagh et al., 2017; Mokdad et al., 2016; Rice et al., 2018). While global health and development policies have historically focused on girls and young women due to the

stark disadvantages that they face worldwide (Baker et al., 2014; Hawkes & Buse, 2013), such findings have led a number of researchers to call for greater gender sensitivity in programs targeting mental health and well-being among young people (Amin et al., 2018; Gwyther et al., 2019; Rice et al., 2018). Our results lend further support to such calls to action, as they suggest that early adolescent boys may experience particular psychosocial risks that should be addressed through intervention activities.

Together, our findings have important implications for preventive interventions targeting psychosocial adjustment among early adolescents in LMICs. First, the heterogeneous nature of the latent classes speaks to the incompatibility of a "one-size-fits-all approach" for addressing psychosocial risks among this age group. Instead, it is clear that across diverse contexts, there is a need for targeted intervention strategies that take into account youth's distinctive emotional and/or behavioral needs. Second, the marked sex differences within equivalent latent classes are indicative that such approaches should be gender sensitive in order to maximize their impact. Indeed, prior studies of mental health and psychosocial support interventions conducted among adolescents in LMICs have often identified disparate effects for boys and girls (Betancourt et al., 2012; Bolton et al., 2007; Qouta et al., 2012; Tol et al., 2012, 2014): this supports the notion that intervention components may need to be tailored in order to appropriately address unique developmental challenges faced by boys and girls in this age group. In practice, this might mean a mix of gender-specific and combined group activities within intervention programs. Third, the presence of a *Maladjusted* class across countries can be used to guide resource allocation decisions. While prevention strategies would ideally follow a multi-tiered approach – including some universal interventions targeting all adolescents, and some selected or indicated interventions targeting only those at the greatest risk (O'Connell et al., 2009) – resource limitations in LMICs

often make it necessary to prioritize populations deemed to be the most vulnerable. These findings could be used to inform such prioritization, as they suggest that there may be a particular need for services among a small subgroup of adolescents with co-occurring emotional and behavioral problems. Finally, and perhaps most importantly, the consistency in psychosocial risk patterns across diverse country settings suggests that interventions targeting early adolescents living in contexts of adversity may have broad cross-national applicability. Given the dearth of evidence from LMICs (Fazel et al., 2014; Patel et al., 2008), these results support the adaptation and implementation of existing interventions with proven success in reaching vulnerable youth.

The current study has several important limitations to consider. Across countries, LCA was used as an exploratory data analysis technique, with researcher judgment factoring heavily into the selection of final models, especially given inconsistencies between various fit indices. While such judgments may make results difficult to replicate, we have documented our methodological decision-making extensively in order to maximize transparency and encourage replication (Collins & Lanza, 2010; Schoot et al., 2017). In addition, the data driven nature of LCA means that identified classes could be sample-specific statistical artifacts rather than naturally occurring subgroups (Bauer & Curran, 2004); however, the consistency of findings across four separate populations, as well as their similarity to those of external researchers (Bianchi et al., 2017; Kretschmer et al., 2015), suggests the reliability and validity of subgroups. While we considered a range of emotional and behavioral problems, there are further indicators that would have been beneficial to include in our analyses in order to better align with prior research. In particular, future studies should focus on the ways in which attention problems coincide with the other included emotional and behavioral indicators as they have been found to be an essential part of the dysregulation profile in other contexts (Althoff et al., 2010; Jordan et al., 2016). While symptoms

of depression and anxiety were originally measured using items with Likert-type response scales, these indicators were dichotomized for analysis. Although this approach increases analytic interpretability and allows for greater comparability across countries, it also results in a loss of information. In addition, all data were assessed by adolescent self-report and are therefore susceptible to social desirability bias, although it is likely that the use of CASI helped to mitigate this problem (Le et al., 2006). Finally, the cross-sectional nature of these data precludes an examination of the stability of these classes over time; given the longitudinal nature of the GEAS, however, there is an opportunity to explore this issue once data become available.

Despite these limitations, this study has a number of notable strengths, including its large sample size, its comparison of early adolescents across four LMICs, its simultaneous analysis of emotional and behavioral problems, and its novel examination of sex-related measurement invariance. Using a person-centered analytic approach, we identified four consistent classes of psychosocial challenges among early adolescents across DRC, Malawi, Indonesia, and China. Tests of measurement invariance indicated there were nuances between boys and girls within equivalent classes, suggesting the importance of gender in shaping the expression of psychosocial risk. Taken together, these findings can be used to support the tailoring of interventions targeting psychosocial adjustment among subgroups of early adolescents with increased vulnerability, and indicate that such programs may have wide utility across diverse cross-national settings.

3.6 References

Abbasi-Ghahramanloo, A., Heshmat, R., Safiri, S., Esmaeil Motlagh, M., Ardalan, G., Mahdavi-Gorabi, A., Asayesh, H., Qorbani, M., & Kelishadi, R. (2018). Risk-Taking Behaviors in Iranian Children and Adolescents: A Latent Class Analysis Approach: Caspian IV Study. *Journal of Research in Health Sciences*, *18*(4), e00428.

Akaike, H. (1987). Factor analysis and AIC. *Psychometrika*, *52*(3), 317–332. https://doi.org/10.1007/BF02294359

Althoff, R. R., Verhulst, F. C., Rettew, D. C., Hudziak, J. J., & van der Ende, J. (2010). Adult outcomes of childhood dysregulation: A 14-year follow-up study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *49*(11), 1105–1116. https://doi.org/10.1016/j.jaac.2010.08.006

Amin, A., Kågesten, A., Adebayo, E., & Chandra-Mouli, V. (2018). Addressing Gender Socialization and Masculinity Norms Among Adolescent Boys: Policy and Programmatic Implications. *The Journal of Adolescent Health*, *62*(3 Suppl), S3–S5. https://doi.org/10.1016/j.jadohealth.2017.06.022

Angold, A., Costello, E. J., & Erkanli, A. (1999). Comorbidity. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *40*(1), 57–87.

Assanangkornchai, S., Li, J., McNeil, E., & Saingam, D. (2018). Clusters of alcohol and drug use and other health-risk behaviors among Thai secondary school students: A latent class analysis. *BMC Public Health*, *18*(1), 1272. https://doi.org/10.1186/s12889-018-6205-z

Baker, P., Dworkin, S. L., Tong, S., Banks, I., Shand, T., & Yamey, G. (2014). The men's health gap: Men must be included in the global health equity agenda. *Bulletin of the World Health Organization*, *92*(8), 618–620. https://doi.org/10.2471/BLT.13.132795

Bauer, D. J., & Curran, P. J. (2004). The integration of continuous and discrete latent variable models: Potential problems and promising opportunities. *Psychological Methods*, *9*(1), 3–29. https://doi.org/10.1037/1082-989X.9.1.3

Bell, D. L., Breland, D. J., & Ott, M. A. (2013). Adolescent and young adult male health: A review. *Pediatrics*, *132*(3), 535–546. https://doi.org/10.1542/peds.2012-3414

Betancourt, T. S., Newnham, E. A., Brennan, R. T., Verdeli, H., Borisova, I., Neugebauer, R., Bass, J., & Bolton, P. (2012). Moderators of treatment effectiveness for war-affected youth with depression in northern Uganda. *Journal of Adolescent Health*, *51*(6), 544–550. https://doi.org/10.1016/j.jadohealth.2012.02.010

Bianchi, V., Brambilla, P., Garzitto, M., Colombo, P., Fornasari, L., Bellina, M., Bonivento, C., Tesei, A., Piccin, S., Conte, S., Perna, G., Frigerio, A., Castiglioni, I., Fabbro, F., Molteni, M., & Nobile, M. (2017). Latent classes of emotional and behavioural problems in epidemiological and referred samples and their relations to DSM-IV diagnoses. *European Child & Adolescent Psychiatry*, *26*(5), 549–557. https://doi.org/10.1007/s00787-016-0918-2

Biederman, J., Petty, C. R., Day, H., Goldin, R. L., Spencer, T., Faraone, S. V., Surman, C. B. H., & Wozniak, J. (2012). Severity of the Aggression/Anxiety-Depression/Attention (A-A-A) CBCL Profile Discriminates between Different Levels of Deficits in Emotional Regulation in Youth with ADHD. *Journal of Developmental and Behavioral Pediatrics*, *33*(3), 236–243. https://doi.org/10.1097/DBP.0b013e3182475267

Blum, R. W., Li, M., & Naranjo-Rivera, G. (2019). Measuring adverse child experiences among young adolescents globally: Relationships with depressive symptoms and violence perpetration. *Journal of Adolescent Health*, *65*(1), 86–93.

Bolton, P., Bass, J., Betancourt, T., Speelman, L., Onyango, G., Clougherty, K. F., Neugebauer, R., Murray, L. K., & Verdeli, H. (2007). Interventions for depression symptoms among adolescent survivors of war and displacement in northern Uganda: A randomized controlled trial. *JAMA*, *298*(5), 519–527. https://doi.org/10.1001/jama.298.5.519

Bonadio, F. T., Dynes, M., Lackey, J., Tompsett, C., & Amrhein, K. (2016). Grouping Youth With Similar Symptoms: A Person-Centered Approach to Transdiagnostic Subgroups. *Journal of Clinical Psychology*, *72*(7), 676–688. https://doi.org/10.1002/jclp.22274

Boylan, K., Vaillancourt, T., Boyle, M., & Szatmari, P. (2007). Comorbidity of internalizing disorders in children with oppositional defiant disorder. *European Child & Adolescent Psychiatry*, *16*(8), 484–494. https://doi.org/10.1007/s00787-007-0624-1

Brinkman, T. M., Li, C., Vannatta, K., Marchak, J. G., Lai, J.-S., Prasad, P. K., Kimberg, C., Vuotto, S., Di, C., Srivastava, D., Robison, L. L., Armstrong, G. T., & Krull, K. R. (2016). Behavioral, Social, and Emotional Symptom Comorbidities and Profiles in Adolescent Survivors of Childhood Cancer: A Report From the Childhood Cancer Survivor Study. *Journal of Clinical Oncology*, *34*(28), 3417–3425. https://doi.org/10.1200/JCO.2016.66.4789

Cavanagh, A., Wilson, C. J., Kavanagh, D. J., & Caputi, P. (2017). Differences in the Expression of Symptoms in Men Versus Women with Depression: A Systematic Review and Meta-analysis. *Harvard Review of Psychiatry*, *25*(1), 29–38. https://doi.org/10.1097/HRP.0000000000000128

Chandra-Mouli, V., Plesons, M., & Amin, A. (2018). Addressing harmful and unequal gender norms in early adolescence. *Nature Human Behaviour*, *2*(4), 239–240. https://doi.org/10.1038/s41562-018-0318-3

Chen, X. (2010). Socio-emotional development in Chinese children. In *The Oxford handbook of Chinese psychology* (pp. 37–52). Oxford University Press.

Clayborne, Z. M., Varin, M., & Colman, I. (2019). Systematic Review and Meta-Analysis: Adolescent Depression and Long-Term Psychosocial Outcomes. *Journal of the American Academy of Child and Adolescent Psychiatry*, *58*(1), 72–79. https://doi.org/10.1016/j.jaac.2018.07.896

Cochrane, J., Chen, H., Conigrave, K. M., & Hao, W. (2003). Alcohol use in China. *Alcohol and Alcoholism*, *38*(6), 537–542. https://doi.org/10.1093/alcalc/agg111

Collins, L. M., & Lanza, S. T. (2010). *Latent class and latent transition analysis: With applications in the social, behavioral, and health sciences*. John Wiley & Sons.

Copeland, W. E., Wolke, D., Angold, A., & Costello, E. J. (2013). Adult Psychiatric Outcomes of Bullying and Being Bullied by Peers in Childhood and Adolescence. *JAMA Psychiatry*, *70*(4), 419–426. https://doi.org/10.1001/jamapsychiatry.2013.504

Courtenay, W. H. (2000). Constructions of masculinity and their influence on men's well-being: A theory of gender and health. *Social Science & Medicine (1982)*, *50*(10), 1385–1401. https://doi.org/10.1016/s0277-9536(99)00390-1

Cummings, C. M., Caporino, N. E., & Kendall, P. C. (2014). Comorbidity of Anxiety and Depression in Children and Adolescents: 20 Years After. *Psychological Bulletin*, *140*(3), 816–845. https://doi.org/10.1037/a0034733

Dembo, R., Briones, R., Gulledge, L., Karas, L., Winters, K. C., Belenko, S., & Greenbaum, P. E. (2012). Stress, Mental Health and Substance Abuse Problems In a Sample of Diversion Program Youth: An Exploratory Latent Class Analysis. *Journal of Child & Adolescent Substance Abuse*, *21*(2), 130–155. https://doi.org/10.1080/1067828X.2012.662115

Deutz, M. H. F., Geeraerts, S. B., van Baar, A. L., Deković, M., & Prinzie, P. (2016). The Dysregulation Profile in middle childhood and adolescence across reporters: Factor structure, measurement invariance, and links with self-harm and suicidal ideation. *European Child & Adolescent Psychiatry*, *25*(4), 431–442. https://doi.org/10.1007/s00787-015-0745-x

Doering, S., Lichtenstein, P., Gillberg, C., Middeldorp, C. M., Bartels, M., Kuja-Halkola, R., & Lundström, S. (2019). Anxiety at age 15 predicts psychiatric diagnoses and suicidal ideation in late adolescence and young adulthood: Results from two longitudinal studies. *BMC Psychiatry*, *19*(1), 1–11. https://doi.org/10.1186/s12888-019-2349-3

Doran, N., Luczak, S. E., Bekman, N., Koutsenok, I., & Brown, S. A. (2012). Adolescent Substance Use and Aggression: A Review. *Criminal Justice and Behavior*. https://doi.org/10.1177/0093854812437022

Dyer, M. L., Easey, K. E., Heron, J., Hickman, M., & Munafò, M. R. (2019). Associations of child and adolescent anxiety with later alcohol use and disorders: A systematic review and meta-analysis of prospective cohort studies. *Addiction*, *114*(6), 968–982. https://doi.org/10.1111/add.14575

Eastman, M., Foshee, V., Ennett, S., Sotres-Alvarez, D., Reyes, H. L. M., Faris, R., & North, K. (2018). Profiles of internalizing and externalizing symptoms associated with bullying victimization. *Journal of Adolescence*, *65*, 101–110. https://doi.org/10.1016/j.adolescence.2018.03.007

Ezpeleta, L., Domènech, J. M., & Angold, A. (2006). A comparison of pure and comorbid CD/ODD and depression. *Journal of Child Psychology and Psychiatry*, *47*(7), 704–712. https://doi.org/10.1111/j.1469-7610.2005.01558.x

Fatusi, A. O., & Hindin, M. J. (2010). Adolescents and youth in developing countries: Health and development issues in context. *Journal of Adolescence*, *33*(4), 499–508.

Fazel, M., Patel, V., Thomas, S., & Tol, W. (2014). Mental health interventions in schools in low-income and middle-income countries. *The Lancet Psychiatry*, *1*(5), 388–398. https://doi.org/10.1016/S2215-0366(14)70357-8

Feng, Y., & Newman, I. M. (2016). Estimate of adolescent alcohol use in China: A meta-analysis. *Archives of Public Health*, *74*, 45. https://doi.org/10.1186/s13690-016-0157-5

Gibb, S. J., Horwood, L. J., & Fergusson, D. M. (2011). Bullying victimization/perpetration in childhood and later adjustment: Findings from a 30 year longitudinal study. *Journal of Aggression, Conflict and Peace Research*, *3*(2), 82–88. https://doi.org/10.1108/17596591111132891

Gobbi, G., Atkin, T., Zytynski, T., Wang, S., Askari, S., Boruff, J., Ware, M., Marmorstein, N., Cipriani, A., Dendukuri, N., & Mayo, N. (2019). Association of Cannabis Use in Adolescence and Risk of Depression, Anxiety, and Suicidality in Young Adulthood: A Systematic Review and Meta-analysis. *JAMA Psychiatry*, *76*(4), 426–434. https://doi.org/10.1001/jamapsychiatry.2018.4500

González-Forteza, C., Juárez-López, C. E., Jiménez, A., Montejo-León, L., Rodríguez-Santisbón, U. R., & Wagner, F. A. (2017). Suicide behavior and associated psychosocial factors among adolescents in Campeche, Mexico. *Preventive Medicine*, *105*, 206–211. https://doi.org/10.1016/j.ypmed.2017.09.011

Gwyther, K., Swann, R., Casey, K., Purcell, R., & Rice, S. M. (2019). Developing young men's wellbeing through community and school-based programs: A systematic review. *PloS One*, *14*(5), e0216955. https://doi.org/10.1371/journal.pone.0216955

Hale, D. R., & Viner, R. M. (2016). The correlates and course of multiple health risk behaviour in adolescence. *BMC Public Health*, *16*(1), 458.

Hall, W. D., Patton, G., Stockings, E., Weier, M., Lynskey, M., Morley, K. I., & Degenhardt, L. (2016). Why young people's substance use matters for global health. *The Lancet Psychiatry*, *3*(3), 265–279. https://doi.org/10.1016/S2215-0366(16)00013-4

Haltigan, J. D., Aitken, M., Skilling, T., Henderson, J., Hawke, L., Battaglia, M., Strauss, J., Szatmari, P., & Andrade, B. F. (2018). "P" and "DP:" Examining Symptom-Level Bifactor Models of Psychopathology and Dysregulation in Clinically Referred Children and Adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, *57*(6), 384–396. https://doi.org/10.1016/j.jaac.2018.03.010

Hawkes, S., & Buse, K. (2013). Gender and global health: Evidence, policy, and inconvenient truths. *The Lancet*, *381*(9879), 1783–1787. https://doi.org/10.1016/S0140-6736(13)60253-6

Haynie, D. L., Nansel, T., Eitel, P., Crump, A. D., Saylor, K., Yu, K., & Simons-Morton, B. (2001). Bullies, Victims, and Bully/Victims: Distinct Groups of At-Risk Youth. *The Journal of Early Adolescence*, *21*(1), 29–49. https://doi.org/10.1177/0272431601021001002

Hill, J. P., & Lynch, M. E. (1983). The Intensification of Gender-Related Role Expectations during Early Adolescence. In J. Brooks-Gunn & A. C. Petersen (Eds.), *Girls at Puberty: Biological and Psychosocial Perspectives* (pp. 201–228). Springer US. https://doi.org/10.1007/978-1-4899-0354-9_10

Jessor, R., & Jessor, S. L. (1977). *Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth*. Academic.

Johnson, D., Dupuis, G., Piche, J., Clayborne, Z., & Colman, I. (2018). Adult mental health outcomes of adolescent depression: A systematic review. *Depression and Anxiety*, *35*(8), 700–716. https://doi.org/10.1002/da.22777

Jordan, P., Rescorla, L. A., Althoff, R. R., & Achenbach, T. M. (2016). International Comparisons of the Youth Self-Report Dysregulation Profile: Latent Class Analyses in 34 Societies. *Journal of the American Academy of Child and Adolescent Psychiatry*, *55*(12), 1046–1053. https://doi.org/10.1016/j.jaac.2016.08.012

Kankaraš, M., Moors, G., & Vermunt, J. K. (2010). Testing for measurement invariance with latent class analysis. In E. Davidov, P. Schmidt, J. Billiet, & B. Meuleman (Eds.), *Cross-cultural analysis: Methods and applications* (pp. 359–384). Routledge.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, *62*(6), 593–602. https://doi.org/10.1001/archpsyc.62.6.593

Khantzian, E. J. (1997). The self-medication hypothesis of substance use disorders: A reconsideration and recent applications. *Harvard Review of Psychiatry*, *4*(5), 231–244. https://doi.org/10.3109/10673229709030550

Kretschmer, T., Barker, E. D., Dijkstra, J. K., Oldehinkel, A. J., & Veenstra, R. (2015). Multifinality of peer victimization: Maladjustment patterns and transitions from early to mid-adolescence. *European Child & Adolescent Psychiatry*, *24*(10), 1169–1179. https://doi.org/10.1007/s00787-014-0667-z

Kubwalo, H. W., Muula, A. S., Siziya, S., Pasupulati, S., & Rudatsikira, E. (2013). Prevalence and correlates of being bullied among in-school adolescents in Malawi: Results from the 2009 Global School-Based Health Survey. *Malawi Medical Journal*, *25*(1), 12–14.

Lanza, S. T., & Cooper, B. R. (2016). Latent Class Analysis for Developmental Research. *Child Development Perspectives*, *10*(1), 59–64. https://doi.org/10.1111/cdep.12163

Lanza, S. T., & Rhoades, B. L. (2013). Latent class analysis: An alternative perspective on subgroup analysis in prevention and treatment. *Prevention Science*, *14*(2), 157–168. https://doi.org/10.1007/s11121-011-0201-1

Le, L. C., Blum, R. W., Magnani, R., Hewett, P. C., & Do, H. M. (2006). A pilot of audio computer-assisted self-interview for youth reproductive health research in Vietnam. *Journal of Adolescent Health*, *38*(6), 740–747. https://doi.org/10.1016/j.jadohealth.2005.07.008

Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1995). Adolescent Psychopathology: III. The Clinical Consequences of Comorbidity. *Journal of the American Academy of Child & Adolescent Psychiatry*, *34*(4), 510–519. https://doi.org/10.1097/00004583-199504000-00018

Lo, Y., Mendell, N. R., & Rubin, D. B. (2001). Testing the Number of Components in a Normal Mixture. *Biometrika*, *88*(3), 767–778. JSTOR.

Luk, J. W., Wang, J., & Simons-Morton, B. G. (2012). The co-occurrence of substance use and bullying behaviors among US adolescents: Understanding demographic characteristics and social influences. *Journal of Adolescence*, *35*(5), 1351–1360.

Ma, C., Ma, Y., Wang, Y., & Lan, X. (2019). Empathy and Psychosocial Adjustment in Tibetan and Han Adolescents: A Person-Centered Approach. *Frontiers in Psychology*, *10*, 1896. https://doi.org/10.3389/fpsyg.2019.01896

Masi, G., Muratori, P., Manfredi, A., Pisano, S., & Milone, A. (2015). Child behaviour checklist emotional dysregulation profiles in youth with disruptive behaviour disorders: Clinical correlates and treatment implications. *Psychiatry Research*, *225*(1–2), 191–196. https://doi.org/10.1016/j.psychres.2014.11.019

Masyn, K. E. (2017). Measurement invariance and differential item functioning in latent class analysis with stepwise multiple indicator multiple cause modeling. *Structural Equation Modeling: A Multidisciplinary Journal*, *24*(2), 180–197.

McCarthy, K., Brady, M., & Hallman, K. (2016). *Investing When It Counts: Reviewing the Evidence and Charting a Course of Research and Action for Very Young Adolescents*. Population Council.

Melton, T. H., Croarkin, P. E., Strawn, J. R., & McClintock, S. M. (2016). Comorbid Anxiety and Depressive Symptoms in Children and Adolescents: A Systematic Review and Analysis. *Journal of Psychiatric Practice*, *22*(2), 84–98. https://doi.org/10.1097/PRA.0000000000000132

Mmari, K., Blum, R. W., Atnafou, R., Chilet, E., Meyer, S. D., El-Gibaly, O., Basu, S., Bello, B., Maina, B., & Zuo, X. (2017). Exploration of gender norms and socialization among early adolescents: The use of qualitative methods for the Global Early Adolescent Study. *Journal of Adolescent Health*, *61*(4), S12–S18.

Mmari, K., Cooper, D., Moreau, C., Koenig, L., Martinez, M., Mafuta, E., Kayembe, P., Meyer, S. D., Michielson, K., Yu, C., Zuo, X., & Blum, R. W. (Unpublished). *The social context of early adolescents in the Global Early Adolescent Study*.

Mokdad, A. H., Forouzanfar, M. H., Daoud, F., Mokdad, A. A., El Bcheraoui, C., Moradi-Lakeh, M., Kyu, H. H., Barber, R. M., Wagner, J., Cercy, K., Kravitz, H., Coggeshall, M., Chew,

A., O'Rourke, K. F., Steiner, C., Tuffaha, M., Charara, R., Al-Ghamdi, E. A., Adi, Y., … Murray, C. J. L. (2016). Global burden of diseases, injuries, and risk factors for young people's health during 1990-2013: A systematic analysis for the Global Burden of Disease Study 2013. *The Lancet*, *387*(10036), 2383–2401. https://doi.org/10.1016/S0140-6736(16)00648-6

Moore, S. E., Norman, R. E., Sly, P. D., Whitehouse, A. J. O., Zubrick, S. R., & Scott, J. (2014). Adolescent peer aggression and its association with mental health and substance use in an Australian cohort. *Journal of Adolescence*, *37*(1), 11–21. https://doi.org/10.1016/j.adolescence.2013.10.006

Moreau, C., Li, M., Meyer, S. D., Manh, L. V., Guiella, G., Acharya, R., Bello, B., Maina, B., & Mmari, K. (2019). Measuring gender norms about relationships in early adolescence: Results from the global early adolescent study. *SSM-Population Health*, *7*, 100314.

Muthén, B., & Shedden, K. (1999). Finite mixture modeling with mixture outcomes using the EM algorithm. *Biometrics*, *55*(2), 463–469. https://doi.org/10.1111/j.0006-341x.1999.00463.x

Muthén, L. K., & Muthén, B. O. (1998). *Mplus User's Guide. Eighth Edition.* Muthén & Muthén.

Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B., & Scheidt, P. (2001). Bullying Behaviors Among US Youth: Prevalence and Association With Psychosocial Adjustment. *JAMA*, *285*(16), 2094–2100. https://doi.org/10.1001/jama.285.16.2094

Nelon, J. L., De Pedro, K. T., Gilreath, T. D., Patterson, M. S., Holden, C. B., & Esquivel, C. H. (2019). A latent class analysis of the co-occurrence of sexual violence, substance use, and mental health in youth. *Substance Use & Misuse*, *54*(12), 1938–1944. https://doi.org/10.1080/10826084.2019.1618337

Noel, H., Denny, S., Farrant, B., Rossen, F., Teevale, T., Clark, T., Fleming, T., Bullen, P., Sheridan, J., & Fortune, S. (2013). Clustering of adolescent health concerns: A latent class analysis of school students in N ew Z ealand. *Journal of Paediatrics and Child Health*, *49*(11), 935–941.

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling*, *14*(4), 535–569.

Nylund-Gibson, K., & Hart, S. R. (2014). Latent Class Analysis in Prevention Science. In Z. Sloboda & H. Petras (Eds.), *Defining Prevention Science* (pp. 493–511). Springer US. https://doi.org/10.1007/978-1-4899-7424-2_21

O'Connell, M. E., Boat, T., & Warner, K. E. (Eds.). (2009). *Preventing Mental, Emotional, and Behavioral Disorders Among Young People: Progress and Possibilities*. National Academies Press (US). http://www.ncbi.nlm.nih.gov/books/NBK32775/

Patalay, P., Fonagy, P., Deighton, J., Belsky, J., Vostanis, P., & Wolpert, M. (2015). A general psychopathology factor in early adolescence. *The British Journal of Psychiatry*, *207*(1), 15–22. https://doi.org/10.1192/bjp.bp.114.149591

Patel, V., Flisher, A. J., Hetrick, S., & McGorry, P. (2007). Mental health of young people: A global public-health challenge. *The Lancet*, *369*(9569), 1302–1313.

Patel, V., Flisher, A. J., Nikapota, A., & Malhotra, S. (2008). Promoting child and adolescent mental health in low and middle income countries. *Journal of Child Psychology and Psychiatry*, *49*(3), 313–334.

Patton, G. C., Coffey, C., Cappa, C., Currie, D., Riley, L., Gore, F., Degenhardt, L., Richardson, D., Astone, N., & Sangowawa, A. O. (2012). Health of the world's adolescents: A synthesis of internationally comparable data. *The Lancet*, *379*(9826), 1665–1675.

Patton, G. C., Darmstadt, G. L., Petroni, S., & Sawyer, S. M. (2018). A Gender Lens on the Health and Well-being of Young Males. *Journal of Adolescent Health*, *62*(3, Supplement), S6–S8. https://doi.org/10.1016/j.jadohealth.2017.06.020

Patton, G. C., Sawyer, S. M., Santelli, J. S., Ross, D. A., Afifi, R., Allen, N. B., Arora, M., Azzopardi, P., Baldwin, W., & Bonell, C. (2016). Our future: A Lancet commission on adolescent health and wellbeing. *The Lancet*, *387*(10036), 2423–2478.

Petersen, K. J., Qualter, P., & Humphrey, N. (2019). The Application of Latent Class Analysis for Investigating Population Child Mental Health: A Systematic Review. *Frontiers in Psychology*, *10*. https://doi.org/10.3389/fpsyg.2019.01214

Qouta, S. R., Palosaari, E., Diab, M., & Punamäki, R.-L. (2012). Intervention effectiveness among war-affected children: A cluster randomized controlled trial on improving mental health. *Journal of Traumatic Stress*, *25*(3), 288–298. https://doi.org/10.1002/jts.21707

Ragonese, C., Shand, T., & Barker, G. (2019). *Masculine Norms and Men's Health: Making the Connections*. Promundo-US.

Rescorla, L. A., Jordan, P., Zhang, S., Baelen-King, G., Althoff, R. R., Ivanova, M. Y., & International Aseba Consortium, null. (2020). Latent Class Analysis of the CBCL Dysregulation Profile for 6- to 16-Year-Olds in 29 Societies. *Journal of Clinical Child and Adolescent Psychology*, 1–14. https://doi.org/10.1080/15374416.2019.1697929

Rice, S. M., Purcell, R., & McGorry, P. D. (2018). Adolescent and Young Adult Male Mental Health: Transforming System Failures Into Proactive Models of Engagement. *Journal of*

Adolescent Health, *62*(3, Supplement), S9–S17. https://doi.org/10.1016/j.jadohealth.2017.07.024

Sawyer, S. M., Afifi, R. A., Bearinger, L. H., Blakemore, S.-J., Dick, B., Ezeh, A. C., & Patton, G. C. (2012). Adolescence: A foundation for future health. *The Lancet*, *379*(9826), 1630–1640.

Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, *7*(2), 147–177.

Schoot, R. van de, Sijbrandij, M., Winter, S. D., Depaoli, S., & Vermunt, J. K. (2017). The GRoLTS-Checklist: Guidelines for Reporting on Latent Trajectory Studies. *Structural Equation Modeling*, *24*(3), 451–467. https://doi.org/10.1080/10705511.2016.1247646

Schwartz, D., Proctor, L. J., & Chien, D. H. (2001). The aggressive victim of bullying: Emotional and behavioral dysregulation as a pathway to victimization by peers. In J. Juvonen & S. Graham (Eds.), *Peer harassment in school: The plight of the vulnerable and victimized* (pp. 147–174). The Guilford Press.

Schwarz, G. (1978). Estimating the Dimension of a Model. *The Annals of Statistics*, *6*(2), 461–464.

Sclove, S. L. (1987). Application of model-selection criteria to some problems in multivariate analysis. *Psychometrika*, *52*(3), 333–343. https://doi.org/10.1007/BF02294360

Sigurdson, J. F., Undheim, A. M., Wallander, J. L., Lydersen, S., & Sund, A. M. (2015). The long-term effects of being bullied or a bully in adolescence on externalizing and internalizing mental health problems in adulthood. *Child and Adolescent Psychiatry and Mental Health*, *9*(1), 42.

Silins, E., Horwood, L. J., Najman, J. M., Patton, G. C., Toumbourou, J. W., Olsson, C. A., Hutchinson, D. M., Degenhardt, L., Fergusson, D., Becker, D., Boden, J. M., Borschmann, R., Plotnikova, M., Youssef, G. J., Tait, R. J., Clare, P., Hall, W. D., & Mattick, R. P. (2018). Adverse adult consequences of different alcohol use patterns in adolescence: An integrative analysis of data to age 30 years from four Australasian cohorts. *Addiction*, *113*(10), 1811–1825. https://doi.org/10.1111/add.14263

Sourander, A., Jensen, P., Davies, M., Niemelä, S., Elonheimo, H., Ristkari, T., Helenius, H., Sillanmäki, L., Piha, J., Kumpulainen, K., Tamminen, T., Moilanen, I., & Almqvist, F. (2007). Who is at greatest risk of adverse long-term outcomes? The Finnish From a Boy to a Man study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *46*(9), 1148–1161. https://doi.org/10.1097/chi.0b013e31809861e9

Stapinski, L. A., Bowes, L., Wolke, D., Pearson, R. M., Mahedy, L., Button, K. S., Lewis, G., & Araya, R. (2014). Peer Victimization During Adolescence and Risk for Anxiety Disorders in Adulthood: A Prospective Cohort Study. *Depression and Anxiety*, *31*(7), 574–582. https://doi.org/10.1002/da.22270

Tol, W. A., Komproe, I. H., Jordans, M. J. D., Vallipuram, A., Sipsma, H., Sivayokan, S., Macy, R. D., & DE Jong, J. T. (2012). Outcomes and moderators of a preventive school-based mental health intervention for children affected by war in Sri Lanka: A cluster randomized trial. *World Psychiatry*, *11*(2), 114–122. https://doi.org/10.1016/j.wpsyc.2012.05.008

Tol, W. A., Komproe, I. H., Jordans, M. J., Ndayisaba, A., Ntamutumba, P., Sipsma, H., Smallegange, E. S., Macy, R. D., & Jong, J. T. D. (2014). School-based mental health intervention for children in war-affected Burundi: A cluster randomized trial. *BMC Medicine*, *12*(1), 56.

United Nations Children's Fund. (2012). *Progress for Children: A report card on adolescents. Number 10*. https://www.unicef.org/publications/index_62280.html

van Lang, N. D. J., Ferdinand, R. F., Ormel, J., & Verhulst, F. C. (2006). Latent class analysis of anxiety and depressive symptoms of the Youth Self-Report in a general population sample of young adolescents. *Behaviour Research and Therapy*, *44*(6), 849–860. https://doi.org/10.1016/j.brat.2005.06.004

Vaughn, M. G., Fu, Q., Perron, B. E., & Wu, L.-T. (2012). Risk profiles among adolescent nonmedical opioid users in the United States. *Addictive Behaviors*, *37*(8), 974–977. https://doi.org/10.1016/j.addbeh.2012.03.015

Wilkinson, A. L., Halpern, C. T., & Herring, A. H. (2016). Directions of the relationship between substance use and depressive symptoms from adolescence to young adulthood. *Addictive Behaviors*, *60*, 64–70. https://doi.org/10.1016/j.addbeh.2016.03.036

Williams, S., Dahan, J., Silverman, W. K., & Pettit, J. W. (2013). Heterogeneous classes of co-occurring externalizing symptoms in a sample of youth referred for anxiety disorders. *Journal of Anxiety Disorders*, *27*(3), 340–346. https://doi.org/10.1016/j.janxdis.2013.02.014

World Health Organization. (2018). *Helping Adolescents Thrive*. https://www.who.int/mental_health/maternal-child/guidelines_promotive_interventions/en/

Xing, Y., Ji, C., & Zhang, L. (2006). Relationship of binge drinking and other health-compromising behaviors among urban adolescents in China. *Journal of Adolescent Health*, *39*(4), 495–500. https://doi.org/10.1016/j.jadohealth.2006.03.014

Yoon, S., Lam, W. W. T., Sham, J. T. L., & Lam, T. (2015). Learning to drink: How Chinese adolescents make decisions about the consumption (or not) of alcohol. *The International Journal on Drug Policy*, *26*(12), 1231–1237. https://doi.org/10.1016/j.drugpo.2015.09.001

Yoon, S., Lam, W. W. T., Sham, J. T. L., & Lam, T. H. (2017). Underage drinking, group identity and access to alcohol: A qualitative study of Chinese youths. *Health Education Research*, *32*(3), 269–278. https://doi.org/10.1093/her/cyx045

Yusuf, A., Habibie, A. N., Efendi, F., Kurnia, I. D., & Kurniati, A. (2019). Prevalence and correlates of being bullied among adolescents in Indonesia: Results from the 2015 Global School-based Student Health Survey. *International Journal of Adolescent Medicine and Health*. https://doi.org/10.1515/ijamh-2019-0064

Zahn-Waxler, C., Crick, N. R., Shirtcliff, E. A., & Woods, K. E. (2015). The Origins and Development of Psychopathology in Females and Males. In *Developmental Psychopathology* (pp. 76–138). John Wiley & Sons, Ltd. https://doi.org/10.1002/9780470939383.ch4

Zhao, J., Li, Q., Wang, L., Lin, L., & Zhang, W. (2019). Latent Profile Analysis of Left-behind Adolescents' Psychosocial Adaptation in Rural China. *Journal of Youth and Adolescence*, *48*(6), 1146–1160. https://doi.org/10.1007/s10964-019-00989-1

Zimmerman, L. A., Li, M., Moreau, C., Wilopo, S., & Blum, R. (2019). Measuring agency as a dimension of empowerment among young adolescents globally; findings from the Global Early Adolescent Study. *SSM-Population Health*, *8*

Chapter 4

A multi-country study of risk and protective factors for emotional and behavioral problems among early adolescents

4.1 Abstract

Introduction: Early adolescence (ages 10-14) is a critical period for psychosocial development, but few studies have focused on risk and protective factors for emergent psychosocial challenges among youth living in low- and middle-income countries (LMICs). This study used data from the Global Early Adolescent Study to explore the contribution of social environmental factors to patterns of emotional and behavioral problems among early adolescents across four LMICs.

Methods: Participants were 10,437 early adolescents from six low-resource urban settings in China, the Democratic Republic of Congo, Indonesia, and Malawi. Multinomial logistic regression was used to examine the associations between distinct patterns of emotional and behavioral problems, previously identified using latent class analysis, and risk and protective factors across the family, peer, school, and neighborhood levels.

Results: Across countries, childhood adversity, peer bullying behaviors, and a perceived lack of school safety were consistently associated with emotional and behavioral problems. With some contextual variability, peer substance use and a perceived lack of neighborhood safety also emerged as significant risk factors. The magnitude of these associations was generally greatest among a subgroup of early adolescents with co-occurring emotional and behavioral problems.

Conclusions: The overall consistency of findings across countries is suggestive of the generalizability of risk factors in early adolescence, and indicates that interventions bolstering psychosocial adjustment among this age group may have applicability in diverse cross-national settings. Given the significance of peer bullying behaviors and school safety, multi-component school-based interventions may be an especially applicable approach.

4.2 Background

Early adolescence (ages 10-14) is a critical period for psychosocial development, with the emotional and behavioral problems that commonly emerge during this time elevating the risk of life-long impairment (Patel et al., 2007; Patton et al., 2016). While there is growing consensus around the importance of intervening during early adolescence in order to lay a foundation for future well-being (Catalano et al., 2012), this period has largely been neglected by researchers, program implementers, and policymakers (Blum et al., 2014; McCarthy et al., 2016). Further, despite 90% of the world's adolescents living in low- and middle-income countries (LMICs) (UNICEF, 2012), very little research on psychosocial development has been conducted in these settings (Patel et al., 2008). Given the heightened vulnerability of early adolescents in low-resource environments (Fatusi & Hindin, 2010), such work is essential for shaping interventions that can mitigate risk among disadvantaged youth around the globe.

A critical entry point into such preventive efforts lies in the overlapping social environments that shape adolescent psychosocial development, with potentially modifiable risk and protective factors at the family, peer, school, and neighborhood levels (Kieling et al., 2011; Viner et al., 2012). Within families, exposure to adverse conditions (e.g., parental mental illness, abuse and neglect, economic deprivation) are strongly linked to emotional and behavioral problems in adolescence (Connell & Goodman, 2002; Flaherty et al., 2013; Norman et al., 2012; Obot & Anthony, 2004; Reiss, 2013; Yap et al., 2014). Conversely, positive parenting – including such factors as warmth, communication, authoritativeness, consistent discipline, and monitoring – is a robust protective factor in psychosocial adjustment (Labella & Masten, 2018; Yap et al., 2014). While strong connections with peers can protect adolescents against a range of negative outcomes (Roach, 2018), peer participation in risky health-related behaviors often elevates adolescents'

adoption of these behaviors (e.g., substance use, bullying) (Leung et al., 2014; Montgomery et al., 2020; Thomas et al., 2018). At the school level, connectedness and teacher support are predictive of well-being (Joyce & Early, 2014; Kidger et al., 2012), whereas feeling unsafe is a key determinant of mental health issues (Gower et al., 2015; Nijs et al., 2014; Olcoń et al., 2017). Finally, there is some evidence that neighborhood violence, discrimination, and disadvantage may negatively impact psychosocial adjustment, although findings in this area have been decidedly mixed (Fowler et al., 2009; Leventhal & Brooks-Gunn, 2000; Stirling et al., 2015).

Beyond the lack of studies from LMICs, a further limitation of the extant literature is its historical focus on risk and protective factors as they relate to *singular* mental health challenges (Davidson et al., 2015). This is problematic due to the common co-occurrence of emotional and behavioral problems during early adolescence, with the majority of youth experiencing issues across multiple psychosocial domains (Angold et al., 1999; Doran et al., 2012; Hale & Viner, 2016; Melton et al., 2016), and it hampers public health efforts to design and implement multi-faceted prevention programs targeting vulnerable youth. In addressing this limitation, a growing number of studies have employed person-centered statistical approaches, such as latent class analysis (LCA), which allow for the identification of subgroups of adolescents who share similar patterns of emotional and behavioral problems (Lanza & Cooper, 2016). These methods have particular applicability in prevention research, as they can be used to inform targeted responses for those who may be at the highest risk (Lanza & Rhoades, 2013; Nylund-Gibson & Hart, 2014). While recent investigations have used person-centered approaches to examine risk and protective factors for co-occurring psychosocial challenges among adolescents from a range of diverse contexts (Ang et al., 2019; Assanangkornchai et al., 2018; González-Forteza et al., 2017; Ji et al., 2018; Luk et al., 2012; Oshri et al., 2011; Sullivan et al., 2010), most have focused exclusively on family- or

peer-level factors, precluding their ability to disentangle the relative influence of a broader range of social determinants. Further, no studies have been identified that examine these issues among adolescents across multiple country settings, limiting the generalizability of findings.

The current study attempts to fill such gaps by exploring the contribution of social environmental factors to co-occurring psychosocial challenges among early adolescents living in four LMICs. This study builds on previous research that used multiple-group LCA to identify prototypical patterns of emotional and behavioral problems among early adolescents in the Democratic Republic of Congo (DRC), Malawi, Indonesia, and China (Fine et al., Unpublished). Across these countries, four general patterns emerged: a *Well-Adjusted* class, with few emotional and behavioral problems; an *Emotional Problems* class, with elevated symptoms of depression and anxiety; a *Behavioral Problems* class (not present in China), with increased involvement in aggressive behaviors, peer victimization, and substance use; and a *Maladjusted* class, with co-occurring emotional and behavioral problems. We expand on this research by examining the extent to which risk and protective factors across family, peer, school, and neighborhood environments are associated with class membership.

4.3 Methods

Study Design and Sample

Data were drawn from the Global Early Adolescent Study (GEAS), a longitudinal study of risk and protective factors for healthy development among early adolescents living in low-resource urban settings (Mmari et al., 2017). Participants were sampled from secondary schools in Kinshasa, DRC; Blantyre, Malawi; Semarang, Bandar Lampung, and Denpasar, Indonesia; and Shanghai, China. Baseline data collection was completed by trained data collectors between 2017 and 2018, with the majority of questionnaires self-administered via mobile tablets to increase

participant privacy. In DRC and Indonesia, primary caregivers were also interviewed in order to provide sociodemographic information. Prior to survey administration, informed consent was obtained from adolescents' primary caregivers and assent was obtained from adolescents. The Institutional Review Boards of the primary research institution in each participating country as well as Johns Hopkins Bloomberg School of Public Health approved the GEAS protocols.

Measures

Latent classes of psychosocial risks. As outlined above, we found in our previous research that early adolescent patterns of emotional and behavioral problems were best characterized by a four-class latent variable solution in DRC, Malawi, and Indonesia, and a three-class latent variable solution in China. Further, tests of measurement invariance indicated that the nature of these classes differed significantly by sex in each country. As such, partially invariant multi-group models were specified in each country, as these models retain parsimony while allowing specific indicators with significant differential functioning to vary by sex. Parameter estimates for these models are illustrated in Figure 4.1. Among boys and girls across countries, four patterns were identified: *Well-Adjusted* (44-65% boys, 39-66% girls); *Emotional Problems* (16-32% boys, 12-33% girls); *Behavioral Problems* (19-25% boys, 10-21% girls; not present in China); and *Maladjusted* (5-16% boys, 3-14% girls). A detailed description of the data analysis procedures used to arrive at these models can be found in Fine et al. (Unpublished).

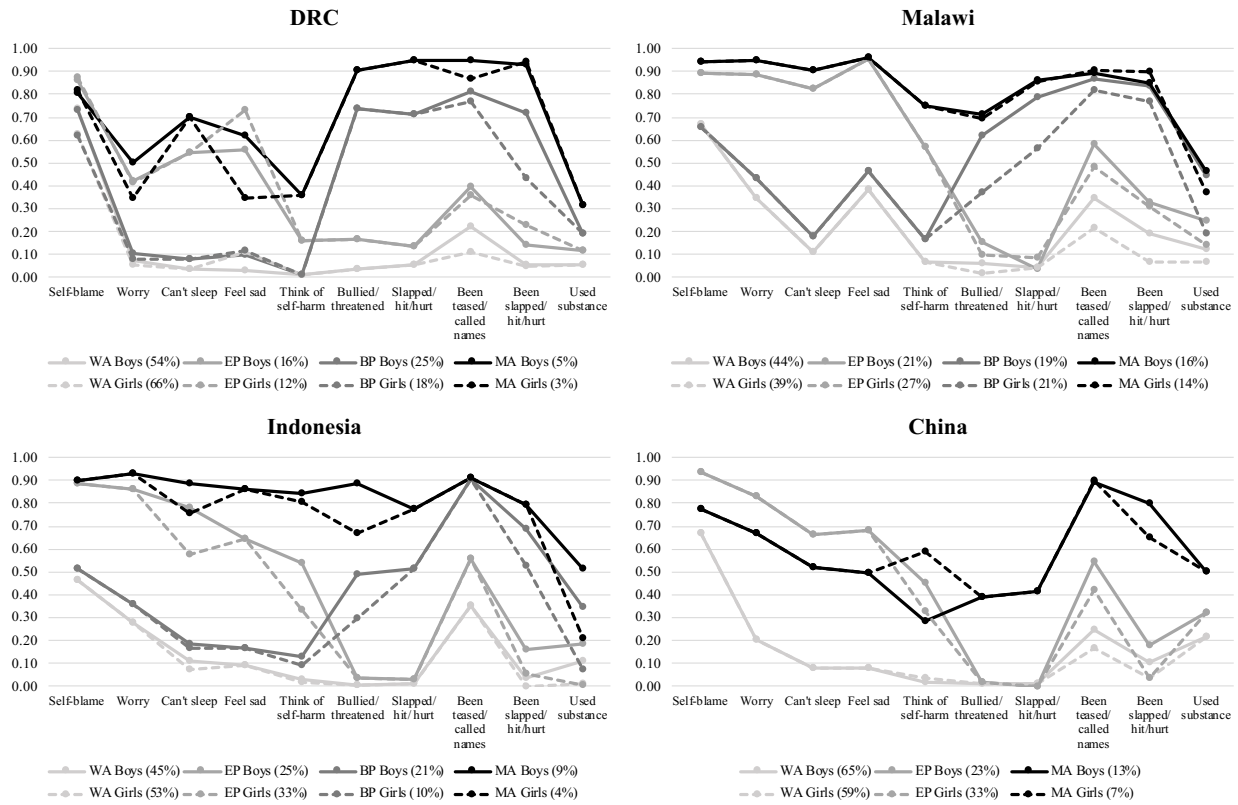


Figure 4.1. Estimated item-response probabilities for the partially invariant multi-group models in each country

Note: WA = Well-Adjusted; EP = Emotional Problems; BP = Behavioral Problems; MA = Maladjusted.

Psychosocial risk indicators. The latent classes described above relied on ten indicators related to emotional and behavioral problems. *Emotional problems* were measured using five indicators capturing symptoms of depression and anxiety ("I blame myself when things go wrong," "I worry for no good reason," "I am so unhappy I can't sleep at night," "I feel sad," "I am so unhappy I think of harming myself"). Adolescents rated how much they agreed with each item, and responses were dichotomized so that a 1 indicated any agreement and a 0 indicated no agreement. *Behavioral problems* were measured using five indicators capturing interpersonal aggression and substance use: four that assessed past-six month experiences of bullying and physical aggression as a victim ("been teased or called names," "been slapped, hit, or otherwise

physically hurt") or perpetrator ("bullied or threatened," "slapped, hit, or otherwise physically hurt"), and one that captured lifetime use of one or more substances (alcohol, tobacco, marijuana, and/or illicit drugs).

Risk and protective factors. In total, ten risk and protective factors across family, peer, school, and neighborhood environments were examined as potential predictors of latent class membership. *Caregiver connectedness* was assessed with one item: "How comfortable do you feel talking with your primary caregiver about things that worry you?" *Caregiver monitoring* was evaluated with one item: "To what extent does your primary caregiver usually know where you are?" In both cases, responses were dichotomized so that a 1 indicated "somewhat" or "very," and a 0 indicated "not at all" or "not very." *Childhood adversity* was assessed by summing scores from a 13-item measure capturing lifetime experiences of maltreatment (e.g., physical abuse, sexual abuse) and family adversity (e.g., caregiver substance use, economic deprivation), which was drawn from the Adverse Childhood Experiences Study (Felitti et al., 1998) and adapted for use with the GEAS sample (Blum et al., 2019; Kabiru et al., 2014). *Peer socialization* was measured using one item: "During a normal week, how often do you spend time hanging out with your closest friends outside of school?" Responses were dichotomized so that a 1 indicated "often" or "very often," and a 0 indicated "never" or "not very often." *Peer substance use* captured adolescents who reported that "a few," "most," or "all" of their friends used tobacco, alcohol, and/or drugs, and *peer bullying* captured those who reported seeing any of their peers bully or threaten someone during the past six months. *School support* captured adolescents who felt there was an adult at school who really cared about them, whereas *school safety* captured those who indicated feeling unsafe or threatened on the way to school, in the classroom, and/or on school grounds. *Neighborhood cohesion* was assessed by summing scores from four items ($\alpha = 0.60\text{-}0.90$)

developed for the GEAS (e.g., "people in my neighborhood look out for and help their neighbors"). Finally, *neighborhood safety* captured adolescents who indicated feeling unsafe or threatened in their neighborhoods.

Data Analysis

A three-step multivariate latent class regression approach was used to examine the associations between latent class membership and risk and protective factors in each country. This approach allows for the addition of covariates into the LCA model through an estimation process that accounts for measurement error due to uncertainty in class classification (Asparouhov & Muthén, 2014; Vermunt, 2010). The BCH method was used to address classification error, as it has been shown to outperform similar three-step approaches (Bakk & Vermunt, 2016). Missing data on the latent class indicators was accounted for through the use of full information maximum likelihood estimation (B. Muthén & Shedden, 1999; Schafer & Graham, 2002). Missing data on the covariates was addressed with multiple imputation through the *Mplus* program (Asparouhov & Muthén, 2010; Rubin, 1987). Standard errors were adjusted for clustering at the school level through the use of sandwich estimators. All multinomial logistic regression models controlled for sociodemographic factors including sex, household size, caregiver marital status, caregiver education, and caregiver employment status. All analyses were performed in *Mplus* version 8.1.6 (Muthén & Muthén, 1998-2017).

4.4 Results

A total of 10,437 early adolescents were included across DRC (n = 2,006; 51.5% girls), Malawi (n = 2,016; 49.6% girls), Indonesia (n = 4,657; 53.0% girls), and China (n = 1,758; 48.6% girls). The average age of participants ranged from 11.9 (SD = 1.4) years old in DRC to 12.5 (SD

= 1.0) years old in China. Primary caregivers across the three study sites with reported data were relatively well-educated, with the majority having attended secondary school or higher (DRC: 89.1%; Indonesia: 81.7%; China: 82.7%), and most were employed or retired (DRC: 75.6%; Indonesia: 58.0%; China: 85.0%). Sociodemographic characteristics for the sample are presented in Table 4.1.

Table 4.1. Adolescent sociodemographic characteristics and risk and protective factors

	DRC (*n* = 2,006)	**Malawi (*n* = 2,016)**	**Indonesia (*n* = 4,657)**	**China (*n* = 1,758)**
Girls: N (%)	1,033 (51.5)	999 (49.6)	2,469 (53.0)	855 (48.6)
Age: M ± SD	11.9 ± 1.4	12.1 ± 1.1	12.2 ± 0.5	12.5 ± 1.0
Household size	7.3 ± 2.6	5.7 ± 1.9	4.8 ± 1.3	3.7 ± 1.1
Primary caregiver's marital status				
Married/living together	942 (47.0)	-	4,159 (89.3)	1,530 (87.0)
Unmarried/separated/widowed	996 (49.7)	-	272 (5.8)	190 (10.8)
Primary caregiver's education				
Primary school or less	118 (5.9)	-	631 (13.6)	78 (4.4)
Some or all secondary school	1,045 (52.1)	-	2,309 (49.6)	340 (19.3)
Some or all vocational school/university	742 (37.0)	-	1,493 (32.1)	1,115 (63.4)
Primary caregiver's employment status				
Employed/retired	1,516 (75.6)	-	2,701 (58.0)	1,495 (85.0)
Unemployed	423 (21.1)	-	1,601 (34.4)	199 (11.3)
Family-level factors:				
Comfortable talking to caregiver	1,596 (79.6)	1,542 (76.5)	3,088 (66.3)	1,208 (68.7)
Caregiver knows location	1,588 (79.2)	1,663 (82.5)	3,773 (81.0)	1,584 (90.1)
Adverse childhood experiences	2.0 ± 1.9	2.6 ± 2.8	2.8 ± 2.5	2.4 ± 2.0
Peer-level factors:				
Socializes outside of school	1,386 (69.1)	1,367 (67.8)	2,069 (44.4)	229 (13.0)
Peer substance use	248 (12.4)	566 (28.1)	1,348 (29.0)	303 (17.2)
Peer bullying/threatening	1,553 (77.4)	1,347 (66.8)	2,112 (45.4)	416 (23.6)
School-level factors:				
Presence of a caring teacher	1,430 (71.3)	1,653 (82.0)	3,384 (72.7)	1,484 (84.4)
Feels unsafe in or around school	339 (16.9)	792 (39.3)	1,442 (31.0)	175 (9.9)
Neighborhood-level factors:				
Neighborhood cohesion	7.9 ± 2.6	10.3 ± 2.1	9.4 ± 2.1	8.7 ± 2.9
Feels unsafe in neighborhood	375 (18.7)	226 (11.2)	575 (12.4)	48 (2.7)

Note. In Indonesia and the DRC, household size, primary caregiver's marital status, primary caregiver's education, and primary caregiver's employment status are based on caregiver-reported data. In Malawi, primary caregiver's marital status, education, and employment status are not reported.

Parameter estimates from the multinomial logistic regression models in each country are presented in Table 2. Across these results, the *Well-Adjusted* class was used as the reference class, as the primary aim of this study was to determine risk and protective factors for psychosocial maladjustment. At the family level, increases in adverse childhood experiences were consistently associated with elevated likelihood of membership in all of the psychosocial risk classes compared to the *Well-Adjusted* class. Notably, the magnitude of this association was greatest in the *Maladjusted* class across countries (OR = 1.63-2.12). Caregiver connectedness served as a protective factor only in DRC, where it was associated with decreased odds of being in the *Maladjusted* class (OR = 0.39, $p = 0.004$). Similarly, caregiver monitoring was associated with reduced likelihood of membership in the *Maladjusted* class in DRC (OR = 0.33, $p<0.001$), as well as the *Behavioral Problems* class in Malawi (OR = 0.57; $p = 0.045$).

At the peer level, bullying behaviors were associated with significantly increased odds of membership in all of the psychosocial risk classes across countries. The magnitude of these relationships was greatest in the *Behavioral Problems* and *Maladjusted* classes, with those who reported witnessing peers bullying or threatening others around 4 to 14 times as likely to be in these classes compared to the *Well-Adjusted* class. With a few exceptions, peer substance use was another important risk factor for membership in the *Behavioral Problems* and *Maladjusted* classes (OR = 1.41-3.06); for the *Emotional Problems* class, however, it was only significant in Malawi (OR = 1.80; $p<0.001$). Interestingly, peer socialization outside of school increased the odds of membership in both the *Emotional Problems* and *Maladjusted* classes in Malawi and Indonesia (OR = 1.28-1.69), and the *Behavioral Problems* class in DRC (OR = 1.52; $p = 0.02$).

A lack of safety in school and neighborhood environments emerged as central risk factors across countries. Those who reported feeling unsafe in or around school were consistently more

likely to be in all of the psychosocial risk classes, with the strongest associations in the *Maladjusted* class (OR = 2.24-2.94). Feeling unsafe in the neighborhood demonstrated more contextual variability: it increased likelihood of membership in the *Emotional Problems* class in Indonesia (OR = 1.62, $p<0.001$), the *Behavioral Problems* class across countries (OR = 2.54-1.70), and the *Maladjusted* class in Malawi (OR = 2.69, $p<0.001$) and Indonesia (OR = 1.73, $p = 0.001$). In terms of protective factors, school support did not reduce the odds of membership in any of the psychosocial risk classes, and neighborhood cohesion was only significant in Indonesia, where it slightly increased the likelihood of being in the *Emotional Problems* class (OR = 1.05, $p = 0.03$) and slightly reduced the likelihood of being in the *Behavioral Problems* class (OR = 0.93, $p = 0.02$).

Table 4.2. Associations between multi-level risk and protective factors and psychosocial risk classes

		DRC (*n* = 2,006)	**Malawi (*n* = 2,016)**	**Indonesia (*n* = 4,657)**	**China (*n* = 1,758)**
		OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Emotional Problems Class					
Family	Comfortable talking to caregiver	1.36 (0.83, 2.21)	0.93 (0.79, 1.08)	1.15 (0.86, 1.53)	0.94 (0.60, 1.49)
	Caregiver knows location	0.84 (0.53, 1.33)	0.79 (0.43, 1.46)	1.03 (0.82, 1.30)	1.23 (0.90, 1.69)
	Adverse childhood experiences	1.70 (1.47, 1.96)***	1.31 (1.21, 1.42)***	1.42 (1.33, 1.52)***	1.42 (1.18, 1.70)***
Peer	Socializes outside of school	0.67 (0.42, 1.06)	1.69 (1.46, 1.95)***	1.28 (1.02, 1.62)*	0.76 (0.35, 1.64)
	Peer substance use	1.08 (0.51, 2.31)	1.80 (1.39, 2.33)***	1.04 (0.79, 1.36)	1.17 (0.71, 1.92)
	Peer bullying/threatening	3.13 (1.63, 6.01)**	1.56 (1.17, 2.07)**	1.39 (1.17, 1.66)***	1.51 (0.98, 2.32)
School	Presence of a caring teacher	1.34 (0.80, 2.23)	0.71 (0.42, 1.18)	1.11 (0.82, 1.50)	0.71 (0.27, 1.88)
	Feels unsafe in or around school	2.00 (1.16, 3.46)*	1.38 (1.03, 1.84)*	1.61 (1.27, 2.05)***	1.68 (1.43, 1.98)***
Neighborhood	Neighborhood cohesion	1.02 (0.94, 1.11)	1.06 (0.92, 1.21)	1.05 (1.00, 1.11)*	0.96 (0.88, 1.04)
	Feels unsafe in neighborhood	0.72 (0.43, 1.20)	1.29 (0.93, 1.80)	1.63 (1.21, 2.19)***	2.13 (1.54, 2.95)***
Behavioral Problems Class					
Family	Comfortable talking to caregiver	0.95 (0.67, 1.35)	1.02 (0.64, 1.65)	1.20 (0.93, 1.55)	-
	Caregiver knows location	0.80 (0.59, 1.10)	0.57 (0.33, 0.99)*	0.73 (0.50, 1.06)	-
	Adverse childhood experiences	1.29 (1.17, 1.43)***	1.35 (1.20, 1.53)***	1.44 (1.37, 1.52)***	-
Peer	Socializes outside of school	1.56 (1.09, 2.24)*	1.23 (0.86, 1.78)	1.23 (0.90, 1.67)	-
	Peer substance use	1.28 (0.80, 2.06)	1.90 (1.35, 2.68)***	1.41 (1.03, 1.93)*	-
	Peer bullying/threatening	13.67 (5.66, 33.02)***	6.61 (3.16, 13.82)***	4.67 (3.10, 7.03)***	-
School	Presence of a caring teacher	0.91 (0.65, 1.29)	1.14 (0.65, 1.99)	0.92 (0.71, 1.20)	-
	Feels unsafe in or around school	2.23 (1.50, 3.31)***	2.06 (1.80, 2.37)***	2.13 (1.72, 2.63)***	-
Neighborhood	Neighborhood cohesion	0.97 (0.90, 1.03)	1.00 (0.90, 1.11)	0.93 (0.87, 0.99)*	-
	Feels unsafe in neighborhood	1.54 (1.06, 2.24)*	1.58 (1.21, 2.06)**	1.70 (1.20, 2.40)**	-
Maladjusted Class					
Family	Comfortable talking to caregiver	0.39 (0.21, 0.74)**	1.01 (0.68, 1.50)	1.14 (0.74, 1.76)	0.53 (0.26, 1.07)
	Caregiver knows location	0.33 (0.19, 0.60)***	0.87 (0.39, 1.94)	1.04 (0.63 ,1.71)	0.99 (0.81, 1.21)
	Adverse childhood experiences	2.12 (1.71, 2.64)***	1.63 (1.52, 1.76)***	1.97 (1.81, 2.14)***	1.76 (1.44, 2.16)***
Peer	Socializes outside of school	0.89 (0.39, 2.02)	1.52 (1.02, 2.27)*	1.69 (1.14, 2.52)*	1.00 (0.42, 2.37)
	Peer substance use	2.76 (1.22, 6.24)*	3.06 (1.92, 4.87)***	1.35 (0.86, 2.12)	2.69 (1.77, 4.09)***
	Peer bullying/threatening	-	4.83 (2.84, 8.21)***	10.78 (4.36, 26.67)***	3.96 (2.17, 7.22)***
School	Presence of a caring teacher	1.42 (0.55, 3.67)	0.86 (0.43, 1.71)	0.80 (0.48, 1.33)	0.41 (0.16, 1.09)
	Feels unsafe in or around school	2.94 (1.38, 6.29)**	2.24 (1.69, 2.95)***	2.51 (1.56, 4.04)***	2.40 (1.38, 4.19)**
Neighborhood	Neighborhood cohesion	0.95 (0.81, 1.12)	1.05 (0.92, 1.20)	1.04 (0.93, 1.17)	0.99 (0.94, 1.04)
	Feels unsafe in neighborhood	1.14 (0.57, 2.29)	2.69 (1.50, 4.85)***	1.73 (1.25, 2.39)**	1.35 (0.22, 8.23)

Note. Well-Adjusted Class is the reference class. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. OR = Adjusted Odds Ratio; CI = Confidence Interval. All models control for sex, household size, primary caregiver's marital status, primary caregiver's education, and primary caregiver's employment status where possible.

4.5 Discussion

The current study assessed the unique contributions of social environmental factors to psychosocial challenges among early adolescents (ages 10-14) living in low-resource urban settings in DRC, Malawi, Indonesia, and China. Building on prior research, we used a multivariate latent class regression approach to assess the extent to which risk and protective factors across the family, peer, school, and neighborhood levels were associated with latent classes of emotional and behavioral problems. Across countries, adverse childhood experiences emerged as a consistently significant risk factor for psychosocial maladjustment. While this is not surprising given the well-documented associations between childhood adversity and subsequent mental health and psychosocial problems (Hughes et al., 2017; Kalmakis & Chandler, 2015; Norman et al., 2012), it contributes to an emerging body of research focused on the detrimental developmental consequences of childhood adversity in LMICs (Almuneef et al., 2016; Bellis et al., 2014; Blum et al., 2019; Kidman et al., 2020; Oladeji et al., 2010; Soares et al., 2016; of Zhang et al., 2020). Researchers have suggested that childhood adversity may present a particular challenge in low-resource settings due to the compounding effects of chronic poverty, widespread violence, and systemic limitations (Benjet, 2010; Solberg & Peters, 2020). In the context of the current study, this hypothesis is strengthened by the cross-national generalizability of the associations between childhood adversity and adolescent emotional, behavioral, and co-occurring problems. In addition, it is noteworthy that the magnitude of this association was greatest in the *Maladjusted* class compared to both the *Emotional Problems* and *Behavioral Problems* classes. Given substantial evidence regarding the dose-response relationship between exposure to adverse childhood experiences and life course mental health problems (Campbell et al., 2016; Dube et al., 2003;

Felitti et al., 1998; Flaherty et al., 2013; Merrick et al., 2017), this suggests that youth who fall within the *Maladjusted* subgroup may be particularly vulnerable to emergent psychopathology.

These findings also affirm the critical role that peer influence plays in adolescent psychosocial development across diverse contexts. Peer bullying behaviors were robustly linked to the manifestation of behavioral problems with or without co-occurring emotional problems, and these associations were echoed, albeit not as strongly or consistently, for those reporting peer substance use. Again, this is not unexpected: a substantial body of literature has emphasized that affiliation with deviant peers is correlated with a range of risky health-related behaviors in adolescence (Leung et al., 2014; Montgomery et al., 2020; Thomas et al., 2018). In the case of peer bullying behaviors, however, the strength of the associations within the *Maladjusted* and *Behavioral Problems* classes speaks to the ubiquity of witnessing, perpetrating, and experiencing bullying within certain subgroups. Increasingly, researchers have recognized bullying as a complex social phenomenon in which perpetrators and victims are embedded within social contexts that can either deter or reinforce these behaviors (Salmivalli, 2010). Our findings speak to the cross-cultural applicability of this conceptualization, and support the assertion that interventions targeting these behaviors must take such social contexts into account in order to maximize their impact (Cantone et al., 2015; Vreeman & Carroll, 2007)

School safety emerged as another salient point of intervention across study countries, with adolescents who reported feeling unsafe in or around school significantly more likely to have psychosocial problems across one or more domains. This is consistent with a growing body of evidence, largely drawn from high-income countries, which suggests that perceived school safety can profoundly influence adolescent well-being (Gower et al., 2015; Nijs et al., 2014; Olcoń et al., 2017). While school safety is a somewhat nebulous construct, researchers generally agree that it is

strongly related to the pervasiveness of bullying and other interpersonal violence within school contexts (Thapa et al., 2013). This reinforces the necessity of addressing bullying within schools, as this may act on adolescent well-being by both reducing bullying experiences and increasing feelings of safety. Beyond violence, however, it has been suggested that perceived safety is driven by additional school climate-related factors, such as a strong sense of community, teacher support, fair and consistent disciplinary practices, and orderliness (Bradshaw et al., 2009; Fisher et al., 2018; Kitsantas et al., 2004; Lenzi et al., 2017; Mijanovich & Weitzman, 2003; Mooij & Fettelaar, 2013). This suggests the need for comprehensive interventions targeting both individual behaviors and school-wide practices in order to create a safe and supportive learning environment for students (Voight & Nation, 2016).

While the consistency of influential risk factors across countries is striking, equally notable is the overall lack of significant protective factors. In particular, despite our expectation that family-level protective factors would strengthen adolescent psychosocial adjustment (Labella & Masten, 2018; Yap et al., 2014), neither caregiver connectedness nor monitoring emerged as protective factors in the majority of countries. The greatest exception to this was in DRC, where both factors decreased the likelihood of membership in the *Maladjusted* class; this relationship did not hold, however, for the *Emotional Problems* or *Behavioral Problems* classes. This overall lack of significance may relate to the shifting importance of peer environments relative to family environments among this age group. Adolescence is characterized by an increased desire for autonomous decision-making, which is facilitated by a social reorientation towards peers (Nelson et al., 2016; Patton et al., 2016). As such, while parenting practices remain important during this period (Kobak et al., 2017), peer influence may ultimately be more dominant, thereby rendering parental factors less significant when held next to broader social environmental factors.

Together, these findings speak to the potential of using multi-component school-based interventions in order to bolster psychosocial adjustment among adolescents living in low-resource settings. In particular, the key risk factors identified above suggest an approach in which individual strategies focus on vulnerable youth with co-occurring emotional and behavioral problems, classroom initiatives incorporate violence prevention curricula, and school-wide policies aim to increase safety. This aligns with the World Health Organization's Health Promoting Schools framework, a holistic model which emphasizes the need to target individuals, classrooms, and whole schools in order to promote health and prevent illness among students (Langford et al., 2014; Lee, 2009). Systematic reviews have suggested that such integrated approaches may be more effective in influencing adolescent psychosocial development than those focusing purely on one strategy (Cantone et al., 2015; Shackleton et al., 2016; Weare & Nind, 2011). Notably, while few studies of multi-component school-based interventions have been carried out in LMICs, a recent trial conducted in secondary schools in India found that this approach had substantial impacts on adolescent health and well-being, including reductions in depressive symptoms and bullying behaviors (Shinde et al., 2018).

These findings must be interpreted in light of several limitations. First, the cross-sectional nature of these data precludes statements about causality or temporality in the relationship between social environmental factors and latent class membership. Second, all data were assessed by adolescent self-report and are thus subject to social desirability bias, although the use of computer-assisted self-interview in many of the countries may have helped to mitigate this issue (Le et al., 2006). Third, with the exception of childhood adversity and neighborhood cohesion, the measurement of risk and protective factors relied on single dichotomized items rather than validated scales. It is possible that this measurement limitation led to spurious conclusions about

the role of certain factors. For instance, while we found that peer socialization acted as a risk rather than a protective factor in several countries, given its operationalization as time spent with friends outside of school, it is plausible that this covariate captured unsupervised social activities rather than peer connectedness. Indeed, prior research among youth in the United States has found correlations between increased peer activity in the evening and a range of behavioral problems (Gage et al., 2005; Luk et al., 2012). Finally, it has been suggested that multiple imputation may be inappropriate in a latent class analytic framework due to the theoretical incompatibility between multiple imputation, which assumes a single underlying population, and LCA, which assumes multiple latent subgroups within a population (Colder et al., 2001; Enders & Gottschall, 2011).

These limitations notwithstanding, the current study has several important strengths, such as its inclusion of early adolescents from four LMICs, its use of a person-centered analytic approach to examine co-occurring psychosocial challenges, and its simultaneous examination of risk and protective factors across multiple social environmental domains. Across countries, we found a number of factors which were consistently and robustly associated with emotional and behavioral problems, including childhood adversity, peer bullying behaviors, and a perceived lack of school safety. This consistency is suggestive of the generalizability of risk factors in early adolescence, and indicates that interventions targeting psychosocial adjustment among this age group may have applicability in diverse cross-national settings. In addition, the patterns of association across latent classes point to especially heightened vulnerability among a subgroup of adolescents with co-occurring emotional and behavioral problems. Given resource limitations in many LMICs, this information can be used to guide decision-making around which adolescent populations to prioritize through intervention activities.

4.6 References

Almuneef, M., Hollinshead, D., Saleheen, H., AlMadani, S., Derkash, B., AlBuhairan, F., Al-Eissa, M., & Fluke, J. (2016). Adverse childhood experiences and association with health, mental health, and risky behavior in the kingdom of Saudi Arabia. *Child Abuse & Neglect*, *60*, 10–17. https://doi.org/10.1016/j.chiabu.2016.09.003

Ang, R. P., Li, X., Huan, V. S., Liem, G. A. D., Kang, T., Wong, Q., & Yeo, J. Y. P. (2019). Profiles of Antisocial Behavior in School-Based and At-Risk Adolescents in Singapore: A Latent Class Analysis. *Child Psychiatry and Human Development*. https://doi.org/10.1007/s10578-019-00941-1

Angold, A., Costello, E. J., & Erkanli, A. (1999). Comorbidity. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *40*(1), 57–87.

Asparouhov, T., & Muthén, B. (2010). *Multiple Imputation with Mplus*.

Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using M plus. *Structural Equation Modeling*, *21*(3), 329–341.

Assanangkornchai, S., Li, J., McNeil, E., & Saingam, D. (2018). Clusters of alcohol and drug use and other health-risk behaviors among Thai secondary school students: A latent class analysis. *BMC Public Health*, *18*(1), 1272. https://doi.org/10.1186/s12889-018-6205-z

Bakk, Z., & Vermunt, J. K. (2016). Robustness of Stepwise Latent Class Modeling With Continuous Distal Outcomes. *Structural Equation Modeling*, *23*(1), 20–31. https://doi.org/10.1080/10705511.2014.955104

Bellis, M. A., Hughes, K., Leckenby, N., Jones, L., Baban, A., Kachaeva, M., Povilaitis, R., Pudule, I., Qirjako, G., Ulukol, B., Raleva, M., & Terzic, N. (2014). Adverse childhood experiences and associations with health-harming behaviours in young adults: Surveys in

eight eastern European countries. *Bulletin of the World Health Organization*, *92*(9), 641–655. https://doi.org/10.2471/BLT.13.129247

Benjet, C. (2010). Childhood adversities of populations living in low-income countries: Prevalence, characteristics, and mental health consequences. *Current Opinion in Psychiatry*, *23*(4), 356–362. https://doi.org/10.1097/YCO.0b013e32833ad79b

Blum, R. W., Astone, N. M., Decker, M. R., & Mouli, V. C. (2014). A conceptual framework for early adolescence: A platform for research. *International Journal of Adolescent Medicine and Health*, *26*(3), 321–331. https://doi.org/10.1515/ijamh-2013-0327

Blum, R. W., Li, M., & Naranjo-Rivera, G. (2019). Measuring adverse child experiences among young adolescents globally: Relationships with depressive symptoms and violence perpetration. *Journal of Adolescent Health*, *65*(1), 86–93.

Bradshaw, C. P., Sawyer, A. L., & O'Brennan, L. M. (2009). A social disorganization perspective on bullying-related attitudes and behaviors: The influence of school context. *American Journal of Community Psychology*, *43*(3–4), 204–220. https://doi.org/10.1007/s10464-009-9240-1

Campbell, J. A., Walker, R. J., & Egede, L. E. (2016). Associations Between Adverse Childhood Experiences, High-Risk Behaviors, and Morbidity in Adulthood. *American Journal of Preventive Medicine*, *50*(3), 344–352. https://doi.org/10.1016/j.amepre.2015.07.022

Cantone, E., Piras, A. P., Vellante, M., Preti, A., Daníelsdóttir, S., D'Aloja, E., Lesinskiene, S., Angermeyer, M. C., Carta, M. G., & Bhugra, D. (2015). Interventions on bullying and cyberbullying in schools: A systematic review. *Clinical Practice and Epidemiology in Mental Health*, *11*(Suppl 1 M4), 58–76. https://doi.org/10.2174/1745017901511010058

Catalano, R. F., Fagan, A. A., Gavin, L. E., Greenberg, M. T., Irwin, C. E., Ross, D. A., & Shek, D. T. L. (2012). Worldwide application of prevention science in adolescent health. *The Lancet*, *379*(9826), 1653–1664. https://doi.org/10.1016/S0140-6736(12)60238-4

Colder, C. R., Mehta, P., Balanda, K., Campbell, R. T., Mayhew, K. P., Stanton, W. R., Pentz, M. A., & Flay, B. R. (2001). Identifying trajectories of adolescent smoking: An application of latent growth mixture modeling. *Health Psychology*, *20*(2), 127–135. https://doi.org/10.1037//0278-6133.20.2.127

Connell, A. M., & Goodman, S. H. (2002). The association between psychopathology in fathers versus mothers and children's internalizing and externalizing behavior problems: A meta-analysis. *Psychological Bulletin*, *128*(5), 746–773. https://doi.org/10.1037/0033-2909.128.5.746

Davidson, L. L., Grigorenko, E. L., Boivin, M. J., Rapa, E., & Stein, A. (2015). A focus on adolescence to reduce neurological, mental health and substance-use disability. *Nature*, *527*(7578), S161.

Doran, N., Luczak, S. E., Bekman, N., Koutsenok, I., & Brown, S. A. (2012). Adolescent Substance Use and Aggression: A Review. *Criminal Justice and Behavior*. https://doi.org/10.1177/0093854812437022

Dube, S. R., Felitti, V. J., Dong, M., Giles, W. H., & Anda, R. F. (2003). The impact of adverse childhood experiences on health problems: Evidence from four birth cohorts dating back to 1900. *Preventive Medicine*, *37*(3), 268–277. https://doi.org/10.1016/s0091-7435(03)00123-3

Enders, C. K., & Gottschall, A. C. (2011). Multiple Imputation Strategies for Multiple Group Structural Equation Models. *Structural Equation Modeling*, *18*(1), 35–54. https://doi.org/10.1080/10705511.2011.532695

Fatusi, A. O., & Hindin, M. J. (2010). Adolescents and youth in developing countries: Health and development issues in context. *Journal of Adolescence*, *33*(4), 499–508.

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and 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. https://doi.org/10.1016/s0749-3797(98)00017-8

Fine, S. L., Blum, R. W., Bass, J. K., Lulebo, A. M., Stones, W., Pinandari, A. W., Wilopo, S. A., Zuo, X., & Musci, R. J. (Unpublished). *A latent class approach to understanding patterns of emotional and behavioral problems across low-income urban settings worldwide*.

Fisher, B. W., Viano, S., Chris Curran, F., Alvin Pearman, F., & Gardella, J. H. (2018). Students' Feelings of Safety, Exposure to Violence and Victimization, and Authoritative School Climate. *American Journal of Criminal Justice*, *43*(1), 6–25. https://doi.org/10.1007/s12103-017-9406-6

Flaherty, E. G., Thompson, R., Dubowitz, H., Harvey, E. M., English, D. J., Proctor, L. J., & Runyan, D. K. (2013). Adverse childhood experiences and child health in early adolescence. *JAMA Pediatrics*, *167*(7), 622–629. https://doi.org/10.1001/jamapediatrics.2013.22

Fowler, P. J., Tompsett, C. J., Braciszewski, J. M., Jacques-Tiura, A. J., & Baltes, B. B. (2009). Community violence: A meta-analysis on the effect of exposure and mental health

outcomes of children and adolescents. *Development and Psychopathology*, *21*(1), 227–259. https://doi.org/10.1017/S0954579409000145

Gage, J. C., Overpeck, M. D., Nansel, T. R., & Kogan, M. D. (2005). Peer activity in the evenings and participation in aggressive and problem behaviors. *Journal of Adolescent Health*, *37*(6), 517.e7-517.e14. https://doi.org/10.1016/j.jadohealth.2004.12.012

González-Forteza, C., Juárez-López, C. E., Jiménez, A., Montejo-León, L., Rodríguez-Santisbón, U. R., & Wagner, F. A. (2017). Suicide behavior and associated psychosocial factors among adolescents in Campeche, Mexico. *Preventive Medicine*, *105*, 206–211. https://doi.org/10.1016/j.ypmed.2017.09.011

Gower, A. L., McMorris, B. J., & Eisenberg, M. E. (2015). School-level contextual predictors of bullying and harassment experiences among adolescents. *Social Science & Medicine*, *147*, 47–53. https://doi.org/10.1016/j.socscimed.2015.10.036

Hale, D. R., & Viner, R. M. (2016). The correlates and course of multiple health risk behaviour in adolescence. *BMC Public Health*, *16*(1), 458.

Hughes, K., Bellis, M. A., Hardcastle, K. A., Sethi, D., Butchart, A., Mikton, C., Jones, L., & Dunne, M. P. (2017). The effect of multiple adverse childhood experiences on health: A systematic review and meta-analysis. *The Lancet Public Health*, *2*(8), e356–e366. https://doi.org/10.1016/S2468-2667(17)30118-4

Ji, Y., Xu, H., Zhang, Y., & Liu, Q. (2018). Heterogeneity of adolescent health risk behaviors in rural western China: A latent class analysis. *PloS One*, *13*(6), e0199286. https://doi.org/10.1371/journal.pone.0199286

Joyce, H. D., & Early, T. J. (2014). The Impact of School Connectedness and Teacher Support on Depressive Symptoms in Adolescents: A Multilevel Analysis. *Children and Youth Services Review*, *39*, 101–107. https://doi.org/10.1016/j.childyouth.2014.02.005

Kabiru, C. W., Elung'ata, P., Mojola, S. A., & Beguy, D. (2014). Adverse life events and delinquent behavior among Kenyan adolescents: A cross-sectional study on the protective role of parental monitoring, religiosity, and self-esteem. *Child and Adolescent Psychiatry and Mental Health*, *8*(1), 1–11. https://doi.org/10.1186/1753-2000-8-24

Kalmakis, K. A., & Chandler, G. E. (2015). Health consequences of adverse childhood experiences: A systematic review. *Journal of the American Association of Nurse Practitioners*, *27*(8), 457–465. https://doi.org/10.1002/2327-6924.12215

Kidger, J., Araya, R., Donovan, J., & Gunnell, D. (2012). The effect of the school environment on the emotional health of adolescents: A systematic review. *Pediatrics*, *129*(5), 925–949. https://doi.org/10.1542/peds.2011-2248

Kidman, R., Piccolo, L. R., & Kohler, H.-P. (2020). Adverse Childhood Experiences: Prevalence and Association With Adolescent Health in Malawi. *American Journal of Preventive Medicine*, *58*(2), 285–293. https://doi.org/10.1016/j.amepre.2019.08.028

Kieling, C., Baker-Henningham, H., Belfer, M., Conti, G., Ertem, I., Omigbodun, O., Rohde, L. A., Srinath, S., Ulkuer, N., & Rahman, A. (2011). Child and adolescent mental health worldwide: Evidence for action. *The Lancet*, *378*(9801), 1515–1525.

Kitsantas, A., Ware, H. W., & Martinez-Arias, R. (2004). Students' Perceptions of School Safety: Effects by Community, School Environment, and Substance Use Variables. *The Journal of Early Adolescence*, *24*(4), 412–430. https://doi.org/10.1177/0272431604268712

Kobak, R., Abbott, C., Zisk, A., & Bounoua, N. (2017). Adapting to the changing needs of adolescents: Parenting practices and challenges to sensitive attunement. *Current Opinion in Psychology*, *15*, 137–142. https://doi.org/10.1016/j.copsyc.2017.02.018

Labella, M. H., & Masten, A. S. (2018). Family influences on the development of aggression and violence. *Current Opinion in Psychology*, *19*, 11–16.

Langford, R., Bonell, C. P., Jones, H. E., Pouliou, T., Murphy, S. M., Waters, E., Komro, K. A., Gibbs, L. F., Magnus, D., & Campbell, R. (2014). The WHO Health Promoting School framework for improving the health and well-being of students and their academic achievement. *Cochrane Database of Systematic Reviews*, *4*. https://doi.org/10.1002/14651858.CD008958.pub2

Lanza, S. T., & Cooper, B. R. (2016). Latent Class Analysis for Developmental Research. *Child Development Perspectives*, *10*(1), 59–64. https://doi.org/10.1111/cdep.12163

Lanza, S. T., & Rhoades, B. L. (2013). Latent class analysis: An alternative perspective on subgroup analysis in prevention and treatment. *Prevention Science*, *14*(2), 157–168. https://doi.org/10.1007/s11121-011-0201-1

Le, L. C., Blum, R. W., Magnani, R., Hewett, P. C., & Do, H. M. (2006). A pilot of audio computer-assisted self-interview for youth reproductive health research in Vietnam. *Journal of Adolescent Health*, *38*(6), 740–747. https://doi.org/10.1016/j.jadohealth.2005.07.008

Lee, A. (2009). Health-promoting schools. *Applied Health Economics and Health Policy*, *7*(1), 11–17. https://doi.org/10.1007/BF03256138

Lenzi, M., Sharkey, J., Furlong, M. J., Mayworm, A., Hunnicutt, K., & Vieno, A. (2017). School Sense of Community, Teacher Support, and Students' School Safety Perceptions.

American Journal of Community Psychology, *60*(3–4), 527–537. https://doi.org/10.1002/ajcp.12174

Leung, R. K., Toumbourou, J. W., & Hemphill, S. A. (2014). The effect of peer influence and selection processes on adolescent alcohol use: A systematic review of longitudinal studies. *Health Psychology Review*, *8*(4), 426–457. https://doi.org/10.1080/17437199.2011.587961

Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin*, *126*(2), 309–337. https://doi.org/10.1037/0033-2909.126.2.309

Luk, J. W., Wang, J., & Simons-Morton, B. G. (2012). The co-occurrence of substance use and bullying behaviors among U.S. adolescents: Understanding demographic characteristics and social influences. *Journal of Adolescence*, *35*(5), 1351–1360. https://doi.org/10.1016/j.adolescence.2012.05.003

McCarthy, K., Brady, M., & Hallman, K. (2016). *Investing When It Counts: Reviewing the Evidence and Charting a Course of Research and Action for Very Young Adolescents*. Population Council.

Melton, T. H., Croarkin, P. E., Strawn, J. R., & McClintock, S. M. (2016). Comorbid Anxiety and Depressive Symptoms in Children and Adolescents: A Systematic Review and Analysis. *Journal of Psychiatric Practice*, *22*(2), 84–98. https://doi.org/10.1097/PRA.0000000000000132

Merrick, M. T., Ports, K. A., Ford, D. C., Afifi, T. O., Gershoff, E. T., & Grogan-Kaylor, A. (2017). Unpacking the impact of adverse childhood experiences on adult mental health. *Child Abuse & Neglect*, *69*, 10–19. https://doi.org/10.1016/j.chiabu.2017.03.016

Mijanovich, T., & Weitzman, B. C. (2003). Which "broken windows" matter? School, neighborhood, and family characteristics associated with youths' feelings of unsafety. *Journal of Urban Health*, *80*(3), 400–415. https://doi.org/10.1093/jurban/jtg045

Mmari, K., Blum, R. W., Atnafou, R., Chilet, E., Meyer, S. D., El-Gibaly, O., Basu, S., Bello, B., Maina, B., & Zuo, X. (2017). Exploration of gender norms and socialization among early adolescents: The use of qualitative methods for the Global Early Adolescent Study. *Journal of Adolescent Health*, *61*(4), S12–S18.

Montgomery, S. C., Donnelly, M., Bhatnagar, P., Carlin, A., Kee, F., & Hunter, R. F. (2020). Peer social network processes and adolescent health behaviors: A systematic review. *Preventive Medicine*, *130*, 105900. https://doi.org/10.1016/j.ypmed.2019.105900

Mooij, T., & Fettelaar, D. (2013). School and pupil effects on secondary pupils' feelings of safety in school, around school, and at home. *Journal of Interpersonal Violence*, *28*(6), 1240–1266. https://doi.org/10.1177/0886260512468242

Muthén, B., & Shedden, K. (1999). Finite mixture modeling with mixture outcomes using the EM algorithm. *Biometrics*, *55*(2), 463–469. https://doi.org/10.1111/j.0006-341x.1999.00463.x

Muthén, L. K., & Muthén, B. O. (1998). *Mplus User's Guide. Eighth Edition.* Muthén & Muthén.

Nelson, E. E., Jarcho, J. M., & Guyer, A. E. (2016). Social re-orientation and brain development: An expanded and updated view. *Developmental Cognitive Neuroscience*, *17*, 118–127. https://doi.org/10.1016/j.dcn.2015.12.008

Nijs, M. M., Bun, C. J. E., Tempelaar, W. M., de Wit, N. J., Burger, H., Plevier, C. M., & Boks, M. P. M. (2014). Perceived school safety is strongly associated with adolescent mental health problems. *Community Mental Health Journal*, *50*(2), 127–134. https://doi.org/10.1007/s10597-013-9599-1

Norman, R. E., Byambaa, M., De, R., Butchart, A., Scott, J., & Vos, T. (2012). The Long-Term Health Consequences of Child Physical Abuse, Emotional Abuse, and Neglect: A Systematic Review and Meta-Analysis. *PLoS Medicine*, *9*(11). https://doi.org/10.1371/journal.pmed.1001349

Nylund-Gibson, K., & Hart, S. R. (2014). Latent Class Analysis in Prevention Science. In Z. Sloboda & H. Petras (Eds.), *Defining Prevention Science* (pp. 493–511). Springer US. https://doi.org/10.1007/978-1-4899-7424-2_21

Obot, I. S., & Anthony, J. C. (2004). Mental Health Problems in Adolescent Children of Alcohol Dependent Parents: Epidemiologic Research with a Nationally Representative Sample. *Journal of Child & Adolescent Substance Abuse*, *13*(4), 83–96. https://doi.org/10.1300/J029v13n04_06

Oladeji, B. D., Makanjuola, V. A., & Gureje, O. (2010). Family-related adverse childhood experiences as risk factors for psychiatric disorders in Nigeria. *The British Journal of Psychiatry*, *196*(3), 186–191. https://doi.org/10.1192/bjp.bp.109.063677

Olcoń, K., Kim, Y., & Gulbas, L. E. (2017). Sense of Belonging and Youth Suicidal Behaviors: What Do Communities and Schools Have to Do with It? *Social Work in Public Health*, *32*(7), 432–442. https://doi.org/10.1080/19371918.2017.1344602

Oshri, A., Tubman, J. G., & Jaccard, J. (2011). Psychiatric symptom typology in a sample of youth receiving substance abuse treatment services: Associations with self-reported child maltreatment and sexual risk behaviors. *AIDS and Behavior*, *15*(8), 1844–1856. https://doi.org/10.1007/s10461-011-9890-5

Patel, V., Flisher, A. J., Hetrick, S., & McGorry, P. (2007). Mental health of young people: A global public-health challenge. *The Lancet*, *369*(9569), 1302–1313.

Patel, V., Flisher, A. J., Nikapota, A., & Malhotra, S. (2008). Promoting child and adolescent mental health in low and middle income countries. *Journal of Child Psychology and Psychiatry*, *49*(3), 313–334.

Patton, G. C., Sawyer, S. M., Santelli, J. S., Ross, D. A., Afifi, R., Allen, N. B., Arora, M., Azzopardi, P., Baldwin, W., & Bonell, C. (2016). Our future: A Lancet commission on adolescent health and wellbeing. *The Lancet*, *387*(10036), 2423–2478.

Reiss, F. (2013). Socioeconomic inequalities and mental health problems in children and adolescents: A systematic review. *Social Science & Medicine (1982)*, *90*, 24–31. https://doi.org/10.1016/j.socscimed.2013.04.026

Roach, A. (2018). Supportive Peer Relationships and Mental Health in Adolescence: An Integrative Review. *Issues in Mental Health Nursing*, *39*(9), 723–737. https://doi.org/10.1080/01612840.2018.1496498

Rubin, D. B. (1987). *Multiple Imputation for Nonresponse in Surveys*. John Wiley & Sons.

Salmivalli, C. (2010). Bullying and the peer group: A review. *Aggression and Violent Behavior*, *15*(2), 112–120. https://doi.org/10.1016/j.avb.2009.08.007

Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, *7*(2), 147–177.

Shackleton, N., Jamal, F., Viner, R. M., Dickson, K., Patton, G., & Bonell, C. (2016). School-Based Interventions Going Beyond Health Education to Promote Adolescent Health: Systematic Review of Reviews. *Journal of Adolescent Health*, *58*(4), 382–396. https://doi.org/10.1016/j.jadohealth.2015.12.017

Shinde, S., Weiss, H. A., Varghese, B., Khandeparkar, P., Pereira, B., Sharma, A., Gupta, R., Ross, D. A., Patton, G., & Patel, V. (2018). Promoting school climate and health outcomes with

the SEHER multi-component secondary school intervention in Bihar, India: A cluster-randomised controlled trial. *The Lancet*, *392*(10163), 2465–2477. https://doi.org/10.1016/S0140-6736(18)31615-5

Soares, A. L. G., Howe, L. D., Matijasevich, A., Wehrmeister, F. C., Menezes, A. M. B., & Gonçalves, H. (2016). Adverse childhood experiences: Prevalence and related factors in adolescents of a Brazilian birth cohort. *Child Abuse & Neglect*, *51*, 21–30. https://doi.org/10.1016/j.chiabu.2015.11.017

Solberg, M. A., & Peters, R. M. (2020). Adverse Childhood Experiences in Non-Westernized Nations: Implications for Immigrant and Refugee Health. *Journal of Immigrant and Minority Health*, *22*(1), 145–155. https://doi.org/10.1007/s10903-019-00953-y

Stirling, K., Toumbourou, J. W., & Rowland, B. (2015). Community factors influencing child and adolescent depression: A systematic review and meta-analysis. *The Australian and New Zealand Journal of Psychiatry*, *49*(10), 869–886. https://doi.org/10.1177/0004867415603129

Sullivan, C. J., Childs, K. K., & O'Connell, D. (2010). Adolescent risk behavior subgroups: An empirical assessment. *Journal of Youth and Adolescence*, *39*(5), 541–562. https://doi.org/10.1007/s10964-009-9445-5

Thapa, A., Cohen, J., Guffey, S., & Higgins-D'Alessandro, A. (2013). A Review of School Climate Research. *Review of Educational Research*, *83*(3), 357–385. https://doi.org/10.3102/0034654313483907

Thomas, H. J., Connor, J. P., & Scott, J. G. (2018). Why do children and adolescents bully their peers? A critical review of key theoretical frameworks. *Social Psychiatry and Psychiatric Epidemiology*, *53*(5), 437–451. https://doi.org/10.1007/s00127-017-1462-1

United Nations Children's Fund. (2012). *Progress for Children: A report card on adolescents. Number 10*. https://www.unicef.org/publications/index_62280.html

Vermunt, J. K. (2010). Latent class modeling with covariates: Two improved three-step approaches. *Political Analysis*, *18*(4), 450–469.

Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *The Lancet*, *379*(9826), 1641–1652.

Voight, A., & Nation, M. (2016). Practices for Improving Secondary School Climate: A Systematic Review of the Research Literature. *American Journal of Community Psychology*, *58*(1–2), 174–191. https://doi.org/10.1002/ajcp.12074

Vreeman, R. C., & Carroll, A. E. (2007). A systematic review of school-based interventions to prevent bullying. *Archives of Pediatrics & Adolescent Medicine*, *161*(1), 78–88. https://doi.org/10.1001/archpedi.161.1.78

Weare, K., & Nind, M. (2011). Mental health promotion and problem prevention in schools: What does the evidence say? *Health Promotion International*, *26 Suppl 1*, i29-69. https://doi.org/10.1093/heapro/dar075

Yap, M. B. H., Pilkington, P. D., Ryan, S. M., & Jorm, A. F. (2014). Parental factors associated with depression and anxiety in young people: A systematic review and meta-analysis. *Journal of Affective Disorders*, *156*, 8–23. https://doi.org/10.1016/j.jad.2013.11.007

Zhang, L., Fang, J., Wan, Y., Gong, C., Su, P., Tao, F., & Sun, Y. (2020). The patterns of adverse childhood experiences among Chinese children: Four-year longitudinal associations with psychopathological symptoms. *Journal of Psychiatric Research*, *122*, 1–8. https://doi.org/10.1016/j.jpsychires.2019.12.009

Chapter 5

"If it's really excessive, it can enter your heart": A mixed methods investigation of bullying among early adolescents in Semarang, Indonesia

5.1 Abstract

Introduction: The current study explored Indonesian early adolescents' motivations, perceptions, and beliefs regarding bullying involvement. Building on prior quantitative findings, an explanatory sequential mixed methods approach was used to better understand the myriad ways in which bullying involvement ties into other psychosocial challenges.

Methods: This study was nested within the Global Early Adolescent Study (GEAS), and included a sub-sample of GEAS participants living in Semarang, Indonesia. Qualitative interviews were conducted with a total of 45 adolescents (25 girls and 20 boys) in two junior high schools, with sampling based on previous quantitative findings. Interviews were audio-recorded, transcribed verbatim, and translated into English. Qualitative data were coded using an inductive thematic analysis approach.

Results: Interviews yielded contextual insights into adolescents' definitions of bullying, including the distinction between "normal" and "serious" bullying; related risk behaviors; key drivers; social and emotional consequences; and coping strategies. Across these thematic categories, a number of noteworthy gender differences emerged.

Conclusions: Overall, findings emphasized the need to develop a locally valid definition of bullying which takes into account the ways in which emotional distress may be both a criterion and a consequence of bullying. In addition, interviews helped shed further light upon the interpretation of previous quantitative data. Findings can be used to inform bullying prevention programs targeting Indonesian youth.

5.2 Background

Bullying is one of the most common forms of youth violence worldwide and is a significant public health challenge for adolescents in diverse country settings. Cross-national studies have suggested that around 25-35% of adolescents worldwide are involved in bullying, although country-level prevalence estimates are highly variable (Craig et al., 2009; Modecki et al., 2014). Bullying has traditionally been defined as repeated aggressive behaviors that are intended to cause harm and involve a power imbalance between the perpetrator and the victim (Olweus, 1993). Such behaviors may include acts of physical aggression (e.g., hitting, pushing), verbal aggression (e.g., name-calling, threatening), relational aggression (e.g., social exclusion), and increasingly, cyber aggression (e.g., online harassment) (Menesini & Salmivalli, 2017). While early research tended to characterize youth as either perpetrators or victims of bullying, the field has increasingly recognized that such labels are not mutually exclusive, with many youth falling into both categories (i.e., "bully-victims") (Cook et al., 2010; Walters, 2020).

A large body of research has documented the bidirectional relationships between bullying and other psychosocial challenges. Adolescents involved in bullying as victims, perpetrators, or both are at increased risk of experiencing a range of short- and long-term emotional and behavioral problems, including depression, anxiety, suicidal behaviors, aggression, delinquency, and substance use (Moore et al., 2017; Ttofi et al., 2012; Zych et al., 2015). Likewise, longitudinal investigations examining the psychosocial antecedents of bullying involvement have identified internalizing symptoms, conduct problems, and social challenges as important predictors (Kljakovic & Hunt, 2016; Reijntjes et al., 2010). Notably, many studies have found that "bully-victims" may be a uniquely vulnerable subgroup, with higher overall rates of mental health and psychosocial problems compared to those involved in bullying purely as victims or perpetrators

(Angeles et al., 2019; Cook et al., 2010; Copeland et al., 2013; Haynie et al., 2001; Kelly et al., 2015; Nansel et al., 2001; Stein et al., 2007; Wolke et al., 2013).

While the extant literature speaks to the pervasive nature and detrimental impacts of bullying involvement, it has notable limitations. In particular, existing research can be difficult to interpret due to considerable inconsistencies in the measurement of bullying (Vivolo-Kantor et al., 2014). Some of these inconsistencies relate to the lack of a globally accepted standard definition of bullying. For instance, while definitions of bullying frequently specify that it must be repeated (e.g., Olweus, 1993), there are differing opinions regarding whether repetition is required given that a single incident can have harmful effects (Swearer et al., 2010). Likewise, despite widespread recognition of the growing burden of cyberbullying, experts disagree on whether cyberbullying is phenomenologically distinct from "traditional" forms of bullying (Englander et al., 2017; Langos, 2012; Olweus & Limber, 2018; Ybarra et al., 2012). A number of studies have also found that differences in measurement strategies – in particular, providing youth with a formal definition of bullying compared to simply describing bullying behaviors – can have a drastic impact on the reported prevalence of bullying involvement (Green et al., 2013; Thomas et al., 2015; Vaillancourt et al., 2008). Finally, cross-national research has suggested that there are important nuances in the ways that adolescents from diverse cultural contexts understand, define, and describe bullying (Murray-Harvey et al., 2010; Sittichai & Smith, 2015; Smith et al., 2002).

In addressing these issues, researchers have called for an increase in studies that utilize qualitative methods in order to illuminate youth's own perceptions of bullying (Hutson, 2018; D. Patton et al., 2017). Such studies complement quantitative research by allowing for a deeper and more contextual understanding of bullying involvement, and can ultimately be used to inform appropriate assessment tools, prevention strategies, and intervention approaches (D. Patton et al.,

2017; Rich & Ginsburg, 1999). Indeed, existing studies that have adopted qualitative methodologies have uncovered important inconsistencies between researchers' definitions of bullying compared to how adolescents themselves conceptualize this phenomenon. A common finding across studies is that while youth often describe aggressive behaviors as bullying, they frequently omit the criteria of intentionality, repetition, and power imbalance from their definitions (Frisén et al., 2008; Guerin & Hennessy, 2002; Hellström et al., 2015; Land, 2003; Vaillancourt et al., 2008). Qualitative methods have also been used to elicit adolescents' perspectives on gender differences in bullying (Athanasiades & Deliyanni-Kouimtzis, 2010; Hellström & Beckman, 2020), causes and consequences of bullying (Albdour et al., 2017; AlBuhairan et al., 2016; Bell et al., 2014; Pister, 2014), experiences of cyberbullying (Berne et al., 2014; Ranney et al., 2020; Vandebosch & Van Cleemput, 2008), and central coping strategies (Evans et al., 2017; Tenenbaum et al., 2011).

In Indonesia, the setting of the current study, existing research suggests that bullying is a prevalent concern for adolescents. According to nationally representative data from the 2015 Global School-based Student Health Survey, around 20% of youth reported past-month experiences of bullying victimization (Yusuf et al., 2019). Similar to other contexts, bullying involvement in Indonesia has been found to be associated with a range of psychosocial problems, including anxiety, loneliness, social isolation, substance use, and suicidal behaviors (Putra et al., 2019; Wang et al., 2020; Yusuf et al., 2019). Such findings have driven the Indonesian government to adopt several initiatives aimed at reducing interpersonal violence in school settings, such as the Child Friendly Schools Initiative and the National Strategy for the Elimination of Violence against Children (Arifin et al., 2019; Ministry for Women's Empowerment and Child Rights, 2015). To date, however, there have been few qualitative studies that attempt to uncover perceptions of

Indonesian adolescents regarding bullying and its psychosocial correlates. Given the paucity of evidence-based interventions targeting bullying involvement in Indonesia (Bowes et al., 2019), such information could be transformative in shaping locally acceptable psychosocial support strategies for vulnerable youth.

The current study attempts to fill these gaps through a mixed methods exploration of bullying involvement among Indonesian youth. It was nested within the Global Early Adolescent Study (GEAS), a longitudinal investigation of risk and protective factors for healthy development among early adolescents (ages 10-14) living in low-resource urban settings worldwide (Mmari et al., 2017). The current study employed an explanatory sequential mixed methods design, in which qualitative data was collected after an initial quantitative phase, with qualitative data used to interpret and expand upon quantitative results (Creswell & Clark, 2017). Specifically, this study followed up on quantitative findings from a prior analysis of co-occurring emotional and behavioral problems among GEAS adolescents in Indonesia (Fine et al., Unpublished), with qualitative interviews intended to yield a more contextual understanding of the contribution of bullying involvement to an adolescent's broader constellation of psychosocial risks. Qualitative interviews were conducted with a sub-sample of GEAS participants living in Semarang, Indonesia. While a range of issues were covered during interviews, the current analysis focuses primarily on (a) adolescents' definitions of bullying; (b) their perceptions of the causes and consequences of bullying; and (c) their strategies for coping with bullying experiences.

5.3 Methods

Study Setting

In Indonesia, the GEAS includes three diverse study sites: Semarang, Java; Bandar Lampung, Sumatra; and Denpasar, Bali. Within each of these sites, baseline quantitative data was

collected by trained research assistants in 2018. The methodology for quantitative data collection within the GEAS has been described in detail elsewhere (Mmari et al., Unpublished). As outlined above, this explanatory sequential mixed methods study expands upon preliminary quantitative findings from across the three Indonesian sites through qualitative data from a sub-sample of adolescents living in Semarang. Qualitative data were collected in Semarang between October and December 2019.

The capital of the Central Java province, Semarang was selected as the site for qualitative data collection for several reasons. While the city has enjoyed notable economic development over the past several decades, infrastructure strain driven by unchecked population growth has contributed to increasing marginalization among the urban poor (Giyarsih & Marfai, 2017; Semarang City Government, 2016; World Health Organization, 2017). The potential for such urbanization patterns to increase psychosocial vulnerability (Lu, 2010) makes Semarang a particularly interesting environment in which to study behavioral risks among disadvantaged youth. In addition, there is indication that the prevalence of mental disorders in Central Java may be higher than other regions of the country (Indonesia Agency of Health and Development, 2013) stressing the need for investigations that explore the antecedents of mental health problems in this context.

Participants and Procedures

Sampling for the qualitative study was based on quantitative findings from a latent class analysis (LCA) of GEAS adolescents from across Indonesia (N = 4,657) in order to include adolescents with a range of bullying experiences. Detailed methodology and results from this quantitative analysis have been submitted for publication in a companion article (Fine et al., Unpublished). Briefly, LCA was used to identify subgroups (i.e., classes) of adolescents based on

their patterns of endorsement to a set of ten emotional and behavioral indicators. These included five indicators related to symptoms of depression and anxiety, two related to aggressive behavior, two related to peer victimization, and one related to substance use (Table 5.1). Results from the class enumeration process supported a four-class solution in Indonesia, which consisted of the following subgroups: *Well-Adjusted* (49%), with few emotional and behavioral problems; *Emotional Problems* (29%), with elevated symptoms of depression and anxiety; *Behavioral Problems* (15%), with increased involvement in aggressive behaviors, peer victimization, and substance use; and *Maladjusted* (6%), with co-occurring emotional and behavioral problems (Figure 5.1).

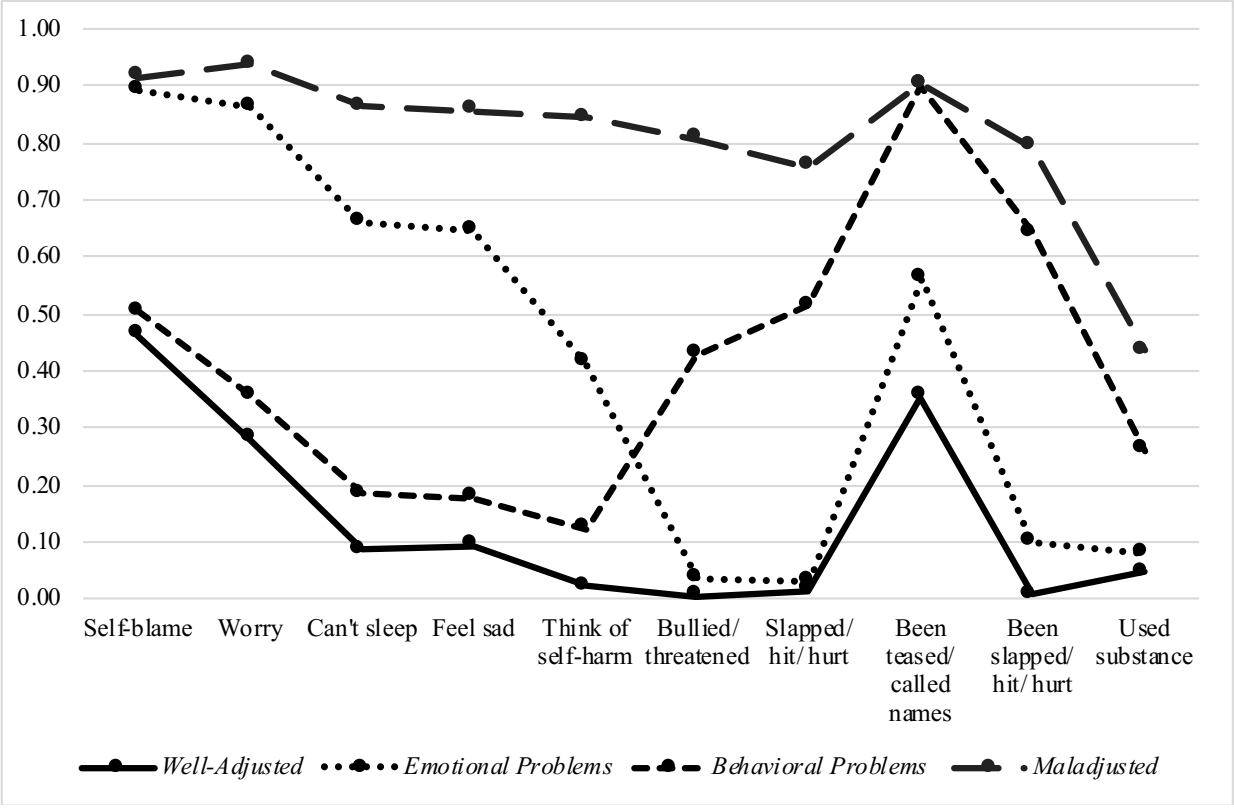


Figure 5.1. Indonesia four-class latent class analysis model (N = 4,657)

Following the class enumeration process, qualitative study participants in Semarang were purposively sampled from each of the four established classes, with selection based on their posterior probability of latent class membership (i.e., their most probable class membership given responses to emotional and behavioral indicators). While we originally intended to make qualitative comparisons between adolescents from different latent classes, variable data richness across interviews made it infeasible to explore such thematic differences. Instead, we have used this stratified purposive sampling strategy (Patton, 1990) to ensure representation from adolescents with varied patterns of emotional and behavioral problems. In order to arrive at our ultimate sample size goal of 40 adolescents, around 16 participants were selected from each latent class, equally divided between boys and girls. While the Indonesian GEAS included adolescents who were 10-14 years old at baseline, sampling was limited to those who were 12-14 years old as they were expected to be able to provide richer qualitative information (Faux et al., 1988). To note, as interviews were conducted approximately one year after baseline data collection, participants were 13-15 years old at the time of the qualitative study.

Of the 63 adolescents who were selected from two participating junior high schools, 45 consented to participate in the in-depth interviews (Table 5.1). This included 11 participants from the *Well-Adjusted* class (6 boys and 5 girls), 9 participants from the *Emotional Problems* class (4 boys and 5 girls), 12 participants from the *Behavioral Problems* class (6 boys and 6 girls), and 13 participants from the *Maladjusted* class (4 boys and 9 girls). Given the salience of bullying involvement in adolescence, this sample size was sufficient for achieving theoretical saturation. Interviews explored adolescents' motivations, perceptions, and beliefs regarding bullying involvement. They were implemented using a semi-structured interview guide, which was developed in English and subsequently translated and back-translated by local translators. The

interview guide was piloted with nine adolescents to ensure that questions were acceptable, comprehensible, and age-appropriate.

Table 5.1. Demographics and latent class indicators of adolescent participants ($N = 45$)

	n	**%**
Sex		
Boy	20	44.4
Girl	25	55.6
Age[a]		
13	35	77.8
14	10	22.2
Latent class membership		
Well-adjusted	11	24.4
Emotional problems	9	20.0
Behavioral problems	12	26.7
Maladjusted	13	28.9
Internalizing symptoms[b]		
I blame myself when things go wrong	26	57.8
I worry for no good reason	23	51.1
I am so unhappy I can't sleep at night	19	42.2
I feel sad	22	48.9
I am so unhappy I think of harming myself	17	37.8
Aggression		
During the last 6 months, have you bullied/threatened another boy/girl?	16	35.6
During the last 6 months, have you slapped/hit/physically hurt another boy/girl?	21	46.7
Peer victimization		
During the last 6 months, have you been teased/called names?	30	66.7
During the last 6 months, have you been slapped/hit/physically hurt?	17	37.8
Substance use		
In your lifetime, have you ever used any substance, including alcohol, tobacco, marijuana, or illicit drugs?	12	26.7

Note. [a] Age assumes interviews conducted one year after quantitative baseline assessment; [b] Coded so that positive endorsement indicates "agree a lot" or "agree a little."

Interviews took place in a private room at school and lasted between 45 and 90 minutes. They were conducted in Bahasa Indonesia by three experienced Indonesian researchers. Prior to data collection, the interview team participated in a three-day training, which included sessions on

the research protocol, qualitative interviewing methods, human subjects protection, and other ethical issues specific to conducting research with youth. Interviews were audio-recorded and transcribed verbatim, and field notes were written immediately after each interview. The interview team participated in daily debriefing sessions in order to address challenges that arose, discuss emergent themes, and plan for future interviews.

Data Analysis

Transcribed audio-recordings and typed field notes were translated on an ongoing basis, with translated data made immediately available to facilitate iterative analysis. These qualitative data were coded using an inductive thematic analysis approach (Braun & Clarke, 2006) that drew on elements from grounded theory (Charmaz, 2006; Corbin & Strauss, 2014). Specifically, analysis began with a process of open coding, whereby lines of data were examined and labeled based on the actions, patterns, and thematic content within. In order to ensure that codes were grounded in the original data, the first phase of open coding was carried out collaboratively by the lead author alongside the interview team, with the lead author coding in English and the interview team coding in Bahasa Indonesia. After coding three representative transcripts, initial codes were compared, grouped into tentative categories, and organized into a preliminary bilingual codebook. In order to refine this preliminary codebook, a further set of ten transcripts were then coded independently by the lead author.

Following open coding, the lead author applied the codebook to the full set of qualitative data, including translated transcripts and field notes. Axial coding was used to explore relationships within and between categories, develop emergent themes, and draw substantive conclusions supported by the data. In addition, matrices were employed to examine overlaps between key codes and differences between boys and girls. *MAXQDA*, a qualitative data analysis

software program, was used to help organize and analyze the data (VERBI Software, 2019). Throughout data analysis, memos were used to document the analytic process. In addition, the lead author discussed findings with the interview team on an ongoing basis to ensure agreement on emergent themes.

In order to increase the credibility of results (Lincoln & Guba, 1985), dissemination meetings were held at each junior high school to present preliminary findings and obtain feedback from key school personnel on points of agreement, points of disagreement, and any missing information. These meetings were facilitated by the interview team, and included school principals, counselors, and teaching staff. Finally, following the qualitative data analysis process, qualitative conclusions were integrated with quantitative results in order to consider important points of convergence and dissonance (O'Cathain et al., 2010; Onwuegbuzie & Teddlie, 2003).

Research Ethics

Ethical approval was obtained from the Institutional Review Board of Johns Hopkins Bloomberg School of Public Health and the Medical and Health Research Ethics Committee of the University of Gadjah Mada. Prior to data collection, informed consent was obtained from parents/guardians and assent was obtained from adolescent participants. In order to preserve confidentiality, the interview team did not have access to the quantitative data forming the basis for participant selection.

5.4 Results

Types of Bullying

Participants had a range of perspectives on what constituted bullying. Nearly all of the adolescents described situations of verbal bullying, which most commonly included mocking or

insulting others about their family background, physical appearance, or perceived shortcomings. Relatedly, a number of adolescents mentioned name-calling (e.g., "Fatty," "Blacky," "Slut"), which was generally carried out over a prolonged period of time. According to participants, a particularly ubiquitous form of verbal bullying was the use of an individual's parent's name or profession as a form of taunting, as detailed below:

> *So my father is of Chinese descent...My father opened a wholesale store which supplied a lot of different markets in my area. The kids called me "Chinese Market" or "Chinese-Javanese." (Girl, age 13)*

Many adolescents also mentioned physical bullying, such as hitting, kicking, pinching, scratching, spitting, hair-pulling, and pushing around. Physical bullying was thought to be much more common among boys, although several adolescents mentioned that girls sometimes participate in less severe forms of physical bullying (e.g., pinching or hair-pulling). By contrast, relational bullying was described as largely unique to girls, and included gossiping, spreading rumors, socially excluding, and ostracizing. The dynamics of relational bullying were also distinct from verbal and physical bullying: whereas verbal and physical bullying were seen as being either one-on-one or group-on-one, relational bullying was always characterized as a situation in which a group ganged up on a single victim. To note, both physical and relational bullying were depicted as being frequently accompanied by verbal bullying, as in the following examples:

> *There was this one time when my friend had brought lunch with her and was about to eat, but the others bullied her, made fun of her food until my friend couldn't even eat. I was about to say sorry but I was afraid to do it…Yeah, [during that time] they stayed away [from her]. Continued to make fun of her, and talked behind her back. And then…stayed away. Anyway, she was completely alone. No one befriended her. (Girl, age 13)*

> *As for me, maybe…in his eyes, I am weak. That's why he punched me...He hit me and insulted me, usually. (Boy, age 13)*

While it was less commonly mentioned, several participants brought up cyberbullying. In particular, participants recounted instances in which adolescents would mock or harass others

either through the comments section on social media platforms or through social media status updates. Finally, a number of adolescents mentioned sexual harassment as a type of bullying, including groping and making sexual comments. While sexual harassment was largely described as boys targeting girls, a few participants discussed boys who harassed other boys, such as the adolescent below:

> *He mocks the boys, too. And he grabs their butts and genitals...there was one time where a boy was writing something down. The seat next to him was empty, so he sat next to him. He touched his genitals, and then continued to bully him later. He'd say things like, "You're such a sissy, you play like a girl." Or he'd say, "Sissy, you don't have a penis and you have flat butt." (Girl, age 14)*

Serious Bullying

In defining bullying, a key theme across many of the interviews was the distinction between "serious" and "normal" bullying. Many of the behaviors described by participants were seen as part of the normative interpersonal dynamics between adolescents. This was particularly true of mocking, which was depicted as a "common" way for adolescents to "joke" or "play around" with each other. While adolescents generally agreed that bullying could sometimes be serious, they held differing opinions regarding factors that distinguished serious from normal bullying. For some, serious bullying was related to the intent of the perpetrator: it is serious if someone intends to cause harm or "means what they say." For others, serious bullying was related to the consequences for the victim: it is serious if someone "doesn't like it," "takes it personally," or ends up with "hurt feelings." The frequency of bullying also contributed to its seriousness, with bullying that was "continuous" or "everyday" considered to be more severe by several participants. Further, many adolescents noted that mocking which started as a joke could "go too far" if it was excessive, thereby "crossing the line" into bullying.

> *If they make fun of me once or twice, they're probably just joking, it's normal, but if they keep mocking me, then I'll consider them to really mean it. That kind of mocking can enter your heart. Usually mocking doesn't enter your heart, but if it's really excessive it can enter your heart and can even cause "sakit hati" ["sick heart"]. (Girl, age 14)*

Several adolescents also suggested that different types of bullying were more or less serious, with physical bullying generally considered to be more severe than verbal bullying. By contrast, a few participants felt that verbal bullying was just as serious because it attacked someone's "pride" or "good name," and thus necessitated a response. Finally, a number of participants indicated that boys generally bully harder than girls, both because they are more likely to "go too far" with their mocking and because they are prone to perpetrate physical violence.

> *If they don't get physical, it's fine. You're not supposed to do it physically. (Boy, age 12)*

> *Boys tend to [bully] more seriously, and they also tend to get into more fights…[boys] tend to do it more, so they often cross the line. (Girl, age 13)*

Related Behaviors

While interviews focused largely on bullying, many of the participants mentioned that adolescents who are involved in bullying commonly take part in a range of other related behaviors. These individuals were described by a number of participants as "*nakal,*" which translates to "naughty" or "delinquent." The most common behaviors attributed to adolescents who fell into this category were smoking, drinking, and fighting. In addition, participants mentioned driving motorcycles recklessly, skipping classes, skipping prayers (particularly Friday afternoon prayers at school), staying out late, dating inappropriately, and participating in *"reog*" (a traditional Javanese dance, which is associated with mysticism).

> *Usually when they hang out to ride motorcycles together, the whole group is there. They may also smoke and drink together. When they get drunk, they usually don't think straight and usually fight each other. (Boy, age 13)*

Like bullying itself, there were gendered dimensions to *nakal*, with the behaviors described above most commonly associated with boys. While a number of participants mentioned girls who participated in these behaviors, this was generally seen as unusual, particularly as it pertained to physical aggression and substance use. Several adolescents suggested that girls who were *nakal* were more likely to participate in a somewhat different set of behaviors than their male counterparts, including things like forming gangs, dressing provocatively, swearing, and breaking rules. To the extent that these girls *did* engage in more "male-oriented" behaviors, this was depicted as largely a function of improper socializing with boys who were *nakal*. As the following adolescents articulated:

> *It happens among girls as well, some are "nakal," but not like that, not like the boys…For them, "nakal" is in the way they socialize with others...like being friends inappropriately, being friends with boys, "nakal" boys, like that. (Girl, age 14)*

> *One of my friends is my neighbor, he's been my friend since I was little. I would go out with him a lot, and I smoked, and I was drunk, too. I would go home at 11:30pm, at 12:00am...My [male] friends said to me, "You're a girl, why would you hang out with us, smoking and drinking like this?" (Girl, age 13)*

Causes of Bullying

Regardless of gender, being *nakal* was considered to be a significant driver of bullying by many participants. Adolescents who fell into this category were characterized as disruptive and oppositional by nature, frequently starting trouble with others for no apparent reason or as a way of seeking attention. For example, one girl profiled a boy that she labeled as *nakal* in the following way:

> *One time, a girl didn't want to give up her seat to a boy. The boy forced her to do it. He didn't accept it, and spat on her…This boy does that a lot…and he also hits [her]…The boy is a "nakal" boy, and often gets into trouble with the school counselor…No one wants to be friends with him…[because] he's annoying like that…Like for example, he likes to hit others for no reason. And he writes on others' work, too…He's the same way towards the teachers, he frequently sleeps during class. If there's an assignment, he will try to cheat*

> *off of that girl's work, and if she doesn't want to let him copy, he'll yell at her. She didn't do anything wrong, but he'll hit her head, too. Yeah, he's a troublesome child and the school should do something about him. (Girl, age 14)*

Numerous participants also suggested that bullying was a way for "strong" adolescents to assert their power over "weak" adolescents. Not only were perpetrators described as being physically strong, but several participants also indicated that they were socially strong: adolescents with lots of friends who "rule the school," as one girl noted. Participants proposed that such adolescents perpetrated bullying as a way of demonstrating this power and superiority: "to gain notoriety so people will fear them" and "to let others know that they're strong." As a result, they often targeted those who "don't dare to fight back": adolescents who were commonly characterized as short, weak, nerdy, quiet, poor, or friendless.

> *There's this gang [of girls] in school...They say it's a gang only for people who have lots of friends, but if people don't have many friends you're not cool so you can't join...Most juniors and some seniors fear this gang. For example, if you make a little mistake, they'll confront you...They do whatever they want...they treat people how they want, and are picky about their friends. They also like to ask you for money, and if you say you don't have money, they will get angry and keep asking for it. (Girl, age 14)*

Beyond the above-mentioned traits, participants noted a number of other characteristics that might cause an adolescent to become a victim of bullying. Physical appearance was a common theme, with those who were overweight or dark-skinned frequently targeted. Likewise, a number of participants mentioned physical and cognitive deficiencies: for example, having an overbite, speaking with a stutter, or having a developmental disability. Those who were seen as gender non-conforming might also be bullied: this was particularly the case for boys who were perceived to be "girly," although several participants also mentioned girls being targeted for certain unsanctioned behaviors (e.g., smoking, drinking, being overly flirtatious, socializing largely with boys).

> *He was mocked with "pretty" during a class, I forget which class, pretty [boy's name], pretty [boy's name], like that, and the boy looked like he wanted to fight back but he*

refrained... there was a point when he wrote something on the blackboard and he was really gentle with it, and the teacher said, "Oh my god, son, are you a girl or a boy? Why do you write so softly like that?" (Girl, age 13)

There was this group of boys…There's one boy in my class that's really…like hollow, that's it...a little lacking. Well he's lacking in…if we rate him out of a hundred percent, he has less than that…The group of boys fought with him. They sent one person to fight that boy who was lacking. (Boy, age 13)

According to several participants, another noteworthy driver of bullying was jealousy, with adolescents targeted for doing well in school or being involved in a romantic relationship. Finally, many participants suggested that adolescents often perpetrated bullying largely for their own entertainment and enjoyment. As one boy said, "They have nothing else to do, probably. They're just bored."

Consequences of Bullying

Throughout the interviews, participants frequently described both the emotional and social consequences of bullying. In terms of the emotional consequences, a consistent term used by adolescents was "*sakit hati,"* which translates literally to "sick heart." Participants' descriptions of *sakit hati* suggest that this term encompasses a range of emotional responses, including hurt feelings, sadness, rumination, and depression. A number of adolescents suggested that *sakit hati* is a state that can last for an extended period of time, although it was clear that this was not always the case. Participants noted that *sakit hati* was the consequence of an experience that "becomes too much" and "enters the heart," and a few mentioned that in severe cases it could even lead to suicidal behaviors.

[The victims] are "sakit hati," and they want revenge but they can't get it because [the bullies] are more powerful. [They feel] sad, depressed, and scared, like they are burdened. (Girl, age 13)

If it's "sakit hati" you can see it in their faces or their eyes...Their faces show some sort of fake expression...at school, if someone is joking around, they would just have a fake

> *smile...the look in their eyes is as if they wanted to confide in others but they are buried inside themselves…they are afraid that if they tell others, later their words will spread to everyone. (Girl, age 13)*

Alongside *sakit hati*, participants mentioned a wide array of related emotions, including feeling sad, angry, ashamed, stressed, and depressed. Many also mentioned feelings of fear: for example, being afraid of the bullies themselves, afraid that it would only get worse if they tried to resist or fight back, and afraid that others would start targeting them if they found out about the bullying. According to adolescents, many of these emotional consequences were related to the primary social consequence of being bullied: social isolation. For example, participants described how those who were *sakit hati* would intentionally distance themselves from their peers. Likewise, those who were afraid would choose to stay away from others to avoid instances of bullying. These decisions to stay away seemed to be intertangled with forced isolation due to the ostracization of peers, particularly in cases of relational bullying:

> *I was "sakit hati," and my friends started to avoid me. And then they told everyone not to be friends with people like that, like me...So, it was better for me to be quiet...I was "sakit hati" so I decided just to be alone. (Girl, age 13)*

Social isolation was also described as a consequence for the bullying perpetrator. Several participants detailed instances in which bullies became "hated for their behavior," and suggested that adolescents would alienate the bullies out of fear or dislike. Relatedly, a few participants mentioned the ways in which bullies would develop a bad reputation, being labeled as "bad" or "*nakal*" by their peers or teachers. One boy illustrated such consequences through his description of what happened to the bully in his group of friends:

> *Even if we didn't make any mistakes, he sometimes beat us up. Even though we were part of his gang…Yeah, he would boss us around, things like that. Order us to do this and that…The disunity started when there was one person who didn't accept it any longer. And then, he asked another person to join him. Both of them agreed. Then they began to incite other friends to join them over time…[Now we] stay away from him…For example, if he needs something, we don't want to help him…No one starts conversations with him anymore. (Boy, age 13)*

Finally, participants mentioned a number of educational consequences for bullying perpetrators. Most commonly, adolescents would be called into the school counselor's office. In serious cases, the school counselor might then call the adolescent's parents into school for a meeting. A few participants also mentioned other punishments from the school, such as receiving a warning letter or getting suspended. To note, several adolescents suggested that while those caught bullying were often called in to speak with the school counselor, this intervention had little lasting impact:

> *I've reported this to the school counselor before, but they just had a discussion with this boy, and it didn't really go through. I'm not satisfied with the response. [The school counselor] only told the boy not to do it again, to do something else when he's joking around. His parents were called, and they didn't even come. (Girl, age 14)*

Coping Strategies

Victims of bullying were described as coping with their experiences in a number of different ways. The most frequently cited coping strategy was to share problems with close friends, who would offer advice, consolation, and support. Similarly, a number of adolescents mentioned seeking support from parents or teachers. To note, numerous participants said that adolescents are often reticent to share their experiences of bullying with others and would instead respond by "staying quiet." Participants cited a range of reasons that adolescents preferred to stay quiet. For instance, adolescents worried that if they told a teacher and the bully got in trouble, then the bullying would get worse. They worried that if they told a friend, the friend would spread it around and everyone would end up knowing what had happened to them. They worried that their parents would be angry with them for being involved in bullying, even as a victim. Notably, both of these competing coping strategies – seeking support versus staying quiet – were much more commonly mentioned by girls compared to boys.

I've told her several times to report him to the school counselor or try to fight back. She doesn't want to, because she's worried that if she responds like that it will be even worse for her. So she just succumbs to it, just stays quiets. (Girl, age 14)

My parents would get angry, I think they would get angry, and later I would get blamed. So I just stayed quiet. (Girl, age 13)

Another consistent theme throughout interviews was the feedback loop of interpersonal aggression, with those who were initially victims of bullying often becoming perpetrators either as a way of "venting their anger" or as a means of retaliation. In addition, many participants suggested that for boys, physical fighting was a common and acceptable way for coping with bullying victimization. Several adolescents related this to the idea of pride: if a boy "didn't accept" being mocked, particularly when the mockery was related to his family's reputation, then getting into a fight was the most appropriate recourse. These fights were generally described as short-lived, with both parties moving on from the conflict once the fight was over.

Sometimes [a boy] can't accept it when his physical appearance is mocked, or when his parents are mocked. That's the main cause of two boys fighting…They'll punch and kick each other, and their friends will egg them on. But [the fighting] usually doesn't last long. Someone will try to separate it. (Boy, age 13)

With boys, it's normal for them to defend themselves. With girls, they normally only defend themselves through talking. But boys defend themselves physically…For boys, they tend to still be friends after fighting with each other. For example, after A and B fight, they still are friends once they resolve their problems. (Girl, age 14)

As an alternative to fighting back, a number of participants mentioned overcoming bullying by being "patient" and "letting it go." For these adolescents, "staying quiet" in the moment was used as a deliberate coping strategy: a method for depriving the bully of satisfaction and keeping the harassment from escalating. Afterwards, adolescents described trying not to let these experiences have a lasting impact on them, even if they were hurtful. A few also mentioned trying to cope with their emotions through prayer, or through taking out their anger elsewhere.

I'm used to being mocked like that and I just let it go, it doesn't affect my life. If the bullies like it, well just let them be. (Girl, age 14)

Well, I felt angry, but I didn't show it in front of people. I would go to a deserted place, like a river or a forest, and I would vent my anger by throwing stones. (Boy, age 13)

5.5 Discussion

The current study explored Indonesian early adolescents' motivations, perceptions, and beliefs regarding bullying involvement. Consistent with previous qualitative studies (Frisén et al., 2008; Guerin & Hennessy, 2002; Hellström et al., 2015; Land, 2003; Vaillancourt et al., 2008), we found that Indonesian adolescents did not uniformly emphasize the traditional bullying criteria of intentionality, repetition, and power imbalance (Olweus, 1993). Of these three factors, power came up most frequently in interviews, with bullying commonly seen as a way for adolescents who were physically or socially strong to assert themselves over those they perceived as vulnerable. Repeated behaviors were also mentioned by a number of adolescents, particularly as an indication of when bullying crossed the line from something innocuous into something much more serious. Intentionality arose rarely, although a few participants again suggested that harmful intent could be a marker of serious bullying. While all three criteria emerged, however, their lack of consistent endorsement across the majority of adolescents is indicative that this widely used definition of bullying may not be entirely appropriate within the Indonesian context. Further, while the overall inconsistences between youth- and researcher-generated descriptions of bullying are unsurprising, they add weight to recent arguments around the need for an updated definition that has a greater basis in empirical evidence (Hanish et al., 2013; Vivolo-Kantor et al., 2014; Volk et al., 2017).

Notably, in distinguishing between "normal" and "serious" bullying, a number of participants stressed that the harmful consequences for the victim outweighed the harmful intent of the perpetrator. For these adolescents, interpersonal aggression could be considered bullying to the extent that it caused significant emotional distress (e.g., *sakit hati*). Several other studies have

documented similar findings around the importance of the victim's experiences in defining bullying (Guerin & Hennessy, 2002; Hellström et al., 2015; Madsen, 1996). While a robust body of literature has established emotional distress as a *consequence* of bullying victimization (Moore et al., 2017; Reijntjes et al., 2010), these studies suggest that such distress should be considered fundamental to the very nature of bullying. Despite this evidence, however, few definitions of bullying have explicitly included harmful consequences as a central criteria. A notable exception is Volk et al. (2014), who proposed a modified definition of bullying as "*aggressive goal-directed behavior that harms another individual within the context of power imbalance*." The authors argue that including harmful impact as part of this definition removes the conflation of repetition with harm, and instead acknowledges that a victim's perception of harm can be amplified by both the frequency and severity of bullying (Van der Ploeg et al., 2015; Van Noorden et al., 2016; Ybarra et al., 2014). Findings from the current study lend support to this notion: adolescents indicated that the seriousness of bullying was intimately tied to the harm it caused, which could be related to bullying type or frequency.

Participants' accounts of the consequences of serious bullying underscore the importance of pinpointing a contextually appropriate definition for this phenomenon. Adolescents highlighted a range of short- and long-term emotional challenges resulting from bullying victimization, encapsulated by their descriptions of *sakit hati*. A few participants suggested that at its most severe, bullying involvement could lead to suicidal behaviors, an association which has been well-established by quantitative evidence (Heerde & Hemphill, 2019; Holt et al., 2015). It was also apparent that emotional distress is often intimately connected to social isolation, and that each of these negative consequences can amplify the other. This has particular salience when paired with the admission that many adolescents choose to "stay quiet" about their bullying experiences, as it

illustrates the ways in which adolescents' responses to bullying may deepen their feelings of isolation. While studies have established associations between bullying and loneliness (Fleming & Jacobsen, 2010; Moore et al., 2017; Yusuf et al., 2019), future longitudinal investigations should attempt to tease apart the complex pathways linking bullying involvement, social isolation, and emotional distress among Indonesian youth.

Across qualitative interviews, a number of noteworthy gender differences emerged related to adolescents' involvement in bullying and other related risk behaviors. While both boys and girls participated in verbal bullying, adolescents suggested that boys were more likely to be involved in physical bullying and girls were more likely to be involved in relational bullying. This aligns with widespread views of gendered aggression, in which physical aggression is assumed to be more masculine and relational aggression is assumed to be more feminine (Crick et al., 2007; Juvonen & Graham, 2014); to note, while studies have continually confirmed that boys are more likely than girls to engage in physical forms of bullying, findings have been more equivocal regarding gender differences in relational bullying (Archer & Coyne, 2005; Card et al., 2008; Casper & Card, 2017). Stark gender differences also emerged in boys' and girls' divergent expressions of other behavioral risks, with boys perceived as being predisposed to smoking, drinking, getting into fights, driving recklessly, and staying out late at night (e.g., as in the case of those described as *nakal*). Together, these findings speak to the ways in which underlying gender norms can drive vulnerability among adolescent boys, with normative values around masculinity supporting the adoption of physical violence, delinquency, and substance use (Amin et al., 2018; Ragonese et al., 2019). In addition, they suggest the need for gender sensitivity when building prevention programs targeting behavioral challenges among adolescents in this context.

Interviews also illuminated boys' and girls' unique strategies and vulnerabilities related to coping with experiences of bullying. Girls were especially likely to rely on social support from friends or family in order to cope with bullying victimization and its resultant emotional distress; this reflects prior evidence which has established that girls have a greater tendency to seek support compared to boys (Athanasiades & Deliyanni-Kouimtzis, 2010; Cowie, 2000; Hellström & Beckman, 2020; Hunter et al., 2004; Naylor et al., 2001). At the same time, many girls expressed feeling afraid or uncomfortable with sharing their experiences, choosing instead to stay silent when faced with bullying. By contrast, boys commonly used physical outlets in order to cope with bullying experiences, starting fistfights with peers as a means of resolving interpersonal conflict. Participants' descriptions of these fights suggest their widespread acceptability: a socially sanctioned method for boys to vent their anger and defend their pride. While this type of coping may present a short-term solution for distressed boys, however, it is concerning due to the ways in which it normalizes violence as an acceptable problem-solving strategy, potentially foreshadowing the use of aggression within intimate relationships. Indeed, an emerging body of research has established links between bullying involvement and subsequent dating violence perpetration (Adhia et al., 2019; Falb et al., 2011; Foshee et al., 2014; Zych et al., 2019).

Finally, qualitative interviews yielded important contextual insights into the interpretation of the four previously established latent classes. In particular, adolescents' differentiation between normal and serious bullying provides a useful lens through which to understand the distinction between the *Maladjusted* and *Behavioral Problems* subgroups: the former in which bullying involvement is accompanied by a range of emotional problems, and the latter in which it stands on its own. Given the above-mentioned qualification that serious bullying can be defined by its resultant emotional distress, it follows that bullying involvement may be more problematic among

youth within the *Maladjusted* class compared to those within the *Behavioral Problems* class. A number of researchers have noted the normative nature of bullying among school-aged youth (Guerra et al., 2011; Salmivalli, 2010; Smith & Brain, 2000). This was certainly reflected by participants in the current study, many of whom described bullying as being a commonplace occurrence within school settings, a typical part of interpersonal dynamics, and a way for youth to entertain themselves and others. This aspect of bullying can make it particularly insidious from an intervention standpoint due to the challenges of shifting behaviors that are reinforced by social norms (Juvonen & Graham, 2014). Our mixed methods results suggest a possible entry point into this issue by allowing for the identification of those for whom these widespread behaviors are most consequential.

Together, these findings can be used to inform bullying prevention programs targeting Indonesian youth. The normative nature of bullying in this context speaks to the need for whole-school approaches which attempt to shape the broader social climate in schools through a combination of components targeting entire schools, classrooms, teachers, and individuals (Vreeman & Carroll, 2007). These approaches have shown promise in high-income contexts, with several systematic reviews suggesting that they are more effective in reducing bullying than those solely focused on individual victims or perpetrators (Cantone et al., 2015; Silva et al., 2017; Vreeman & Carroll, 2007). Notably, a recent study piloted a whole-school intervention aimed at shifting social norms around bullying in secondary schools across South Sulawesi and Central Java – including four schools in Semarang – and found this approach to be both feasible and acceptable (Bowes et al., 2019). Despite the intervention's promise, however, findings were mixed in terms of its impact on the prevalence of bullying perpetration and victimization, although it is important to note that the study was underpowered to detect statistical changes. The authors concluded that

while social norms around bullying are an important and potentially malleable intervention target, future contextual adaptations were warranted.

Our qualitative results serve as a roadmap for the types of adaptations that may be necessary in order to more effectively reach Indonesian youth. First, they imply the need to acknowledge adolescents' own definitions and perceptions of bullying, especially given inconsistencies with traditional conceptualizations of bullying. For instance, given the centrality of the victim's experience of emotional distress to adolescents' understanding of problematic bullying, anti-bullying messaging could focus on its harmful consequences in order to emphasize the ways in which this normative behavior can become serious and to help youth better classify bullying incidents. Second, our results suggest that interventions may not be equally applicable to both boys and girls, and should therefore take into account gender differences in bullying involvement as well as the role that underlying gender norms play in driving these differences. Finally, the fact that many adolescents were unwilling to disclose significant bullying experiences underscores the importance of building better psychosocial support systems within school settings. While school counselors are intended to provide this support, they were largely described by participants in terms of their disciplinary roles – and many viewed this discipline as ineffective. As such, there is a clear need to equip school personnel with the skills to better address emotional distress and teach healthy coping strategies among vulnerable students.

A number of study limitations must be discussed. First, as mentioned previously, our original analytic plan was to make thematic comparisons across adolescents from the four latent classes. This was ultimately infeasible due to variations in data richness: while some participants were excellent informants, some had immense difficulty articulating their thoughts and experiences, which is a challenge inherent in conducting qualitative research with younger

participants (Faux et al., 1988; Huang et al., 2016). As such, we have not indicated adolescents' latent class assignments for the selected quotations, nor do we attempt to attach differential meanings to qualitative data drawn from adolescents from separate classes. Instead, we have largely relied on class assignments as a means of ensuring representation from adolescents with diverse emotional and behavioral experiences. Second, findings from qualitative interviews conducted in Semarang may not be transferable to adolescents across Indonesia, particularly given the country's immense ethnic, cultural, and linguistical diversity. Future qualitative studies should replicate these efforts with Indonesian youth drawn from a range of different environments in order to help inform country-wide bullying prevention efforts. Third, while interviews were conducted in Bahasa Indonesia, the majority of data analysis was undertaken in English using translated transcripts. We have attempted to address this issue through a bilingual process of open coding as well as ongoing collaboration with Indonesian partners; it is still likely, however, that some relevant information was lost in translation.

Despite these limitations, our results demonstrate the utility of exploring adolescent bullying involvement using a mixed methods framework. Building on prior quantitative research – which uncovered four distinct patterns of emotional and behavioral problems among Indonesian youth – qualitative findings emphasized the myriad ways in which bullying involvement ties into other psychosocial challenges. Overall, results highlighted the need to take into account youth's own perceptions of bullying in order to develop effective prevention strategies in Indonesian schools.

5.6 References

Adhia, A., Gordon, A. R., Roberts, A. L., Fitzmaurice, G. M., Hemenway, D., & Austin, S. B. (2019). Longitudinal Associations Between Bullying and Intimate Partner Violence Among Adolescents and Young Adults. *Violence and Victims*, *34*(6), 1011–1029. https://doi.org/10.1891/0886-6708.VV-D-18-00135

Albdour, M., Lewin, L., Kavanaugh, K., Hong, J. S., & Wilson, F. (2017). Arab American Adolescents' Perceived Stress and Bullying Experiences: A Qualitative Study. *Western Journal of Nursing Research*, *39*(12), 1567–1588. https://doi.org/10.1177/0193945916678214

AlBuhairan, F. S., Al Eissa, M., Alkufeidy, N., & Almuneef, M. (2016). Bullying in early adolescence: An exploratory study in Saudi Arabia. *International Journal of Pediatrics & Adolescent Medicine*, *3*(2), 64–70. https://doi.org/10.1016/j.ijpam.2016.01.002

Amin, A., Kågesten, A., Adebayo, E., & Chandra-Mouli, V. (2018). Addressing Gender Socialization and Masculinity Norms Among Adolescent Boys: Policy and Programmatic Implications. *The Journal of Adolescent Health*, *62*(3 Suppl), S3–S5. https://doi.org/10.1016/j.jadohealth.2017.06.022

Angeles, G., de Hoop, J., Handa, S., Kilburn, K., Milazzo, A., Peterman, A., & Malawi Social Cash Transfer Evaluation Team. (2019). Government of Malawi's unconditional cash transfer improves youth mental health. *Social Science & Medicine (1982)*, *225*, 108–119. https://doi.org/10.1016/j.socscimed.2019.01.037

Archer, J., & Coyne, S. M. (2005). An Integrated Review of Indirect, Relational, and Social Aggression. *Personality and Social Psychology Review*, *9*(3), 212–230. https://doi.org/10.1207/s15327957pspr0903_2

Arifin, M., Sudarmo, S., & Sudibyo, D. (2019). The Implementation of Child- Friendly Schools: Challenges and Obstacles in the Era of Technological and Information Advancement. *Advances in Social Science, Education and Humanities Research*, *317*, 34–37. https://doi.org/10.2991/iconprocs-19.2019.7

Athanasiades, C., & Deliyanni-Kouimtzis, V. (2010). The experience of bullying among secondary school students. *Psychology in the Schools*, *47*(4), 328–341. https://doi.org/10.1002/pits.20473

Bell, R., Arnold, E., Golden, S., Langdon, S., Anderson, A., & Bryant, A. (2014). Perceptions and psychosocial correlates of bullying among Lumbee Indian youth. *American Indian and Alaska Native Mental Health Research*, *21*(1), 1–17.

Berne, S., Frisén, A., & Kling, J. (2014). Appearance-related cyberbullying: A qualitative investigation of characteristics, content, reasons, and effects. *Body Image*, *11*(4), 527–533. https://doi.org/10.1016/j.bodyim.2014.08.006

Bowes, L., Aryani, F., Ohan, F., Haryanti, R. H., Winarna, S., Arsianto, Y., Budiyawati, H., Widowati, E., Saraswati, R., Kristianto, Y., Suryani, Y. E., Ulum, D. F., & Minnick, E. (2019). The development and pilot testing of an adolescent bullying intervention in Indonesia—The ROOTS Indonesia program. *Global Health Action*, *12*(1), 1656905. https://doi.org/10.1080/16549716.2019.1656905

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101.

Cantone, E., Piras, A. P., Vellante, M., Preti, A., Daníelsdóttir, S., D'Aloja, E., Lesinskiene, S., Angermeyer, M. C., Carta, M. G., & Bhugra, D. (2015). Interventions on bullying and

cyberbullying in schools: A systematic review. *Clinical Practice and Epidemiology in Mental Health*, *11*(Suppl 1 M4), 58–76. https://doi.org/10.2174/1745017901511010058

Card, N. A., Stucky, B. D., Sawalani, G. M., & Little, T. D. (2008). Direct and indirect aggression during childhood and adolescence: A meta-analytic review of gender differences, intercorrelations, and relations to maladjustment. *Child Development*, *79*(5), 1185–1229. https://doi.org/10.1111/j.1467-8624.2008.01184.x

Casper, D. M., & Card, N. A. (2017). Overt and Relational Victimization: A Meta-Analytic Review of Their Overlap and Associations With Social–Psychological Adjustment. *Child Development*, *88*(2), 466–483. https://doi.org/10.1111/cdev.12621

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. Sage Publications.

Cook, C. R., Williams, K. R., Guerra, N. G., Kim, T. E., & Sadek, S. (2010). Predictors of bullying and victimization in childhood and adolescence: A meta-analytic investigation. *School Psychology Quarterly*, *25*(2), 65–83. https://doi.org/10.1037/a0020149

Copeland, W. E., Wolke, D., Angold, A., & Costello, E. J. (2013). Adult Psychiatric Outcomes of Bullying and Being Bullied by Peers in Childhood and Adolescence. *JAMA Psychiatry*, *70*(4), 419–426. https://doi.org/10.1001/jamapsychiatry.2013.504

Corbin, J., & Strauss, A. (2014). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Sage Publications.

Cowie, H. (2000). Bystanding or standing by: Gender issues in coping with bullying in English schools. *Aggressive Behavior*, *26*(1), 85–97. https://doi.org/10.1002/(SICI)1098-2337(2000)26:1<85::AID-AB7>3.0.CO;2-5

Craig, W., Harel-Fisch, Y., Fogel-Grinvald, H., Dostaler, S., Hetland, J., Simons-Morton, B., Molcho, M., de Mato, M. G., Overpeck, M., Due, P., & Pickett, W. (2009). A cross-national profile of bullying and victimization among adolescents in 40 countries. *International Journal of Public Health*, *54*(Suppl 2), 216–224. https://doi.org/10.1007/s00038-009-5413-9

Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*. Sage Publications.

Crick, N. R., Ostrov, J. M., & Kawabata, Y. (2007). Relational aggression and gender: An overview. In *The Cambridge handbook of violent behavior and aggression* (pp. 245–259). Cambridge University Press. https://doi.org/10.1017/CBO9780511816840.012

Englander, E., Donnerstein, E., Kowalski, R., Lin, C. A., & Parti, K. (2017). Defining Cyberbullying. *Pediatrics*, *140*(Supplement 2), S148–S151. https://doi.org/10.1542/peds.2016-1758U

Evans, C. B. R., Cotter, K. L., & Smokowski, P. R. (2017). Giving Victims of Bullying a Voice: A Qualitative Study of Post Bullying Reactions and Coping Strategies. *Child and Adolescent Social Work Journal*, *34*(6), 543–555. https://doi.org/10.1007/s10560-017-0492-6

Falb, K. L., McCauley, H. L., Decker, M. R., Gupta, J., Raj, A., & Silverman, J. G. (2011). School bullying perpetration and other childhood risk factors as predictors of adult intimate partner violence perpetration. *Archives of Pediatrics & Adolescent Medicine*, *165*(10), 890–894. https://doi.org/10.1001/archpediatrics.2011.91

Faux, S. A., Walsh, M., & Deatrick, J. A. (1988). Intensive interviewing with children and adolescents. *Western Journal of Nursing Research*, *10*(2), 180–194.

Fine, S. L., Blum, R. W., Bass, J. K., Lulebo, A. M., Stones, W., Pinandari, A. W., Wilopo, S. A., Zuo, X., & Musci, R. J. (Unpublished). *A latent class approach to understanding patterns of emotional and behavioral problems across low-income urban settings worldwide*.

Fleming, L. C., & Jacobsen, K. H. (2010). Bullying among middle-school students in low and middle income countries. *Health Promotion International*, *25*(1), 73–84. https://doi.org/10.1093/heapro/dap046

Foshee, V. A., McNaughton Reyes, H. L., Vivolo-Kantor, A. M., Basile, K. C., Chang, L.-Y., Faris, R., & Ennett, S. T. (2014). Bullying as a longitudinal predictor of adolescent dating violence. *The Journal of Adolescent Health*, *55*(3), 439–444. https://doi.org/10.1016/j.jadohealth.2014.03.004

Frisén, A., Holmqvist, K., & Oscarsson, D. (2008). 13-year-olds' perception of bullying: Definitions, reasons for victimisation and experience of adults' response. *Educational Studies*, *34*(2), 105–117. https://doi.org/10.1080/03055690701811149

Giyarsih, S. R., & Marfai, M. A. (2017). Regional transformation in Semarang city, Indonesia. *Journal of Urban and Regional Analysis*, *9*(2), 129–139.

Green, J. G., Felix, E. D., Sharkey, J. D., Furlong, M. J., & Kras, J. E. (2013). Identifying bully victims: Definitional versus behavioral approaches. *Psychological Assessment*, *25*(2), 651–657. https://doi.org/10.1037/a0031248

Guerin, S., & Hennessy, E. (2002). Pupils' definitions of bullying. *European Journal of Psychology of Education*, *17*(3), 249–261. https://doi.org/10.1007/BF03173535

Guerra, N. G., Williams, K. R., & Sadek, S. (2011). Understanding bullying and victimization during childhood and adolescence: A mixed methods study. *Child Development*, *82*(1), 295–310. https://doi.org/10.1111/j.1467-8624.2010.01556.x

Hanish, L., Bradshaw, C. P., Espelage, D. L., Rodkin, P. C., Swearer, S. M., & Horne, A. (2013). Looking Toward the Future of Bullying Research: Recommendations for Research and Funding Priorities. *Journal of School Violence*, *12*(3), 283–295. https://doi.org/10.1080/15388220.2013.788449

Haynie, D. L., Nansel, T., Eitel, P., Crump, A. D., Saylor, K., Yu, K., & Simons-Morton, B. (2001). Bullies, Victims, and Bully/Victims: Distinct Groups of At-Risk Youth. *The Journal of Early Adolescence*, *21*(1), 29–49. https://doi.org/10.1177/0272431601021001002

Heerde, J. A., & Hemphill, S. A. (2019). Are Bullying Perpetration and Victimization Associated with Adolescent Deliberate Self-Harm? A Meta-Analysis. *Archives of Suicide Research*, *23*(3), 353–381. https://doi.org/10.1080/13811118.2018.1472690

Hellström, L., & Beckman, L. (2020). Adolescents' perception of gender differences in bullying. *Scandinavian Journal of Psychology*, *61*(1), 90–96. https://doi.org/10.1111/sjop.12523

Hellström, L., Persson, L., & Hagquist, C. (2015). Understanding and defining bullying–adolescents' own views. *Archives of Public Health*, *73*(1), 4.

Holt, M. K., Vivolo-Kantor, A. M., Polanin, J. R., Holland, K. M., DeGue, S., Matjasko, J. L., Wolfe, M., & Reid, G. (2015). Bullying and suicidal ideation and behaviors: A meta-analysis. *Pediatrics*, *135*(2), e496-509. https://doi.org/10.1542/peds.2014-1864

Huang, X., O'Connor, M., Ke, L.-S., & Lee, S. (2016). Ethical and methodological issues in qualitative health research involving children: A systematic review. *Nursing Ethics*, *23*(3), 339–356. https://doi.org/10.1177/0969733014564102

Hunter, S. C., Boyle, J. M. E., & Warden, D. (2004). Help seeking amongst child and adolescent victims of peer-aggression and bullying: The influence of school-stage, gender,

victimisation, appraisal, and emotion. *The British Journal of Educational Psychology*, *74*(Pt 3), 375–390. https://doi.org/10.1348/0007099041552378

Hutson, E. (2018). Integrative Review of Qualitative Research on the Emotional Experience of Bullying Victimization in Youth. *The Journal of School Nursing*, *34*(1), 51–59. https://doi.org/10.1177/1059840517740192

Indonesia Agency of Health and Development. (2013). *Basic Health Research: Riskesdas 2013* (Vol. 2018). http://labmandat.litbang.depkes.go.id/riset-badan-litbangkes/menu-riskesnas/menu-riskesdas/374-rkd-2013

Juvonen, J., & Graham, S. (2014). Bullying in schools: The power of bullies and the plight of victims. *Annual Review of Psychology*, *65*, 159–185. https://doi.org/10.1146/annurev-psych-010213-115030

Kelly, E. V., Newton, N. C., Stapinski, L. A., Slade, T., Barrett, E. L., Conrod, P. J., & Teesson, M. (2015). Suicidality, internalizing problems and externalizing problems among adolescent bullies, victims and bully-victims. *Preventive Medicine*, *73*, 100–105. https://doi.org/10.1016/j.ypmed.2015.01.020

Kljakovic, M., & Hunt, C. (2016). A meta-analysis of predictors of bullying and victimisation in adolescence. *Journal of Adolescence*, *49*, 134–145. https://doi.org/10.1016/j.adolescence.2016.03.002

Land, D. (2003). Teasing apart secondary students' conceptualizations of peer teasing, bullying and sexual harassment. *School Psychology International*, *24*(2), 147–165. https://doi.org/10.1177/0143034303024002002

Langos, C. (2012). Cyberbullying: The challenge to define. *Cyberpsychology, Behavior and Social Networking*, *15*(6), 285–289. https://doi.org/10.1089/cyber.2011.0588

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic Inquiry*. Sage Publications.

Lu, Y. (2010). Mental health and risk behaviours of rural–urban migrants: Longitudinal evidence from Indonesia. *Population Studies*, *64*(2), 147–163.

Madsen, K. C. (1996). Differing perceptions of bullying and their practical implications. *Educational and Child Psychology*, *13*(2), 14–22.

Menesini, E., & Salmivalli, C. (2017). Bullying in schools: The state of knowledge and effective interventions. *Psychology, Health & Medicine*, *22*(sup1), 240–253. https://doi.org/10.1080/13548506.2017.1279740

Ministry for Women's Empowerment and Child Rights. (2015). *National Strategy on Elimination of Violence against Children 2016-2020*. Republic of Indonesia.

Mmari, K., Blum, R. W., Atnafou, R., Chilet, E., Meyer, S. D., El-Gibaly, O., Basu, S., Bello, B., Maina, B., & Zuo, X. (2017). Exploration of gender norms and socialization among early adolescents: The use of qualitative methods for the Global Early Adolescent Study. *Journal of Adolescent Health*, *61*(4), S12–S18.

Mmari, K., Cooper, D., Moreau, C., Koenig, L., Martinez, M., Mafuta, E., Kayembe, P., Meyer, S. D., Michielson, K., Yu, C., Zuo, X., & Blum, R. W. (Unpublished). *The social context of early adolescents in the Global Early Adolescent Study*.

Modecki, K. L., Minchin, J., Harbaugh, A. G., Guerra, N. G., & Runions, K. C. (2014). Bullying prevalence across contexts: A meta-analysis measuring cyber and traditional bullying. *The Journal of Adolescent Health*, *55*(5), 602–611. https://doi.org/10.1016/j.jadohealth.2014.06.007

Moore, S. E., Norman, R. E., Suetani, S., Thomas, H. J., Sly, P. D., & Scott, J. G. (2017). Consequences of bullying victimization in childhood and adolescence: A systematic

review and meta-analysis. *World Journal of Psychiatry*, *7*(1), 60–76. https://doi.org/10.5498/wjp.v7.i1.60

Murray-Harvey, R., Slee, P. T., & Mitsuru, T. (2010). Comparative and Cross-Cultural Research on School Bullying. In S. R. Jimerson, S. M. Swearer, & D. L. Espelage (Eds.), *Handbook of bullying in schools: An international perspective* (pp. 35–47). Routledge/Taylor & Francis Group.

Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B., & Scheidt, P. (2001). Bullying Behaviors Among US Youth: Prevalence and Association With Psychosocial Adjustment. *JAMA*, *285*(16), 2094–2100. https://doi.org/10.1001/jama.285.16.2094

Naylor, P., Cowie, H., & Rey, R. del. (2001). Coping Strategies of Secondary School Children in Response to Being Bullied. *Child Psychology and Psychiatry Review*, *6*(3), 114–120. https://doi.org/10.1111/1475-3588.00333

O'Cathain, A., Murphy, E., & Nicholl, J. (2010). Three techniques for integrating data in mixed methods studies. *BMJ*, *341*, c4587. https://doi.org/10.1136/bmj.c4587

Olweus, D. (1993). *Bullying at school: What we know and what we can do*. Blackwell.

Olweus, D., & Limber, S. P. (2018). Some problems with cyberbullying research. *Current Opinion in Psychology*, *19*, 139–143. https://doi.org/10.1016/j.copsyc.2017.04.012

Onwuegbuzie, A. J., & Teddlie, C. (2003). *A framework for analyzing data in mixed methods research* (A. Tashakkori & C. Teddlie, Eds.; pp. 351–384). Sage Publications.

Patton, D. U., Hong, J. S., Patel, S., & Kral, M. J. (2017). A Systematic Review of Research Strategies Used in Qualitative Studies on School Bullying and Victimization. *Trauma, Violence & Abuse*, *18*(1), 3–16. https://doi.org/10.1177/1524838015588502

Patton, M. Q. (1990). *Qualitative evaluation and research methods*. Sage Publications.

Pister, R. (2014). Understanding Bullying Through the Eyes of Youth. *Journal of Ethnographic & Qualitative Research*, *9*(1), 27–43.

Putra, I. G. N. E., Karin, P. A. E. S., & Ariastuti, N. L. P. (2019). Suicidal ideation and suicide attempt among Indonesian adolescent students. *International Journal of Adolescent Medicine and Health*. https://doi.org/10.1515/ijamh-2019-0035

Ragonese, C., Shand, T., & Barker, G. (2019). *Masculine Norms and Men's Health: Making the Connections*. Promundo-US.

Ranney, M. L., Pittman, S. K., Riese, A., Koehler, C., Ybarra, M. L., Cunningham, R. M., Spirito, A., & Rosen, R. K. (2020). What Counts?: A Qualitative Study of Adolescents' Lived Experience With Online Victimization and Cyberbullying. *Academic Pediatrics*, *20*(4), 485–492. https://doi.org/10.1016/j.acap.2019.11.001

Reijntjes, A., Kamphuis, J. H., Prinzie, P., & Telch, M. J. (2010). Peer victimization and internalizing problems in children: A meta-analysis of longitudinal studies. *Child Abuse & Neglect*, *34*(4), 244–252. https://doi.org/10.1016/j.chiabu.2009.07.009

Rich, M., & Ginsburg, K. R. (1999). The reason and rhyme of qualitative research: Why, when, and how to use qualitative methods in the study of adolescent health. *Journal of Adolescent Health*, *25*(6), 371–378. https://doi.org/10.1016/S1054-139X(99)00068-3

Salmivalli, C. (2010). Bullying and the peer group: A review. *Aggression and Violent Behavior*, *15*(2), 112–120. https://doi.org/10.1016/j.avb.2009.08.007

Semarang City Government, S. C. (2016). *Resilient Semarang: Moving together towards a Resilient Semarang*. http://100resilientcities.org/cities/semarang/

Silva, J. L. da, Oliveira, W. A. de, Mello, F. C. M. de, Andrade, L. S. de, Bazon, M. R., & Silva, M. A. I. (2017). Anti-bullying interventions in schools: A systematic literature review.

Ciencia & Saude Coletiva, *22*(7), 2329–2340. https://doi.org/10.1590/1413-81232017227.16242015

Sittichai, R., & Smith, P. K. (2015). Bullying in South-East Asian Countries: A review. *Aggression and Violent Behavior*, *23*, 22–35. https://doi.org/10.1016/j.avb.2015.06.002

Smith, P. K., & Brain, P. (2000). Bullying in schools: Lessons from two decades of research. *Aggressive Behavior*, *26*(1), 1–9. https://doi.org/10.1002/(SICI)1098-2337(2000)26:1<1::AID-AB1>3.0.CO;2-7

Smith, P. K., Cowie, H., Olafsson, R. F., & Liefooghe, A. P. D. (2002). Definitions of Bullying: A Comparison of Terms Used, and Age and Gender Differences, in a Fourteen–Country International Comparison. *Child Development*, *73*(4), 1119–1133. https://doi.org/10.1111/1467-8624.00461

Stein, J. A., Dukes, R. L., & Warren, J. I. (2007). Adolescent male bullies, victims, and bully-victims: A comparison of psychosocial and behavioral characteristics. *Journal of Pediatric Psychology*, *32*(3), 273–282. https://doi.org/10.1093/jpepsy/jsl023

Swearer, S. M., Siebecker, A. B., Johnsen-Frerichs, L. A., & Wang, C. (2010). Assessment of bullying/victimization: The problem of comparability across studies and across methodologies. In S. R. Jimerson, S. M. Swearer, & D. L. Espelage (Eds.), *Handbook of bullying in schools: An international perspective* (pp. 305–327). Routledge/Taylor & Francis Group.

Tenenbaum, L. S., Varjas, K., Meyers, J., & Parris, L. (2011). Coping strategies and perceived effectiveness in fourth through eighth grade victims of bullying. *School Psychology International*, *32*(3), 263–287. https://doi.org/10.1177/0143034311402309

Thomas, H. J., Connor, J. P., & Scott, J. G. (2015). Integrating Traditional Bullying and Cyberbullying: Challenges of Definition and Measurement in Adolescents - a Review. *Educational Psychology Review; New York*, *27*(1), 135–152. http://dx.doi.org.proxy1.library.jhu.edu/10.1007/s10648-014-9261-7

Ttofi, M. M., Farrington, D. P., & Lösel, F. (2012). School bullying as a predictor of violence later in life: A systematic review and meta-analysis of prospective longitudinal studies. *Aggression and Violent Behavior*, *17*(5), 405–418. https://doi.org/10.1016/j.avb.2012.05.002

Vaillancourt, T., McDougall, P., Hymel, S., Krygsman, A., Miller, J., Stiver, K., & Davis, C. (2008). Bullying: Are researchers and children/youth talking about the same thing?: *International Journal of Behavioral Development*. https://doi.org/10.1177/0165025408095553

Van der Ploeg, R., Steglich, C., Salmivalli, C., & Veenstra, R. (2015). The Intensity of Victimization: Associations with Children's Psychosocial Well-Being and Social Standing in the Classroom. *PLoS ONE*, *10*(10). https://doi.org/10.1371/journal.pone.0141490

Van Noorden, T. H. J., Bukowski, W. M., Haselager, G. J. T., Lansu, T. A. M., & Cillessen, A. H. N. (2016). Disentangling the Frequency and Severity of Bullying and Victimization in the Association with Empathy. *Social Development*, *25*(1), 176–192. https://doi.org/10.1111/sode.12133

Vandebosch, H., & Van Cleemput, K. (2008). Defining cyberbullying: A qualitative research into the perceptions of youngsters. *Cyberpsychology & Behavior*, *11*(4), 499–503. https://doi.org/10.1089/cpb.2007.0042

VERBI Software. (2019). *MAXQDA 2020*. VERBI Software. maxqda.com

Vivolo-Kantor, A. M., Martell, B. N., Holland, K. M., & Westby, R. (2014). A systematic review and content analysis of bullying and cyber-bullying measurement strategies. *Aggression and Violent Behavior*, *19*(4), 423–434. https://doi.org/10.1016/j.avb.2014.06.008

Volk, A. A., Dane, A. V., & Marini, Z. A. (2014). What is bullying? A theoretical redefinition. *Developmental Review*, *34*(4), 327–343. https://doi.org/10.1016/j.dr.2014.09.001

Volk, A. A., Veenstra, R., & Espelage, D. L. (2017). So you want to study bullying? Recommendations to enhance the validity, transparency, and compatibility of bullying research. *Aggression and Violent Behavior*, *36*, 34–43. https://doi.org/10.1016/j.avb.2017.07.003

Vreeman, R. C., & Carroll, A. E. (2007). A systematic review of school-based interventions to prevent bullying. *Archives of Pediatrics & Adolescent Medicine*, *161*(1), 78–88. https://doi.org/10.1001/archpedi.161.1.78

Walters, G. D. (2020). School-Age Bullying Victimization and Perpetration: A Meta-Analysis of Prospective Studies and Research. *Trauma, Violence & Abuse*, 1524838020906513. https://doi.org/10.1177/1524838020906513

Wang, Q., Liu, Y., & Mati, K. (2020). Bully victimization is a correlate of sleep loss over worry (SLOW) among adolescents in four South-East Asian countries. *Sleep Medicine*, *69*, 179–188. https://doi.org/10.1016/j.sleep.2020.01.022

Wolke, D., Copeland, W. E., Angold, A., & Costello, E. J. (2013). Impact of bullying in childhood on adult health, wealth, crime, and social outcomes. *Psychological Science*, *24*(10), 1958–1970. https://doi.org/10.1177/0956797613481608

World Health Organization. (2017). *State of health inequality: Indonesia*. World Health Organization.

Ybarra, M. L., Boyd, D., Korchmaros, J. D., & Oppenheim, J. K. (2012). Defining and measuring cyberbullying within the larger context of bullying victimization. *The Journal of Adolescent Health*, *51*(1), 53–58. https://doi.org/10.1016/j.jadohealth.2011.12.031

Ybarra, M. L., Espelage, D. L., & Mitchell, K. J. (2014). Differentiating youth who are bullied from other victims of peer-aggression: The importance of differential power and repetition. *The Journal of Adolescent Health*, *55*(2), 293–300. https://doi.org/10.1016/j.jadohealth.2014.02.009

Yusuf, A., Habibie, A. N., Efendi, F., Kurnia, I. D., & Kurniati, A. (2019). Prevalence and correlates of being bullied among adolescents in Indonesia: Results from the 2015 Global School-based Student Health Survey. *International Journal of Adolescent Medicine and Health*. https://doi.org/10.1515/ijamh-2019-0064

Zych, I., Ortega-Ruiz, R., & Del Rey, R. (2015). Systematic review of theoretical studies on bullying and cyberbullying: Facts, knowledge, prevention, and intervention. *Aggression and Violent Behavior*, *23*, 1–21. https://doi.org/10.1016/j.avb.2015.10.001

Zych, I., Viejo, C., Vila, E., & Farrington, D. P. (2019). School Bullying and Dating Violence in Adolescents: A Systematic Review and Meta-Analysis. *Trauma, Violence & Abuse*, 1524838019854460. https://doi.org/10.1177/1524838019854460

Chapter 6

Conclusions

6.1 Summary of Findings

In this dissertation, we used a mixed methods approach to explore psychosocial risks among early adolescents living in low-resource urban settings across four low- and middle-income countries (LMICs). Participants were drawn from the multi-country Global Early Adolescent Study (GEAS), and included 10,437 early adolescents from Kinshasa, Democratic Republic of Congo (DRC); Blantyre, Malawi; Semarang, Bandar Lampung, and Denpasar, Indonesia; and Shanghai, China. Below, we summarize the dissertation's central findings, the main strengths and limitations of this work, future research directions, and implications for interventions targeting psychosocial development among early adolescents in contexts of adversity.

In *Chapter Three*, we used latent class analysis (LCA) to identify and characterize prototypical patterns of emotional and behavioral problems among early adolescents from the four included countries. We then explored similarities and differences in these patterns across countries, and examined the extent to which patterns varied between boys and girls within each country. Results indicated that early adolescent patterns of emotional and behavioral problems were best characterized by a four-class latent variable solution in DRC, Malawi, and Indonesia, and a three-class latent variable solution in China. Despite immense cultural and contextual variability across the four included countries, we found striking similarities in these patterns. Results supported the existence of four general subgroups of early adolescents: a *Well-Adjusted* class, with few emotional and behavioral problems; an *Emotional Problems* class, with elevated symptoms of depression and anxiety; a *Behavioral Problems* class (not present in China), with increased involvement in aggressive behaviors, peer victimization, and substance use; and a *Maladjusted*

class, with co-occurring emotional and behavioral problems. These results are consistent with prior research conducted among adolescents from a range of global settings, including high-income countries (Bianchi et al., 2017; Bonadio et al., 2016; Brinkman et al., 2016; Kretschmer et al., 2015; Ma et al., 2019; Noel et al., 2013), suggesting the potential generalizability of these psychosocial risk patterns across low-, middle-, and high-income country contexts.

Despite the overall consistency in patterns of emotional and behavioral problems across countries, there were a number of notable differences, including the lack of a clear *Behavioral Problems* class in China. We hypothesize that such variability relates to the influence of cultural factors in the manifestation of psychosocial risk among early adolescents. For instance, in the case of China, traditional cultural values around social harmony may inhibit the development and expression of aggressive and delinquent behaviors, diminishing the likelihood that youth without any underlying emotional issues would engage in such behaviors (Chen, 2010). Further, our tests of measurement invariance indicated that the prevalence and nature of the identified classes differed significantly by sex within each country. While there was little consistency across countries in terms of which emotional and behavioral indicators exhibited sex-specific measurement invariance, boys were uniformly more likely to be in the *Maladjusted* class. This suggests that there may be heightened psychosocial vulnerability among boys in this age group, which aligns with an emerging body of research around the disproportionately high mental health challenges faced by adolescent boys and young men (Rice et al., 2018).

In *Chapter Four*, we assessed the unique contributions of social environmental factors to psychosocial challenges among the same group of GEAS participants. Building on the LCA results from the preceding chapter, we used multivariate latent class regression to assess the extent to which risk and protective factors across the family, peer, school, and neighborhood levels were

associated with latent classes of emotional and behavioral problems. Across countries, we found that childhood adversity, peer bullying behaviors, and a perceived lack of school safety were consistently and robustly associated with psychosocial challenges. With some contextual variability, peer substance use and a perceived lack of neighborhood safety also emerged as significant risk factors. The magnitude of these associations was generally greatest among a subgroup of early adolescents with co-occurring emotional and behavioral problems (i.e., those in the *Maladjusted* class). Overall, results speak to the need for school-based interventions targeting both individual behaviors and school-wide practices in order to bolster psychosocial adjustment among vulnerable youth (Voight & Nation, 2016). Further, the consistency of findings suggests that such interventions may have applicability across a range of settings worldwide.

In *Chapter Five*, we explored Indonesian early adolescents' motivations, perceptions, and beliefs regarding bullying involvement. Building on our Indonesia-specific quantitative findings from *Chapter Three*, we used an explanatory sequential mixed methods approach to better understand the myriad ways in which bullying involvement ties into other psychosocial challenges. Qualitative interviews were conducted with a total of 45 GEAS participants in two junior high schools in Semarang, with sampling based on the four previously identified latent classes. Inductive thematic analysis of interview transcripts yielded contextual insights into adolescents' definitions of bullying, including the distinction between "normal" and "serious" bullying; related risk behaviors; key drivers; social and emotional consequences; and coping strategies. Findings emphasized the need to develop a locally valid definition of bullying which takes into account the ways in which emotional distress may be both a criterion and a consequence of bullying (Hanish et al., 2013; Hellström et al., 2015; Volk et al., 2014, 2017). In addition, results highlighted gender differences in bullying involvement as well as the role that underlying gender norms play in driving

these differences (Crick et al., 2007; Juvonen & Graham, 2014). Overall, interviews helped inform the interpretation of latent class results, and suggested that bullying involvement may be most problematic for adolescents in the *Maladjusted* class.

When considered together, these three chapters highlight the intertangled nature of emotional and behavioral problems in early adolescence, and emphasize the need for methodological approaches and intervention strategies that account for the co-occurrence of mental health challenges among this age group. In addition, results illuminate the heterogeneous ways in which adolescent psychosocial maladjustment can manifest across diverse cross-national settings, as well as some of the key social environmental risk and protective factors that influence psychosocial vulnerability. Findings indicate that the most extreme forms of maladjustment are marked by dysregulation across multiple emotional and behavioral domains. It follows that youth who fall into this category are likely to be at the greatest risk of experiencing negative long-term outcomes – and therefore may stand to benefit the most from early intervention efforts. All three of these chapters also speak to the role of cultural factors and gender norms in shaping the expression of psychosocial risk among early adolescents living in LMICs, underscoring the importance of greater cultural consideration and gender sensitivity when designing and implementing mental health interventions. Finally, findings suggest that despite such nuances, developmental processes during this critical period result in patterns and predictors of emotional and behavioral problems that are remarkably similar across varied country settings.

6.2 Strengths and Limitations

The research comprising this dissertation includes a number of strengths and limitations. Across these studies, generalizability presents a significant challenge. While the cross-national consistency of quantitative results in *Chapter Three* is compelling, particularly given the inclusion

of four countries from distinct global regions, findings may not be representative of adolescent psychosocial development across all LMICs. Likewise, the significant risk and protective factors uncovered in *Chapter Four* may vary within other regional or country settings. In addition, it is important to note that the GEAS included only in-school youth from low-resource urban areas. As such, these results cannot be assumed to apply to adolescents living in rural areas, or to those who are not actively enrolled in school. In particular, there are likely to be differences in terms of the key risk and protective factors for psychosocial adjustment among both of these populations. For instance, community-level factors may take on an outsized role in influencing psychosocial development in the absence of strong in-school peer support networks for out-of-school youth. Likewise, effective parental monitoring and support may look very different in rural compared to urban areas. Future research should explore whether the current findings remain consistent in both of these unique populations. Finally, the qualitative findings from *Chapter Five* may not be transferable to adolescents across Indonesia, particularly given the country's immense ethnic, cultural, and linguistic diversity. Similarly, while qualitative data have been used to interpret latent class results, these interpretations may not apply to adolescents from the other included GEAS countries.

The quantitative analyses included in this dissertation were also impacted by missing data, which may produce bias in results (Schafer & Graham, 2002). In *Chapter Three*, approximately 17% of adolescents had missing information on one or more of the psychosocial risk indicators. These missing data were addressed through the use of full information maximum likelihood estimation, which includes all available information in model estimation and does not exclude individuals unless they are missing information across all latent class indicators (Collins & Lanza, 2010). While this approach resulted in the exclusion of less than 1% of GEAS participants from

the LCA models, it is possible that the inclusion of those with partial information led to bias in latent class results if indicator-level missingness was not missing at random. In *Chapter Four*, multiple imputation was used to manage covariate-level missingness in the latent class regression models. While this was the best available method given the selected three-step analytic approach, it has been suggested that multiple imputation may be inappropriate in a latent class analytic framework due to the theoretical incompatibility between multiple imputation, which assumes a single underlying population, and LCA, which assumes multiple latent subgroups within a population (Colder et al., 2001; Enders & Gottschall, 2011). Future analyses might explore alternative methods for addressing covariate-level missingness in order to determine whether results were impacted by this methodology.

Lastly, both sets of quantitative analyses were marked by measurement limitations. In *Chapter Three*, depressive and anxiety symptoms were not collected using a validated adolescent mental health assessment instrument and did not undergo rigorous cross-cultural adaptation. This is problematic due to the potential for cultural factors to impact the expression, experience, and attribution of mental health problems, as well as specific idioms of distress (Good & Kleinman, 1985; Hinton & Lewis-Fernández, 2010; Kirmayer, 1989). Further, while symptoms were originally measured using items with Likert-type response scales, indicators were dichotomized to increases analytic interpretability, resulting in the loss of information. In *Chapter Four*, the measurement of risk and protective factors largely relied on single dichotomized items rather than validated scales. It is possible that this led to spurious conclusions about the role of certain factors, as individual indicators are generally insufficient in representing latent constructs, as in the case of "caregiver connectedness" or "peer socialization" (DeVellis, 2016). Further, as before, the dichotomization of these items did not take advantage of the full available participant information.

Finally, across both chapters, data were assessed by adolescent self-report and are thus subject to social desirability bias, although the use of computer assisted self-interview in many of the countries may have helped to mitigate this issue (Le et al., 2006).

The greatest strength of this research is its application of innovative methods to address gaps in existing knowledge regarding adolescent psychosocial development in LMICs. The person-centered analytic approach used in *Chapters Three* and *Four* allowed for the examination of co-occurring emotional and behavioral problems alongside key social environmental risk and protective factors. This approach has high public health relevance due to its ability to identify subgroups of adolescents with increased psychosocial vulnerability and inform multi-level prevention strategies targeting these subgroups. The evaluation of sex-related measurement invariance in *Chapter Three* revealed important qualitative distinctions between boys and girls within equivalent psychosocial risk subgroups, exposing the influence of gender norms on mental health challenges across diverse country settings. The simultaneous analysis of risk and protective factors at the family, peer, school, and neighborhood levels in *Chapter Four* helped to disentangle the relative influence of social determinants across these social environmental domains. Finally, the use of an explanatory sequential mixed methods approach in *Chapter Five* provided a more complete picture of psychosocial risks among Indonesian adolescents than would have been obtainable from relying on quantitative or qualitative methods alone.

Overall, this dissertation benefited from its inclusion of a large sample of early adolescents living in six low-income urban settings across four LMICs and across two continents. It is one of the first investigations to examine psychosocial development among early adolescents from such a heterogeneous group of LMICs – and one of the only ones to do so using methods that account for the co-occurrence of mental health challenges among this age group. By utilizing cross-national

data, this dissertation was able to examine three distinctive but complementary research questions focused on the patterns of early adolescent emotional and behavioral problems across countries, the risk and protective factors that contribute to such patterns, and the ways in which adolescents within a specific country context understand how bullying involvement relates to broader psychosocial risks. Together, findings provide a foundation for future research and programmatic efforts related to early adolescent psychosocial development in LMICs.

6.3 Implications for Research

The results of this dissertation raise a number of noteworthy questions that warrant further investigation. First, longitudinal studies are needed to understand whether the latent subgroups of emotional and behavioral problems uncovered in *Chapter Three* have stability over time. One of the main assumptions of this dissertation is that membership in these subgroups is indicative of underlying psychosocial vulnerability – and may ultimately lead to the emergence of mental disorders and other health-compromising outcomes. In order to test this hypothesis, prospective research is needed to investigate trajectories of psychosocial risks among vulnerable youth, their associations with mental health and psychosocial outcomes, and risk and protective factors that moderate these relationships. While several studies have employed latent transition analysis to consider these issues, few have included co-occurring emotional and behavioral problems and none have been carried out in LMICs (Kretschmer et al., 2015; Moore et al., 2019; Olino et al., 2010; Reef et al., 2011; Yu et al., 2017). Notably, given the longitudinal nature of the GEAS, this question can ultimately be explored through an extension of this dissertation's research methods once data become available.

Relatedly, subsequent research should focus on the ways in which mental health and psychosocial support interventions influence trajectories of psychosocial risks: for instance, by

fostering coping skills and promoting resiliency among those categorized as maladjusted during early adolescence. In order to consider this question, however, there is first a need for additional research regarding interventions that are effective in preventing mental health problems and promoting well-being among youth living in LMICs. In *Chapter Four*, we explored the extent to which a range of social environmental factors exacerbated or buffered emotional and behavioral problems among early adolescents in order to uncover the most salient entry points into preventive efforts. While we uncovered a number of potential targets – including family adversity, peer behaviors, and school safety – evidence-based strategies built around these factors are unproven in most LMICs due to a lack of existing research in these contexts (Barry et al., 2013; Fazel et al., 2014; Klasen & Crombag, 2013). Future investigations should work towards filling these gaps in understanding through the rigorous adaptation, implementation, and evaluation of promising interventions across a range of LMIC settings.

Finally, this dissertation highlights a number of areas in which future mixed methods inquiries would be beneficial. In *Chapter Five*, we showed the value of including youth voices in quantitative developmental research in order to provide a deeper and more contextual understanding of mental health challenges. Such methods could be extended in order to further explore key issues uncovered through this research, including cross-cultural nuances in the expression of behavioral risk, psychosocial vulnerabilities faced by adolescent boys, the ways in which gender norms influence mental health, factors contributing to perceived school and neighborhood safety, and the role of social norms in risk behaviors. Further, few existing studies have used qualitative interviews to explore findings from latent class models, despite the potential of this innovative approach to elucidate important thematic distinctions linked to subgroup membership (Aresi et al., 2020; Lowe et al., 2015; Suárez-Orozco et al., 2010). This dissertation

lays the groundwork for future mixed methods investigations capitalizing upon this design, and suggests its particular benefit in examining issues related to adolescent development.

6.4 Implications for Practice

The findings from the included analyses raise a number of important considerations for practitioners and policymakers focused on adolescent psychosocial development in low-resource settings. Practically, given resource limitations in many LMICs, they suggest the need to prioritize individually focused services for a vulnerable subgroup of maladjusted adolescents with co-occurring emotional and behavioral problems. The plight of these youth was highlighted in both the quantitative and qualitative data by their elevated levels of psychosocial challenges, the magnitude of the relationships between these challenges and a range of overlapping social environmental risk factors, and the ways in which their emotional issues may be a signifier of involvement in nonnormative interpersonal aggression. In the global mental health field, there has been an evolving focus on transdiagnostic interventions which can flexibly address a wide range of common mental health problems faced by adults in LMICs (Bolton et al., 2014; Murray et al., 2014; Patel et al., 2018). Results from this dissertation speak to the need for similar transdiagnostic approaches with at-risk youth in order to meet both their emotional and behavioral needs (Marchette & Weisz, 2017).

Findings also underscore the importance of schools as a locus of intervention for the large proportion of youth who attend school worldwide. Quantitative analyses suggested that peer risk behaviors and perceived school safety have an outsized impact on youth emotional and behavioral problems, and qualitative data further emphasized the ways in which social norms around bullying involvement within school environments can impede healthy psychosocial adjustment. This is not particularly revelatory – historically, the majority of prevention activities targeting adolescents in

both high- and low-resource settings have been implemented within schools due to their potential to reach wide swathes of the population (Barry et al., 2013; Caldwell et al., 2019; Fazel et al., 2014; Ng et al., 2020; Onrust et al., 2016). In shedding light on specific concerns related to school climate, however, this dissertation's results align with a growing body of research suggesting the need for holistic intervention approaches targeting individuals, classrooms, and whole schools in order to promote healthy psychosocial development among students (Langford et al., 2014; Lee, 2009; Voight & Nation, 2016).

Across both individual and school-based intervention approaches, this research highlights the need to incorporate a gendered approach into programmatic efforts. Results demonstrated the ways in which underlying gender norms can shape the development and presentation of psychosocial risk: this was apparent in the marked differences between boys and girls within equivalent psychosocial risk subgroups, the gendered nature of Indonesian youth's involvement in risk behaviors, and their variable strategies and vulnerabilities related to coping with emotional distress. Findings align with a growing body of research suggesting the critical role of gender norms in influencing psychosocial adjustment among early adolescents (Chandra-Mouli et al., 2018; Rice et al., 2018), and suggest the need to tailor intervention strategies and components in order to appropriately address the unique developmental challenges faced by boys and girls in this age group.

Lastly, and most significantly, the consistency of findings across multiple country settings suggests that interventions targeting early adolescents living in contexts of adversity may have broad cross-national applicability. Across the four LMICs included in this dissertation, both the patterns and predictors of early adolescent psychosocial challenges demonstrated striking homogeneity. While these findings do not negate the influence of cultural factors on mental health

and well-being, they do indicate that across diverse low-resource environments worldwide, early adolescent psychosocial development may be more similar than it is different. Rather than reinventing the wheel, practitioners and policymakers in LMICs should capitalize upon these similarities by adopting strategies with proven success in reaching vulnerable youth.

6.5 References

Aresi, G., Cleveland, M. J., Vieno, A., Beccaria, F., Turrisi, R., & Marta, E. (2020). A Mixed Methods Cross-Cultural Study to Compare Youth Drinking Cultures in Italy and the USA. *Applied Psychology. Health and Well-Being*, *12*(1), 231–255. https://doi.org/10.1111/aphw.12181

Barry, M. M., Clarke, A. M., Jenkins, R., & Patel, V. (2013). A systematic review of the effectiveness of mental health promotion interventions for young people in low and middle income countries. *BMC Public Health*, *13*, 835. https://doi.org/10.1186/1471-2458-13-835

Bianchi, V., Brambilla, P., Garzitto, M., Colombo, P., Fornasari, L., Bellina, M., Bonivento, C., Tesei, A., Piccin, S., Conte, S., Perna, G., Frigerio, A., Castiglioni, I., Fabbro, F., Molteni, M., & Nobile, M. (2017). Latent classes of emotional and behavioural problems in epidemiological and referred samples and their relations to DSM-IV diagnoses. *European Child & Adolescent Psychiatry*, *26*(5), 549–557. https://doi.org/10.1007/s00787-016-0918-2

Bolton, P., Lee, C., Haroz, E. E., Murray, L. K., Dorsey, S., Robinson, C., Ugueto, A. M., & Bass, J. (2014). A transdiagnostic community-based mental health treatment for comorbid disorders: Development and outcomes of a randomized controlled trial among Burmese refugees in Thailand. *PLoS Medicine*, *11*(11), e1001757. https://doi.org/10.1371/journal.pmed.1001757

Bonadio, F. T., Dynes, M., Lackey, J., Tompsett, C., & Amrhein, K. (2016). Grouping Youth With Similar Symptoms: A Person-Centered Approach to Transdiagnostic Subgroups. *Journal of Clinical Psychology*, *72*(7), 676–688. https://doi.org/10.1002/jclp.22274

Brinkman, T. M., Li, C., Vannatta, K., Marchak, J. G., Lai, J.-S., Prasad, P. K., Kimberg, C., Vuotto, S., Di, C., Srivastava, D., Robison, L. L., Armstrong, G. T., & Krull, K. R. (2016). Behavioral, Social, and Emotional Symptom Comorbidities and Profiles in Adolescent Survivors of Childhood Cancer: A Report From the Childhood Cancer Survivor Study. *Journal of Clinical Oncology*, *34*(28), 3417–3425. https://doi.org/10.1200/JCO.2016.66.4789

Caldwell, D. M., Davies, S. R., Hetrick, S. E., Palmer, J. C., Caro, P., López-López, J. A., Gunnell, D., Kidger, J., Thomas, J., French, C., Stockings, E., Campbell, R., & Welton, N. J. (2019). School-based interventions to prevent anxiety and depression in children and young people: A systematic review and network meta-analysis. *The Lancet Psychiatry*, *6*(12), 1011–1020. https://doi.org/10.1016/S2215-0366(19)30403-1

Chandra-Mouli, V., Plesons, M., & Amin, A. (2018). Addressing harmful and unequal gender norms in early adolescence. *Nature Human Behaviour*, *2*(4), 239–240. https://doi.org/10.1038/s41562-018-0318-3

Chen, X. (2010). Socio-emotional development in Chinese children. In *The Oxford handbook of Chinese psychology* (pp. 37–52). Oxford University Press.

Colder, C. R., Mehta, P., Balanda, K., Campbell, R. T., Mayhew, K. P., Stanton, W. R., Pentz, M. A., & Flay, B. R. (2001). Identifying trajectories of adolescent smoking: An application of latent growth mixture modeling. *Health Psychology*, *20*(2), 127–135. https://doi.org/10.1037//0278-6133.20.2.127

Collins, L. M., & Lanza, S. T. (2010). *Latent class and latent transition analysis: With applications in the social, behavioral, and health sciences*. John Wiley & Sons.

Crick, N. R., Ostrov, J. M., & Kawabata, Y. (2007). Relational aggression and gender: An overview. In *The Cambridge handbook of violent behavior and aggression* (pp. 245–259). Cambridge University Press. https://doi.org/10.1017/CBO9780511816840.012

DeVellis, R. F. (2016). *Scale Development: Theory and Applications*. SAGE Publications.

Enders, C. K., & Gottschall, A. C. (2011). Multiple Imputation Strategies for Multiple Group Structural Equation Models. *Structural Equation Modeling*, *18*(1), 35–54. https://doi.org/10.1080/10705511.2011.532695

Fazel, M., Patel, V., Thomas, S., & Tol, W. (2014). Mental health interventions in schools in low-income and middle-income countries. *The Lancet Psychiatry*, *1*(5), 388–398. https://doi.org/10.1016/S2215-0366(14)70357-8

Good, B. J., & Kleinman, A. M. (1985). *Culture and anxiety: Cross-cultural evidence for the patterning of anxiety disorders.* (A. H. Tuma & J. D. Mase, Eds.; pp. 297–323). Lawrence Erlbaum Associates, Inc.

Hanish, L., Bradshaw, C. P., Espelage, D. L., Rodkin, P. C., Swearer, S. M., & Horne, A. (2013). Looking Toward the Future of Bullying Research: Recommendations for Research and Funding Priorities. *Journal of School Violence*, *12*(3), 283–295. https://doi.org/10.1080/15388220.2013.788449

Hellström, L., Persson, L., & Hagquist, C. (2015). Understanding and defining bullying–adolescents' own views. *Archives of Public Health*, *73*(1), 4.

Hinton, D. E., & Lewis-Fernández, R. (2010). Idioms of distress among trauma survivors: Subtypes and clinical utility. *Culture, Medicine and Psychiatry*, *34*(2), 209–218. https://doi.org/10.1007/s11013-010-9175-x

Juvonen, J., & Graham, S. (2014). Bullying in schools: The power of bullies and the plight of victims. *Annual Review of Psychology*, *65*, 159–185. https://doi.org/10.1146/annurev-psych-010213-115030

Kirmayer, L. J. (1989). Cultural variations in the response to psychiatric disorders and emotional distress. *Social Science & Medicine (1982)*, *29*(3), 327–339.

Klasen, H., & Crombag, A.-C. (2013). What works where? A systematic review of child and adolescent mental health interventions for low and middle income countries. *Social Psychiatry and Psychiatric Epidemiology*, *48*(4), 595–611. https://doi.org/10.1007/s00127-012-0566-x

Kretschmer, T., Barker, E. D., Dijkstra, J. K., Oldehinkel, A. J., & Veenstra, R. (2015). Multifinality of peer victimization: Maladjustment patterns and transitions from early to mid-adolescence. *European Child & Adolescent Psychiatry*, *24*(10), 1169–1179. https://doi.org/10.1007/s00787-014-0667-z

Langford, R., Bonell, C. P., Jones, H. E., Pouliou, T., Murphy, S. M., Waters, E., Komro, K. A., Gibbs, L. F., Magnus, D., & Campbell, R. (2014). The WHO Health Promoting School framework for improving the health and well-being of students and their academic achievement. *Cochrane Database of Systematic Reviews*, *4*. https://doi.org/10.1002/14651858.CD008958.pub2

Le, L. C., Blum, R. W., Magnani, R., Hewett, P. C., & Do, H. M. (2006). A pilot of audio computer-assisted self-interview for youth reproductive health research in Vietnam. *Journal of Adolescent Health*, *38*(6), 740–747. https://doi.org/10.1016/j.jadohealth.2005.07.008

Lee, A. (2009). Health-promoting schools. *Applied Health Economics and Health Policy*, *7*(1), 11–17. https://doi.org/10.1007/BF03256138

Lowe, S. R., Rhodes, J. E., & Waters, M. C. (2015). Understanding resilience and other trajectories of psychological distress: A mixed-methods study of low-income mothers who survived Hurricane Katrina. *Current Psychology*, *34*(3), 537–550.

Ma, C., Ma, Y., Wang, Y., & Lan, X. (2019). Empathy and Psychosocial Adjustment in Tibetan and Han Adolescents: A Person-Centered Approach. *Frontiers in Psychology*, *10*, 1896. https://doi.org/10.3389/fpsyg.2019.01896

Marchette, L. K., & Weisz, J. R. (2017). Practitioner Review: Empirical evolution of youth psychotherapy toward transdiagnostic approaches. *Journal of Child Psychology and Psychiatry*, *58*(9), 970–984. https://doi.org/10.1111/jcpp.12747

Moore, S. A., Dowdy, E., Nylund-Gibson, K., & Furlong, M. J. (2019). A latent transition analysis of the longitudinal stability of dual-factor mental health in adolescence. *Journal of School Psychology*, *73*, 56–73. https://doi.org/10.1016/j.jsp.2019.03.003

Murray, L. K., Dorsey, S., Haroz, E., Lee, C., Alsiary, M. M., Haydary, A., Weiss, W. M., & Bolton, P. (2014). A Common Elements Treatment Approach for Adult Mental Health Problems in Low- and Middle-Income Countries. *Cognitive and Behavioral Practice*, *21*(2), 111–123. https://doi.org/10.1016/j.cbpra.2013.06.005

Ng, E. D., Chua, J. Y. X., & Shorey, S. (2020). The Effectiveness of Educational Interventions on Traditional Bullying and Cyberbullying Among Adolescents: A Systematic Review and Meta-Analysis. *Trauma, Violence & Abuse*, 1524838020933867. https://doi.org/10.1177/1524838020933867

Noel, H., Denny, S., Farrant, B., Rossen, F., Teevale, T., Clark, T., Fleming, T., Bullen, P., Sheridan, J., & Fortune, S. (2013). Clustering of adolescent health concerns: A latent class

analysis of school students in New Zealand. *Journal of Paediatrics and Child Health*, *49*(11), 935–941.

Olino, T. M., Klein, D. N., Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (2010). Latent trajectory classes of depressive and anxiety disorders from adolescence to adulthood: Descriptions of classes and associations with risk factors. *Comprehensive Psychiatry*, *51*(3), 224–235. https://doi.org/10.1016/j.comppsych.2009.07.002

Onrust, S. A., Otten, R., Lammers, J., & Smit, F. (2016). School-based programmes to reduce and prevent substance use in different age groups: What works for whom? Systematic review and meta-regression analysis. *Clinical Psychology Review*, *44*, 45–59. https://doi.org/10.1016/j.cpr.2015.11.002

Patel, V., Saxena, S., Lund, C., Thornicroft, G., Baingana, F., Bolton, P., Chisholm, D., Collins, P. Y., Cooper, J. L., Eaton, J., Herrman, H., Herzallah, M. M., Huang, Y., Jordans, M. J. D., Kleinman, A., Medina-Mora, M. E., Morgan, E., Niaz, U., Omigbodun, O., … UnÜtzer, Jü. (2018). The Lancet Commission on global mental health and sustainable development. *The Lancet*, *392*(10157), 1553–1598. https://doi.org/10.1016/S0140-6736(18)31612-X

Reef, J., Diamantopoulou, S., van Meurs, I., Verhulst, F. C., & van der Ende, J. (2011). Developmental trajectories of child to adolescent externalizing behavior and adult DSM-IV disorder: Results of a 24-year longitudinal study. *Social Psychiatry and Psychiatric Epidemiology*, *46*(12), 1233–1241. https://doi.org/10.1007/s00127-010-0297-9

Rice, S. M., Purcell, R., & McGorry, P. D. (2018). Adolescent and Young Adult Male Mental Health: Transforming System Failures Into Proactive Models of Engagement. *Journal of Adolescent Health*, *62*(3, Supplement), S9–S17. https://doi.org/10.1016/j.jadohealth.2017.07.024

Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, *7*(2), 147–177.

Suárez-Orozco, C., Gaytán, F. X., Bang, H. J., Pakes, J., O'Connor, E., & Rhodes, J. (2010). Academic trajectories of newcomer immigrant youth. *Developmental Psychology*, *46*(3), 602.

Voight, A., & Nation, M. (2016). Practices for Improving Secondary School Climate: A Systematic Review of the Research Literature. *American Journal of Community Psychology*, *58*(1–2), 174–191. https://doi.org/10.1002/ajcp.12074

Volk, A. A., Dane, A. V., & Marini, Z. A. (2014). What is bullying? A theoretical redefinition. *Developmental Review*, *34*(4), 327–343. https://doi.org/10.1016/j.dr.2014.09.001

Volk, A. A., Veenstra, R., & Espelage, D. L. (2017). So you want to study bullying? Recommendations to enhance the validity, transparency, and compatibility of bullying research. *Aggression and Violent Behavior*, *36*, 34–43. https://doi.org/10.1016/j.avb.2017.07.003

Yu, J., Putnick, D. L., Hendricks, C., & Bornstein, M. H. (2017). Health-Risk Behavior Profiles and Reciprocal Relations With Depressive Symptoms From Adolescence to Young Adulthood. *The Journal of Adolescent Health*, *61*(6), 773–778. https://doi.org/10.1016/j.jadohealth.2017.07.002

Supplementary Materials

Appendix A. Global Early Adolescent Study Sites and Sampling Strategies

Study Site	2018 Population[1]	Sampling Strategy	Recruitment Strategy	Sample Size
Kinshasa, Democratic Republic of Congo	13,171,000	Adolescents were from the Masina and Kimbanseke municipalities. Partner organizations performed a community mapping exercise of all of the primary and secondary schools within each community. Random sampling was first used to select 20 schools in each municipality. Then, up to 25 students were randomly selected from each school, stratified by sex.	School leaders and research staff recruited selected participants together.	2,006 (1,033 girls and 973 boys)
Blantyre, Malawi	879,000	Purposive sampling of four public sector schools in the Mbayani, Makata, Chirimba, and Namatete townships. Schools were identified by the District Education Manager in Urban Blantyre. Random number sampling was used to select adolescents in grades 5 and 6 at each participating school, stratified by sex.	Community briefings were held in each township to alert parents/guardians and community members about the study. Information sheets were given to selected students, who were asked to show these to their parents/guardians for written consent.	2,016 (999 girls and 1,017 boys)
Semarang, Indonesia	1,800,000	Purposive sampling of six public junior high schools in each city. In Bandar Lampung and Semarang, the participating schools were spread geographically across five subdistricts. In Denpasar, the participating schools were spread across three subdistricts. All students in grade 7 from each selected school were invited to participate.	Study staff obtained approval for participation in person at the school level, using flyers and information sessions with participating parents/guardians and adolescents.	1,517 (834 girls and 683 boys)
Bandar Lampung, Indonesia	1,047,000			1,391 (736 girls and 655 boys)
Denpasar, Indonesia	944,000			1,749 (899 girls and 850 boys)
Shanghai, China	25,582,000	Three public secondary schools were purposively selected: one	Study staff obtained approval for	1,758

		school in Baoshan subdistrict with about 250 students in each grade, and two schools in Pengpu sub-district with about 100 and 200 students in each grade, respectively. All eligible students in grades 6, 7, and 8 were invited to participate in the study.	participation in person at each school, and used flyers and information sessions to recruit parents/guardians and adolescents into the study.	(855 girls and 903 boys)

Note. [1] Estimates obtained from https://populationstat.com/.

Appendix B. Relevant Global Early Adolescent Study Instrument Questions

This appendix includes all of the Global Early Adolescent Study questions that were used in dissertation analyses. The full instrument is available from: https://www.geastudy.org/.

A. Sociodemographics

1. How old are you?

    - 10 years old
    - 11 years old
    - 12 years old
    - 13 years old
    - 14 years old

2. Are you a…

    - Boy
    - Girl

3. Were you born in this city?

    - Yes
    - No

4. When you think of the house where you usually live, how many people in general live in one house with you?

5. Who is the person who most looks after or takes care of you? This is sometimes called your primary caregiver

    - Mother
    - Stepmother
    - Father
    - Stepfather
    - Sister
    - Brother
    - Grandmother
    - Grandfather
    - Aunt
    - Uncle
    - Other adult family member
    - Other adult non-family member
    - Other
    - There is no one who looks after me

6. What is the highest level of education your primary caregiver has completed?

- Has never been to school
- Left before completing primary school
- Completed primary school
- Completed some secondary school, but left before finishing
- Completed secondary school
- Completed trade or vocational school
- Completed all or some university

7. What is your primary caregiver's current working situation?

   - Working for pay or has retired
   - Not currently working for pay, but seeking a job
   - Not currently working for pay and not seeking a job

8. What is the current relationship situation of your primary caregiver?

   - Currently married or living together as if married
   - Divorced or separated
   - Widowed

9. How comfortable do you feel talking with your primary caregiver about things that worry you?

   - Very comfortable
   - Somewhat comfortable
   - Not very comfortable
   - Not at all comfortable

10. To what extent does your primary caregiver usually know where you are?

    - Very true
    - Somewhat true
    - Not very comfortable
    - Not at all true

B. Peers

11. During a normal week, how often do you spend time hanging out or socializing with your closest friends outside of school?

    - Nearly every day
    - 3 or 4 times a week
    - 1 or 2 times a week
    - Never

12. In general, how many of your friends do you think smoke cigarettes (tobacco)?

    - All of them
    - Most of them

- Few of them
- None of them

13. In general, how many of your friends do you think drink alcohol (store-bought or home-brewed)?

    - All of them
    - Most of them
    - Few of them
    - None of them

14. In general, how many of your friends do you think use drugs?

    - All of them
    - Most of them
    - Few of them
    - None of them

C. School

15. Do you feel that there is an adult (a teacher or someone else) in school who really cares about you?

    - Yes, most of the time
    - Yes, some of the time
    - No, not much
    - No, not at all

D. Neighborhood

Neighborhood cohesion:

The following questions are about adults in your neighborhood. That is, people who live in the same neighborhood as you, but are not your family or relatives. Tell me how much you think the following are true:

16. People in my neighborhood look out for and help their neighbors

    - Very true
    - Somewhat true
    - Not very true
    - Not true at all

17. People in my neighborhood can be trusted

    - Very true
    - Somewhat true
    - Not very true

- Not true at all

18. People in my neighborhood know who I am

- Very true
- Somewhat true
- Not very true
- Not true at all

19. People in my neighborhood care about me

- Very true
- Somewhat true
- Not very true
- Not true at all

Safety:

Sometimes children feel unsafe or threatened when they are in their neighborhood, on the way to school, or in school. For example, afraid of being attacked, bullied, or being hurt.

20. Has this happened to you in the last year?

- Yes
- No

21. Can you tell us where you feel unsafe or threatened? Select all that apply.

- In my neighborhood
- On the way to school
- In my classroom
- On the playground, gym, or sports field at school

D. Mental Health

Depression:

We would like to know a little about how you are feeling. Tell me how much you agree or disagree with the following statements:

22. I blame myself when things go wrong

- Agree a lot
- Agree a little
- Neither agree, nor disagree
- Disagree a little
- Disagree a lot

23. I worry for no good reason

- Agree a lot
- Agree a little
- Neither agree, nor disagree
- Disagree a little
- Disagree a lot

24. I am so unhappy I can't sleep at night

- Agree a lot
- Agree a little
- Neither agree, nor disagree
- Disagree a little
- Disagree a lot

25. I feel sad

- Agree a lot
- Agree a little
- Neither agree, nor disagree
- Disagree a little
- Disagree a lot

26. I am so unhappy I think of harming myself

- Agree a lot
- Agree a little
- Neither agree, nor disagree
- Disagree a little
- Disagree a lot

Adverse childhood experiences:

Now we would like to ask whether, as a child, you ever experienced any difficult experiences. You may not want to tell us, and that is OK, but the reason we are asking is that it will help us better understand who you are and what you've experienced.

27. Have you ever been scared or felt really bad because grown-ups called you names, said mean things to you, or said they didn't want you?

- Often
- Sometimes
- Never

28. Have you ever been scare that your parents or other adults were going to hurt you badly (so that you were injured or killed)?

- Often
- Sometimes

- Never

29. Have you ever felt like you are not loved or cared about?

    - Often
    - Sometimes
    - Never

30. Have you ever felt like you have no one that protects you?

    - Often
    - Sometimes
    - Never

31. Has there ever been a time in your life when you were totally on your own and had to take care of yourself for more than a short time?

    - Often
    - Sometimes
    - Never

32. Have your parents or guardians ever drank to much alcohol or used drugs so they came home and were really abusive to you or your family?

    - Often
    - Sometimes
    - Never

33. Has there ever been a time when your family did not have enough food because they had no money?

    - Often
    - Sometimes
    - Never

34. Have you ever seen your mom being hit, beaten, or threatened?

    - Often
    - Sometimes
    - Never

35. Have you ever seen your mother or father so sad that they couldn't take care of you?

    - Often
    - Sometimes
    - Never

36. Have any of your parents ever been to prison or jail?

- Often
- Sometimes
- Never

37. Has your family ever been forced to leave your house/home?

- Often
- Sometimes
- Never

38. Has an adult ever touched your private parts, except when being bathed?

- Often
- Sometimes
- Never

39. Has an adult ever attempted or forced you to have sexual intercourse?

- Often
- Sometimes
- Never

Bullying and gender-based violence:

40. During the last 6 months, have you ever seen any of your male peers bully or threaten someone? By bullying, we mean making threats, spreading rumors about someone, attacking someone verbally, or excluding someone from a group on purpose.

- Yes, I have seen them bully or threaten other boys
- Yes, I have seen them bully or threaten girls
- Yes, I have seen them bully or threaten both boys and girls
- No, I have not seen them bully or threaten someone

41. During the last 6 months, have you seen any of your female peers bully or threaten someone?

- Yes, I have seen them bully or threaten other girls
- Yes, I have seen them bully or threaten boys
- Yes, I have seen them bully or threaten both girls and boys
- No, I have not seen them bully or threaten someone

42. During the last 6 months, have you seen any of your male peers start a physical fight with someone?

- Yes, I have seen them start a fight against other boys
- Yes, I have seen them start a fight against girls
- Yes, I have seen them start a fight against both boys and girls
- No, I have not seen them start a fight against someone

43. During the last 6 months, have you seen any of your female peers start a physical fight with someone?

    - o Yes, I have seen them start a fight against other girls
    - o Yes, I have seen them start a fight against boys
    - o Yes, I have seen them start a fight against both girls and boys
    - o No, I have not seen them start a fight against someone

44. During the last 6 months, have you been teased or called names by someone?

    - o Yes, by a girl
    - o Yes, by a boy
    - o Yes, by both girls and boys

45. During the last 6 months, have you ever been slapped, hit, or otherwise physically hurt by a boy or girl in a way you did not want?

    - o Yes, by a girl
    - o Yes, by a boy
    - o Yes, by both girls and boys

Alcohol and substance use:

46. Have you ever used alcohol (except for religious purposes?

    - o Yes
    - o No

47. In your lifetime, have you ever smoked cigarettes, a pipe, or chewed tobacco?

    - o Yes
    - o No

48. Have you ever used (smoked or eaten) marijuana (grass, weed, pot, khat)?

    - o Yes
    - o No

49. Have you ever used any other drugs that were not given to you to treat an illness? These are sometimes referred to as “street drugs,” such as, for example, heroin, crack, opium, or valium.

    - o Yes
    - o No

Appendix C. Mplus Programs

This appendix includes representative Mplus programs used to conduct analyses of the Democratic Republic of Congo data. Equivalent programs were used in the other study countries.

Model 1. Final four-class model

```
DATA:     FILE = GEAS_DRC.dat ;

VARIABLE: NAMES = country city schoolid age sex int_02a int_03a
          int_04a int_05a int_06a agg_01 agg_02 vic_01 vic_02
          sub_01 ;

          USEVARIABLE = schoolid int_02a int_03a int_04a int_05a
          int_06a agg_01 agg_02 vic_01 vic_02 sub_01;

          CATEGORICAL = int_02a int_03a int_04a int_05a int_06a
          agg_01 agg_02 vic_01 vic_02 sub_01;

          MISSING = all (-9999) ;

          CLUSTER = schoolid ;

          CLASSES = c(4) ;

ANALYSIS: TYPE = mixture complex ;

          STARTS = 5000 500 ;

OUTPUT:   Tech10 Tech11 ;
```

Model 2. Fully unconstrained multi-group four-class model

```
DATA:     FILE = GEAS_DRC.dat ;

VARIABLE: NAMES = country city schoolid age sex int_02a int_03a
          int_04a int_05a int_06a agg_01 agg_02 vic_01 vic_02
          sub_01 ;

          USEVARIABLE = schoolid int_02a int_03a int_04a int_05a
          int_06a agg_01 agg_02 vic_01 vic_02 sub_01 ;

          CATEGORICAL = int_02a int_03a int_04a int_05a int_06a
          agg_01 agg_02 vic_01 vic_02 sub_01 ;

          KNOWNCLASS = cg (sex=0 sex=1) ;

          MISSING = all (-9999) ;

          CLUSTER = schoolid ;

          CLASSES = cg(2) c(4) ;

ANALYSIS: TYPE = mixture complex ;

          STARTS = 100 20 ;

MODEL:    %OVERALL%

          c on cg ;

          %CG#1.C#1%

          [ int_02a$1*-0.98008 ];
          [ int_03a$1*1.86735 ];
          [ int_04a$1*1.86397 ];
          [ int_05a$1*2.01882 ];
          [ int_06a$1*3.68003 ];
          [ agg_01$1*-1.10904 ];
          [ agg_02$1*-1.16701 ];
          [ vic_01$1*-1.58305 ];
          [ vic_02$1*-1.06986 ];
          [ sub_01$1*1.36352 ];

          %CG#1.C#2%

          [ int_02a$1*-1.84186 ];
          [ int_03a$1*0.24499 ];
```

```
[ int_04a$1*-0.42189 ];
[ int_05a$1*-0.33978 ];
[ int_06a$1*1.58588 ];
[ agg_01$1*1.51304 ];
[ agg_02$1*1.94560 ];
[ vic_01$1*0.39678 ];
[ vic_02$1*1.82937 ];
[ sub_01$1*1.81086 ];

%CG#1.C#3%

[ int_02a$1*-2.05220 ];
[ int_03a$1*-0.13183 ];
[ int_04a$1*-2.01397 ];
[ int_05a$1*-1.53579 ];
[ int_06a$1*0.30438 ];
[ agg_01$1*-15 ];
[ agg_02$1*-2.48693 ];
[ vic_01$1*-2.76445 ];
[ vic_02$1*-3.31959 ];
[ sub_01$1*0.73909 ];

%CG#1.C#4%

[ int_02a$1*-1.03592 ];
[ int_03a$1*2.46413 ];
[ int_04a$1*3.54519 ];
[ int_05a$1*3.22061 ];
[ int_06a$1*4.15206 ];
[ agg_01$1*3.00221 ];
[ agg_02$1*2.76768 ];
[ vic_01$1*1.17746 ];
[ vic_02$1*2.68074 ];
[ sub_01$1*2.56779 ];

%CG#2.C#1%

[ int_02a$1*-0.48327 ];
[ int_03a$1*2.85635 ];
[ int_04a$1*3.19491 ];
[ int_05a$1*2.24404 ];
[ int_06a$1*4.89878 ];
[ agg_01$1*3.35818 ];
[ agg_02$1*2.79139 ];
[ vic_01$1*2.18575 ];
[ vic_02$1*3.11151 ];
[ sub_01$1*3.08694 ];
```

```
%CG#2.C#2%

[ int_02a$1*-1.91410 ];
[ int_03a$1*0.49970 ];
[ int_04a$1*0.09612 ];
[ int_05a$1*-0.79393 ];
[ int_06a$1*1.86152 ];
[ agg_01$1*1.84654 ];
[ agg_02$1*1.90960 ];
[ vic_01$1*0.58680 ];
[ vic_02$1*1.32489 ];
[ sub_01$1*2.50434 ];

%CG#2.C#3%

[ int_02a$1*-1.34571 ];
[ int_03a$1*0.83712 ];
[ int_04a$1*-0.23171 ];
[ int_05a$1*0.85019 ];
[ int_06a$1*0.91419 ];
[ agg_01$1*-1.63542 ];
[ agg_02$1*-15 ];
[ vic_01$1*-1.53012 ];
[ vic_02$1*-1.42685 ];
[ sub_01$1*0.56832 ];

%CG#2.C#4%

[ int_02a$1*-0.42360 ];
[ int_03a$1*2.74963 ];
[ int_04a$1*15 ];
[ int_05a$1*2.05673 ];
[ int_06a$1*4.12347 ];
[ agg_01$1*-1.00970 ];
[ agg_02$1*-0.53227 ];
[ vic_01$1*-1.11951 ];
[ vic_02$1*0.35019 ];
[ sub_01$1*1.66732 ];
```

Model 3. Fully constrained multi-group four-class model

```
DATA:     FILE = GEAS_DRC.dat ;

VARIABLE: NAMES = country city schoolid age sex int_02a int_03a
          int_04a int_05a int_06a agg_01 agg_02 vic_01 vic_02
          sub_01 ;

          USEVARIABLE = schoolid int_02a int_03a int_04a int_05a
          int_06a agg_01 agg_02 vic_01 vic_02 sub_01 ;

          CATEGORICAL = int_02a int_03a int_04a int_05a int_06a
          agg_01 agg_02 vic_01 vic_02 sub_01 ;

          KNOWNCLASS = cg (sex=0 sex=1) ;

          MISSING = all (-9999) ;

          CLUSTER = schoolid ;

          CLASSES = cg(2) c(4) ;

ANALYSIS: TYPE = mixture complex ;

          STARTS = 100 20 ;

MODEL:    %OVERALL%

          c ON cg ;

          %cg#1.c#1%

          [int_02a$1] (1) ;
          [int_03a$1] (2) ;
          [int_04a$1] (3) ;
          [int_05a$1] (4) ;
          [int_06a$1] (5) ;
          [agg_01$1] (6) ;
          [agg_02$1] (7) ;
          [vic_01$1] (8) ;
          [vic_02$1] (9) ;
          [sub_01$1] (10) ;

          %cg#2.c#1%

          [int_02a$1] (1) ;
          [int_03a$1] (2) ;
          [int_04a$1] (3) ;
```

```
[int_05a$1] (4) ;
[int_06a$1] (5) ;
[agg_01$1] (6) ;
[agg_02$1] (7) ;
[vic_01$1] (8) ;
[vic_02$1] (9) ;
[sub_01$1] (10) ;

%cg#1.c#2%

[int_02a$1] (11) ;
[int_03a$1] (12) ;
[int_04a$1] (13) ;
[int_05a$1] (14) ;
[int_06a$1] (15) ;
[agg_01$1] (16) ;
[agg_02$1] (17) ;
[vic_01$1] (18) ;
[vic_02$1] (19) ;
[sub_01$1] (20) ;

%cg#2.c#2%

[int_02a$1] (11) ;
[int_03a$1] (12) ;
[int_04a$1] (13) ;
[int_05a$1] (14) ;
[int_06a$1] (15) ;
[agg_01$1] (16) ;
[agg_02$1] (17) ;
[vic_01$1] (18) ;
[vic_02$1] (19) ;
[sub_01$1] (20) ;

%cg#1.c#3%

[int_02a$1] (21) ;
[int_03a$1] (22) ;
[int_04a$1] (23) ;
[int_05a$1] (24) ;
[int_06a$1] (25) ;
[agg_01$1] (26) ;
[agg_02$1] (27) ;
[vic_01$1] (28) ;
[vic_02$1] (29) ;
[sub_01$1] (30) ;

%cg#2.c#3%
```

```
[int_02a$1] (21) ;
[int_03a$1] (22) ;
[int_04a$1] (23) ;
[int_05a$1] (24) ;
[int_06a$1] (25) ;
[agg_01$1] (26) ;
[agg_02$1] (27) ;
[vic_01$1] (28) ;
[vic_02$1] (29) ;
[sub_01$1] (30) ;

%cg#1.c#4%

[int_02a$1] (31) ;
[int_03a$1] (32) ;
[int_04a$1] (33) ;
[int_05a$1] (34) ;
[int_06a$1] (35) ;
[agg_01$1] (36) ;
[agg_02$1] (37) ;
[vic_01$1] (38) ;
[vic_02$1] (39) ;
[sub_01$1] (40) ;

%cg#2.c#4%

[int_02a$1] (31) ;
[int_03a$1] (32) ;
[int_04a$1] (33) ;
[int_05a$1] (34) ;
[int_06a$1] (35) ;
[agg_01$1] (36) ;
[agg_02$1] (37) ;
[vic_01$1] (38) ;
[vic_02$1] (39) ;
[sub_01$1] (40) ;
```

Model 3. Multi-group four-class model with "self-blame" indicator constrained

```
DATA:     FILE = GEAS_DRC.dat ;

VARIABLE: NAMES = country city schoolid age sex int_02a int_03a
          int_04a int_05a int_06a agg_01 agg_02 vic_01 vic_02
          sub_01 ;

          USEVARIABLE = schoolid int_02a int_03a int_04a int_05a
          int_06a agg_01 agg_02 vic_01 vic_02 sub_01 ;

          CATEGORICAL = int_02a int_03a int_04a int_05a int_06a
          agg_01 agg_02 vic_01 vic_02 sub_01 ;

          KNOWNCLASS = cg (sex=0 sex=1) ;

          MISSING = all (-9999) ;

          CLUSTER = schoolid ;

          CLASSES = cg(2) c(4) ;

ANALYSIS: TYPE = mixture complex ;

          STARTS = 100 20 ;

MODEL:    %OVERALL%

          c on cg ;

          %CG#1.C#1%

          [ int_02a$1*-0.98008 ] (1);
          [ int_03a$1*1.86735 ];
          [ int_04a$1*1.86397 ];
          [ int_05a$1*2.01882 ];
          [ int_06a$1*3.68003 ];
          [ agg_01$1*-1.10904 ];
          [ agg_02$1*-1.16701 ];
          [ vic_01$1*-1.58305 ];
          [ vic_02$1*-1.06986 ];
          [ sub_01$1*1.36352 ];

          %CG#1.C#2%

          [ int_02a$1*-1.84186 ] (2);
          [ int_03a$1*0.24499 ];
          [ int_04a$1*-0.42189 ];
```

```
[ int_05a$1*-0.33978 ];
[ int_06a$1*1.58588 ];
[ agg_01$1*1.51304 ];
[ agg_02$1*1.94560 ];
[ vic_01$1*0.39678 ];
[ vic_02$1*1.82937 ];
[ sub_01$1*1.81086 ];

%CG#1.C#3%

[ int_02a$1*-2.05220 ] (3);
[ int_03a$1*-0.13183 ];
[ int_04a$1*-2.01397 ];
[ int_05a$1*-1.53579 ];
[ int_06a$1*0.30438 ];
[ agg_01$1*-15 ];
[ agg_02$1*-2.48693 ];
[ vic_01$1*-2.76445 ];
[ vic_02$1*-3.31959 ];
[ sub_01$1*0.73909 ];

%CG#1.C#4%

[ int_02a$1*-1.03592 ] (4);
[ int_03a$1*2.46413 ];
[ int_04a$1*3.54519 ];
[ int_05a$1*3.22061 ];
[ int_06a$1*4.15206 ];
[ agg_01$1*3.00221 ];
[ agg_02$1*2.76768 ];
[ vic_01$1*1.17746 ];
[ vic_02$1*2.68074 ];
[ sub_01$1*2.56779 ];

%CG#2.C#1%

[ int_02a$1*-0.48327 ] (4);
[ int_03a$1*2.85635 ];
[ int_04a$1*3.19491 ];
[ int_05a$1*2.24404 ];
[ int_06a$1*4.89878 ];
[ agg_01$1*3.35818 ];
[ agg_02$1*2.79139 ];
[ vic_01$1*2.18575 ];
[ vic_02$1*3.11151 ];
[ sub_01$1*3.08694 ];

%CG#2.C#2%
```

```
[ int_02a$1*-1.91410 ] (2);
[ int_03a$1*0.49970 ];
[ int_04a$1*0.09612 ];
[ int_05a$1*-0.79393 ];
[ int_06a$1*1.86152 ];
[ agg_01$1*1.84654 ];
[ agg_02$1*1.90960 ];
[ vic_01$1*0.58680 ];
[ vic_02$1*1.32489 ];
[ sub_01$1*2.50434 ];

%CG#2.C#3%

[ int_02a$1*-1.34571 ] (3);
[ int_03a$1*0.83712 ];
[ int_04a$1*-0.23171 ];
[ int_05a$1*0.85019 ];
[ int_06a$1*0.91419 ];
[ agg_01$1*-1.63542 ];
[ agg_02$1*-15 ];
[ vic_01$1*-1.53012 ];
[ vic_02$1*-1.42685 ];
[ sub_01$1*0.56832 ];

%CG#2.C#4%

[ int_02a$1*-0.42360 ] (1);
[ int_03a$1*2.74963 ];
[ int_04a$1*15 ];
[ int_05a$1*2.05673 ];
[ int_06a$1*4.12347 ];
[ agg_01$1*-1.00970 ];
[ agg_02$1*-0.53227 ];
[ vic_01$1*-1.11951 ];
[ vic_02$1*0.35019 ];
[ sub_01$1*1.66732 ];
```

Model 4. Final partially invariant multi-group four-class model

```
DATA:     FILE = GEAS_DRC.dat ;

VARIABLE: NAMES = country city schoolid age sex int_02a int_03a
          int_04a int_05a int_06a agg_01 agg_02 vic_01 vic_02
          sub_01 ;

          USEVARIABLE = schoolid int_02a int_03a int_04a int_05a
          int_06a agg_01 agg_02 vic_01 vic_02 sub_01 ;

          CATEGORICAL = int_02a int_03a int_04a int_05a int_06a
          agg_01 agg_02 vic_01 vic_02 sub_01 ;

          KNOWNCLASS = cg (sex=0 sex=1) ;

          MISSING = all (-9999) ;

          CLUSTER = schoolid ;

          CLASSES = cg(2) c(4) ;

ANALYSIS: TYPE = mixture complex ;

          STARTS = 100 20 ;

MODEL:    %OVERALL%

          c on cg ;

          %CG#1.C#1%

          [ int_02a$1*-0.98008 ];
          [ int_03a$1*1.86735 ];
          [ int_04a$1*1.86397 ] (31);
          [ int_05a$1*2.01882 ];
          [ int_06a$1*3.68003 ] (51);
          [ agg_01$1*-1.10904 ] (61);
          [ agg_02$1*-1.16701 ] (71);
          [ vic_01$1*-1.58305 ];
          [ vic_02$1*-1.06986 ];
          [ sub_01$1*1.36352 ] (101);

          %CG#1.C#2%

          [ int_02a$1*-1.84186 ];
          [ int_03a$1*0.24499 ];
          [ int_04a$1*-0.42189 ] (32);
```

```
[ int_05a$1*-0.33978 ];
[ int_06a$1*1.58588 ] (52);
[ agg_01$1*1.51304 ] (62);
[ agg_02$1*1.94560 ] (72);
[ vic_01$1*0.39678 ];
[ vic_02$1*1.82937 ];
[ sub_01$1*1.81086 ] (102);

%CG#1.C#3%

[ int_02a$1*-2.05220 ];
[ int_03a$1*-0.13183 ];
[ int_04a$1*-2.01397 ] (33);
[ int_05a$1*-1.53579 ];
[ int_06a$1*0.30438 ] (53);
[ agg_01$1*-15 ] (63);
[ agg_02$1*-2.48693 ] (73);
[ vic_01$1*-2.76445 ];
[ vic_02$1*-3.31959 ];
[ sub_01$1*0.73909 ] (103);

%CG#1.C#4%

[ int_02a$1*-1.03592 ];
[ int_03a$1*2.46413 ];
[ int_04a$1*3.54519 ] (34);
[ int_05a$1*3.22061 ];
[ int_06a$1*4.15206 ] (54);
[ agg_01$1*3.00221 ] (64);
[ agg_02$1*2.76768 ] (74);
[ vic_01$1*1.17746 ];
[ vic_02$1*2.68074 ];
[ sub_01$1*2.56779 ] (104);

%CG#2.C#1%

[ int_02a$1*-0.48327 ];
[ int_03a$1*2.85635 ];
[ int_04a$1*3.19491 ] (34);
[ int_05a$1*2.24404 ];
[ int_06a$1*4.89878 ] (54);
[ agg_01$1*3.35818 ] (64);
[ agg_02$1*2.79139 ] (74);
[ vic_01$1*2.18575 ];
[ vic_02$1*3.11151 ];
[ sub_01$1*3.08694 ] (104);

%CG#2.C#2%
```

```
[ int_02a$1*-1.91410 ];
[ int_03a$1*0.49970 ];
[ int_04a$1*0.09612 ] (32);
[ int_05a$1*-0.79393 ];
[ int_06a$1*1.86152 ] (52);
[ agg_01$1*1.84654 ] (62);
[ agg_02$1*1.90960 ] (72);
[ vic_01$1*0.58680 ];
[ vic_02$1*1.32489 ];
[ sub_01$1*2.50434 ] (102);

%CG#2.C#3%

[ int_02a$1*-1.34571 ];
[ int_03a$1*0.83712 ];
[ int_04a$1*-0.23171 ] (33);
[ int_05a$1*0.85019 ];
[ int_06a$1*0.91419 ] (53);
[ agg_01$1*-1.63542 ] (63);
[ agg_02$1*-15 ] (73);
[ vic_01$1*-1.53012 ];
[ vic_02$1*-1.42685 ];
[ sub_01$1*0.56832 ] (103);

%CG#2.C#4%

[ int_02a$1*-0.42360 ];
[ int_03a$1*2.74963 ];
[ int_04a$1*15 ] (31);
[ int_05a$1*2.05673 ];
[ int_06a$1*4.12347 ] (51);
[ agg_01$1*-1.00970 ] (61);
[ agg_02$1*-0.53227 ] (71);
[ vic_01$1*-1.11951 ];
[ vic_02$1*0.35019 ];
[ sub_01$1*1.66732 ] (101);
```

Model 5. Step one in three-step BCH weight latent class regression using partially invariant multi-group four-class model

```
DATA:     FILE = GEAS_DRC_LCR.dat ;

VARIABLE: NAMES = schoolid age sex migration hhsize cg4 cgmar
          cgedu2 cgemp2 int_02a int_03a int_04a int_05a int_06a
          agg_01 agg_02 vic_01 vic_02 sub_01 fcon_01b fmon_03b
          ace_01_bin ace_02_bin ace_03_bin ace_04_bin ace_05_bin
          ace_06_bin ace_07_bin ace_08_bin ace_09_bin ace_10_bin
          ace_11_bin  ace_12_bin  ace_13_bin  socialb  psub_02
          pviol_01a scon_02b ssafe ncohtot nsafe ;

          USEVARIABLE = int_02a int_03a int_04a int_05a int_06a
          agg_01 agg_02 vic_01 vic_02 sub_01 ;

          CATEGORICAL = int_02a int_03a int_04a int_05a int_06a
          agg_01 agg_02 vic_01 vic_02 sub_01 ;

          AUXILIARY = age migration hhsize cg4 cgmar cgedu2 cgemp2
          fcon_01b  fmon_03b  ace_01_bin  ace_02_bin  ace_03_bin
          ace_04_bin ace_05_bin ace_06_bin ace_07_bin ace_08_bin
          ace_09_bin ace_10_bin ace_11_bin ace_12_bin ace_13_bin
          socialb psub_02 pviol_01a scon_02b ssafe ncohtot nsafe
          ;

          KNOWNCLASS = cg (sex=0 sex=1) ;

          MISSING = all (-9999) ;

          CLUSTER = schoolid ;

          CLASSES = cg(2) c(4) ;

ANALYSIS: TYPE = mixture complex ;

          STARTS = 100 20 ;

MODEL:    %OVERALL%

          c#1 ON cg#1*0.52539;
          c#2 ON cg#1*0.46214;
          c#3 ON cg#1*0.68919;

          [ cg#1*-0.05984 ];
          [ c#1*-1.27781 ];
          [ c#2*-1.66719 ];
          [ c#3*-3.03431 ];
```

```
%CG#1.C#1%

[ int_02a$1*-1.00075 ];
[ int_03a$1*2.15845 ];
[ int_04a$1*2.46714 ] (3);
[ int_05a$1*2.18938 ];
[ int_06a$1*4.16624 ] (5);
[ agg_01$1*-1.04595 ] (6);
[ agg_02$1*-0.90250 ] (7);
[ vic_01$1*-1.48346 ];
[ vic_02$1*-0.94637 ];
[ sub_01$1*1.42547 ] (10);

%CG#1.C#2%

[ int_02a$1*-1.84218 ];
[ int_03a$1*0.30505 ];
[ int_04a$1*-0.17895 ] (13);
[ int_05a$1*-0.22272 ];
[ int_06a$1*1.63398 ] (15);
[ agg_01$1*1.62248 ] (16);
[ agg_02$1*1.85788 ] (17);
[ vic_01$1*0.41287 ];
[ vic_02$1*1.77051 ];
[ sub_01$1*2.03278 ] (20);

%CG#1.C#3%

[ int_02a$1*-1.41497 ];
[ int_03a$1*-0.00713 ];
[ int_04a$1*-0.84262 ] (23);
[ int_05a$1*-0.48327 ];
[ int_06a$1*0.58356 ] (25);
[ agg_01$1*-2.26609 ] (26);
[ agg_02$1*-2.88061 ] (27);
[ vic_01$1*-2.90930 ];
[ vic_02$1*-2.57535 ];
[ sub_01$1*0.76065 ] (30);

%CG#1.C#4%

[ int_02a$1*-1.02028 ];
[ int_03a$1*2.50934 ];
[ int_04a$1*3.29432 ] (33);
[ int_05a$1*3.37314 ];
[ int_06a$1*4.56728 ] (35);
[ agg_01$1*3.19295 ] (36);
```

```
[ agg_02$1*2.79804 ] (37);
[ vic_01$1*1.23456 ];
[ vic_02$1*2.81351 ];
[ sub_01$1*2.87483 ] (40);

%CG#2.C#1%

[ int_02a$1*-0.50201 ];
[ int_03a$1*2.46758 ];
[ int_04a$1*2.46714 ] (3);
[ int_05a$1*2.00373 ];
[ int_06a$1*4.16624 ] (5);
[ agg_01$1*-1.04595 ] (6);
[ agg_02$1*-0.90250 ] (7);
[ vic_01$1*-1.19587 ];
[ vic_02$1*0.25405 ];
[ sub_01$1*1.42547 ] (10);

%CG#2.C#2%

[ int_02a$1*-1.93078 ];
[ int_03a$1*0.34033 ];
[ int_04a$1*-0.17895 ] (13);
[ int_05a$1*-1.01632 ];
[ int_06a$1*1.63398 ] (15);
[ agg_01$1*1.62248 ] (16);
[ agg_02$1*1.85788 ] (17);
[ vic_01$1*0.57980 ];
[ vic_02$1*1.21440 ];
[ sub_01$1*2.03278 ] (20);

%CG#2.C#3%

[ int_02a$1*-1.52647 ];
[ int_03a$1*0.62067 ];
[ int_04a$1*-0.84262 ] (23);
[ int_05a$1*0.63578 ];
[ int_06a$1*0.58356 ] (25);
[ agg_01$1*-2.26609 ] (26);
[ agg_02$1*-2.88061 ] (27);
[ vic_01$1*-1.90460 ];
[ vic_02$1*-2.83546 ];
[ sub_01$1*0.76065 ] (30);

%CG#2.C#4%

[ int_02a$1*-0.51250 ];
[ int_03a$1*2.79451 ];
```

```
            [ int_04a$1*3.29432 ] (33);
            [ int_05a$1*2.10432 ];
            [ int_06a$1*4.56728 ] (35);
            [ agg_01$1*3.19295 ] (36);
            [ agg_02$1*2.79804 ] (37);
            [ vic_01$1*2.07596 ];
            [ vic_02$1*3.02041 ];
            [ sub_01$1*2.87483 ] (40);

SAVEDATA: FILE = GEAS_DRC_LCR_S2_BCH.dat ;

            SAVE = BCHWEIGHTS ;
```

Model 5. Multiple imputation of covariates based on data produced by step one in three-step BCH weight latent class regression

```
DATA:      FILE = GEAS_DRC_LCR_S2_BCH.dat ;

VARIABLE: NAMES = int_02a int_03a int_04a int_05a int_06a agg_01
          agg_02 vic_01 vic_02 sub_01 age migration hhsize cg4
          cgmar cgedu2 cgemp2 fcon_01b fmon_03b ace_01_bin
          ace_02_bin ace_03_bin ace_04_bin ace_05_bin ace_06_bin
          ace_07_bin ace_08_bin ace_09_bin ace_10_bin ace_11_bin
          ace_12_bin ace_13_bin socialb psub_02 pviol_01a scon_02b
          ssafe ncohtot nsafe bchw1 bchw2 bchw3 bchw4 bchw5 bchw6
          bchw7 bchw8 schoolid sex ;

          CATEGORICAL = migration cg4 cgmar cgedu2 cgemp2 fcon_01b
          fmon_03b ace_01_bin ace_02_bin ace_03_bin ace_04_bin
          ace_05_bin ace_06_bin ace_07_bin ace_08_bin ace_09_bin
          ace_10_bin ace_11_bin ace_12_bin ace_13_bin socialb
          psub_02 pviol_01a scon_02b ssafe nsafe sex ;

          USEVARIABLES = age migration hhsize cg4 cgmar cgedu2
          cgemp2 fcon_01b fmon_03b ace_01_bin ace_02_bin
          ace_03_bin ace_04_bin ace_05_bin ace_06_bin ace_07_bin
          ace_08_bin ace_09_bin ace_10_bin ace_11_bin ace_12_bin
          ace_13_bin socialb psub_02 pviol_01a scon_02b ssafe
          ncohtot nsafe sex ;

          AUXILIARY = int_02a int_03a int_04a int_05a int_06a
          agg_01 agg_02 vic_01 vic_02 sub_01 bchw1 bchw2 bchw3
          bchw4 bchw5 bchw6 bchw7 bchw8 schoolid ;

          MISSING = * ;

DATA IMPUTATION:

          IMPUTE = migration (c) cg4 (c) cgmar (c) cgedu2 (c)
          cgemp2 (c) fcon_01b (c) fmon_03b (c) ace_01_bin (c)
          ace_02_bin (c) ace_03_bin (c) ace_04_bin (c) ace_05_bin
          (c) ace_06_bin (c) ace_07_bin (c) ace_08_bin (c)
          ace_09_bin (c) ace_10_bin (c) ace_11_bin (c) ace_12_bin
          (c) ace_13_bin (c) socialb (c) psub_02 (c) pviol_01a (c)
          scon_02b (c) ssafe (c) nsafe (c) hhsize ncohtot ;

          NDATASETS = 10 ;

          SAVE = GEAS_DRC_LCR_S2_MI_BCH*.dat ;

ANALYSIS: TYPE = basic ;
```

Model 6. Step three in three-step BCH weight latent class regression using imputed data

```
DATA:     FILE = GEAS_DRC_LCR_S2_MI_BCHlist.dat ;

          TYPE = IMPUTATION ;

VARIABLE: NAMES = age migration hhsize cg4 cgmar cgedu2 cgemp2
          fcon_01b fmon_03b ace_01_bin ace_02_bin ace_03_bin
          ace_04_bin ace_05_bin ace_06_bin ace_07_bin ace_08_bin
          ace_09_bin ace_10_bin ace_11_bin ace_12_bin ace_13_bin
          socialb psub_02 pviol_01a scon_02b ssafe ncohtot nsafe
          sex int_02a int_03a int_04a int_05a int_06a agg_01
          agg_02 vic_01 vic_02 sub_01 bchw1 bchw2 bchw3 bchw4
          bchw5 bchw6 bchw7 bchw8 schoolid ;

          USEVARIABLES = hhsize cgmar cgemp2 int_02a int_03a
          int_04a int_05a int_06a agg_01 agg_02 vic_01 vic_02
          sub_01 fcon_01b fmon_03b socialb psub_02 pviol_01a
          scon_02b ssafe ncohtot nsafe sex schoolid bchw1 bchw2
          bchw3 bchw4 acetot cgedusec cgeduuniv ;

          CATEGORICAL = int_02a int_03a int_04a int_05a int_06a
          agg_01 agg_02vic_01 vic_02 sub_01 ;

          MISSING = * ;

          CLUSTER = schoolid ;

          CLASSES = c(4) ;

          TRAINING = bchw1-bchw4 (bch) ;

DEFINE:   acetot = ace_01_bin + ace_02_bin + ace_03_bin +
          ace_04_bin + ace_05_bin + ace_06_bin + ace_07_bin +
          ace_08_bin + ace_09_bin + ace_10_bin + ace_11_bin +
          ace_12_bin + ace_13_bin ;

          IF (sex EQ 1) THEN bchw1 = bchw5 ;
          IF (sex EQ 1) THEN bchw2 = bchw6 ;
          IF (sex EQ 1) THEN bchw3 = bchw7 ;
          IF (sex EQ 1) THEN bchw4 = bchw8 ;

          cgedusec = 0 ;
          IF (cgedu2 EQ 1) THEN cgedusec = 1 ;
          cgeduuniv = 0 ;
          IF (cgedu2 EQ 2) THEN cgeduuniv = 1 ;

ANALYSIS: TYPE = mixture complex ;
```

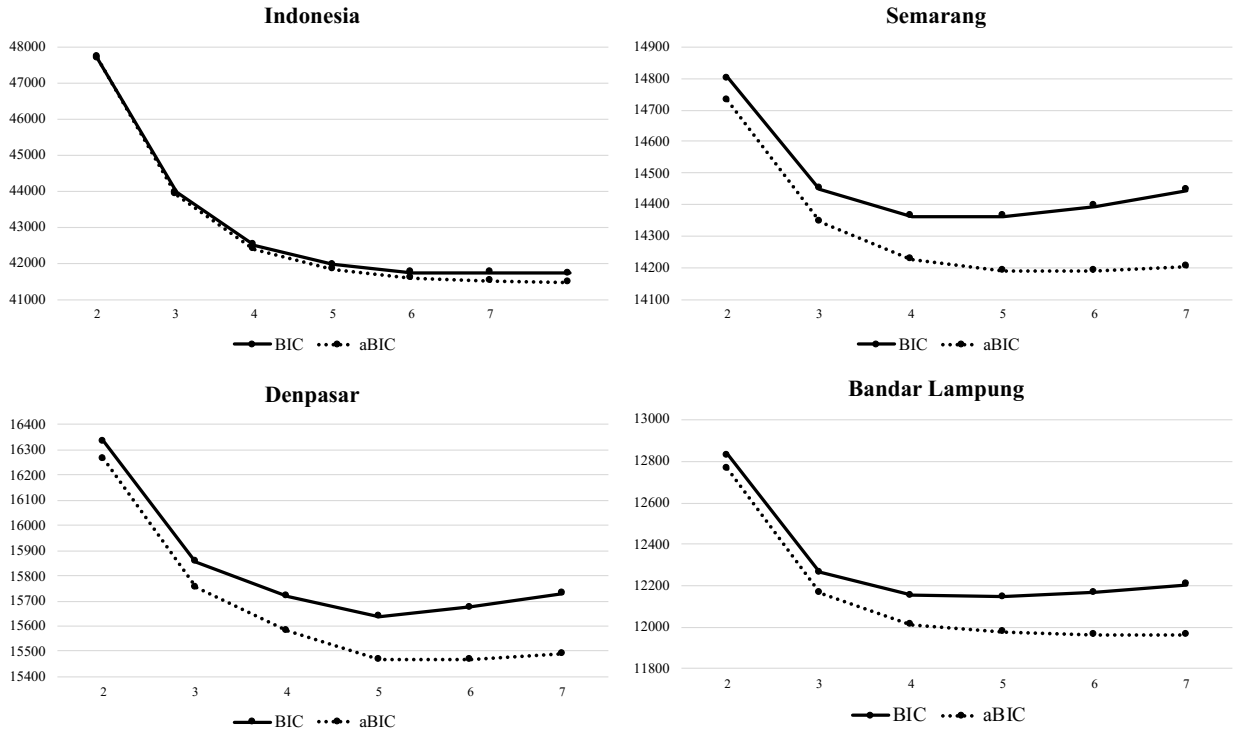
```
          STARTS = 15000 700 ;

OUTPUT:   tech4 ;

MODEL:    %OVERALL%

          c ON sex hhsize cgmar cgedusec cgeduuniv cgemp2 fcon_01b
          fmon_03b acetot socialb psub_02 pviol_01a scon_02b ssafe
          ncohtot nsafe ;
```

Appendix D. Supplemental Tables and Figures



Supplemental Figure 1. Plotted BIC and aBIC values for Indonesia study sites

Note. BIC = Bayesian Information Criteria; aBIC = sample size-adjusted Bayesian Information Criteria.

Supplemental Table 1. Adolescent psychosocial problems by country and sex

	DRC			Malawi			Indonesia			China		
	Boys *n* = 973	Girls *n* = 1,033	*p* value	Boys *n* = 1,017	Girls *n* = 999	*p* value	Boys *n* = 2,188	Girls *n* = 2,469	*p* value	Boys *n* = 903	Girls *n* = 855	*p* value
Emotional problems: N (%)												
Blame myself when things go wrong	**737 (75.8)**	**682 (66.0)**	**<0.001**	749 (73.7)	736 (73.7)	0.717	1,350 (61.7)	1,470 (59.9)	0.108	675 (74.8)	647 (75.7)	0.650
Worry for no good reason	**155 (15.9)**	**119 (11.5)**	**0.004**	557 (54.8)	574 (57.5)	0.090	1,037 (47.4)	1,238 (50.1)	0.064	**355 (39.3)**	**394 (46.1)**	**0.005**
So unhappy I can't sleep at night	**162 (16.7)**	**126 (12.2)**	**0.005**	408 (40.1)	396 (39.6)	0.746	**768 (35.1)**	**667 (27.0)**	**<0.001**	239 (26.5)	263 (30.8)	0.053
Feel sad	159 (16.3)	201 (19.5)	0.071	596 (58.6)	617 (61.8)	0.298	659 (30.1)	760 (30.8)	0.797	**240 (26.6)**	**270 (31.6)**	**0.024**
So unhappy I think of self-harm	52 (5.3)	43 (4.2)	0.216	284 (27.9)	313 (31.3)	0.080	**531 (24.3)**	**393 (15.9)**	**<0.001**	137 (15.2)	148 (17.3)	0.240
Behavioral problems: N (%)												
Bullied/threatened	**275 (28.3)**	**214 (20.7)**	**<0.001**	**289 (28.4)**	**196 (19.6)**	**<0.001**	**367 (16.8)**	**150 (6.1)**	**<0.001**	44 (4.9)	37 (4.3)	0.490
Slapped/hit/physically hurt	**273 (28.1)**	**220 (21.3)**	**<0.001**	**316 (31.1)**	**267 (26.7)**	**0.044**	**372 (17.0)**	**209 (8.5)**	**<0.001**	**59 (6.5)**	**19 (2.1)**	**<0.001**
Been teased/called names	**427 (43.9)**	**296 (28.7)**	**<0.001**	**577 (56.7)**	**485 (48.6)**	**0.001**	**1,114 (50.9)**	**1,139 (46.1)**	**<0.001**	**320 (35.4)**	**239 (28.0)**	**<0.001**
Been slapped/ hit/physically hurt	**275 (28.3)**	**175 (16.9)**	**<0.001**	**444 (43.7)**	**379 (37.9)**	**0.014**	**527 (24.1)**	**224 (9.1)**	**<0.001**	**175 (19.4)**	**65 (7.6)**	**<0.001**
Used substance	**121 (12.4)**	**87 (8.4)**	**0.003**	**268 (26.4)**	**153 (15.3)**	**<0.001**	**461 (21.1)**	**59 (2.4)**	**<0.001**	245 (27.1)	229 (26.8)	0.676

Supplemental Table 2. Estimated class prevalences and item-response probabilities from the latent class models in each country

	DRC (*n* = 2,006)				**Malawi (*n* = 2,016)**				**Indonesia (*n* = 4,657)**				**China (*n* = 1,758)**		
	WA (60%)	EP (14%)	BP (22%)	MA (4%)	WA (40%)	EP (24%)	BP (21%)	MA (15%)	WA (49%)	EP (29%)	BP (15%)	MA (6%)	WA (62%)	EP (28%)	MA (10%)
Emotional problems:															
Blame myself when things go wrong	**0.67**	**0.87**	**0.69**	**0.81**	**0.67**	**0.90**	**0.66**	**0.94**	0.46	**0.89**	**0.51**	**0.92**	**0.67**	**0.94**	**0.77**
Worry for no good reason	0.07	0.42	0.09	0.44	0.35	**0.89**	0.42	**0.95**	0.28	**0.86**	0.36	**0.94**	0.21	**0.84**	**0.66**
So unhappy I can't sleep at night	0.03	**0.55**	0.07	**0.69**	0.11	**0.82**	0.18	**0.90**	0.09	**0.66**	0.19	**0.86**	0.08	**0.66**	**0.52**
Feel sad	0.08	**0.63**	0.11	**0.50**	0.38	**0.96**	0.46	**0.96**	0.09	**0.64**	0.18	**0.86**	0.08	**0.68**	0.49
So unhappy I think of self-harm	0.01	0.16	0.02	0.33	0.07	**0.57**	0.16	**0.74**	0.02	0.42	0.12	**0.84**	0.03	0.39	0.38
Behavioral problems:															
Bullied/threatened	0.04	0.17	**0.74**	**0.90**	0.03	0.12	0.48	**0.72**	0.01	0.04	0.43	**0.81**	0.01	0.02	0.39
Slapped/hit/physically hurt	0.06	0.13	**0.71**	**0.96**	0.04	0.08	**0.64**	**0.86**	0.02	0.03	**0.51**	**0.76**	0.01	0.00	0.42
Been teased/called names	0.16	0.38	**0.79**	**0.92**	0.27	**0.53**	**0.84**	**0.90**	0.36	**0.56**	**0.90**	**0.90**	0.21	0.48	**0.90**
Been slapped/hit/physically hurt	0.05	0.19	**0.59**	**0.94**	0.12	0.32	**0.79**	**0.88**	0.01	0.10	**0.64**	**0.79**	0.07	0.10	**0.75**
Used substance	0.05	0.11	0.20	0.31	0.09	0.18	0.31	0.43	0.05	0.08	0.26	0.44	0.22	0.33	**0.50**

Note: WA = Well-Adjusted; EP = Emotional Problems; BP = Behavioral Problems; MA = Maladjusted. Models estimated separately for each study country. Item-response probabilities greater than 0.50 are bolded to highlight distinctions between classes.

Supplemental Table 3. Estimated class prevalences and item-response probabilities from the fully unconstrained multi-group latent class models in each country

DRC	**Boys (*n* = 973)**				**Girls (*n* = 1,033)**			
	WA (54%)	EP (15%)	BP (26%)	MA (3%)	WA (63%)	EP (15%)	BP (17%)	MA (5%)
Blame myself when things go wrong	**0.74**	**0.86**	**0.73**	**0.89**	**0.62**	**0.87**	**0.60**	**0.79**
Worry for no good reason	0.08	0.44	0.13	**0.53**	0.05	0.38	0.06	0.30
So unhappy I can't sleep at night	0.03	**0.60**	0.13	**0.88**	0.04	0.48	0.00	**0.56**
Feel sad	0.04	**0.58**	0.12	**0.82**	0.10	**0.69**	0.11	0.30
So unhappy I think of self-harm	0.02	0.17	0.03	0.42	0.01	0.14	0.02	0.29
Bullied/threatened	0.05	0.18	**0.75**	**1.00**	0.03	0.14	**0.73**	**0.84**
Slapped/hit/physically hurt	0.06	0.13	**0.76**	**0.92**	0.06	0.13	**0.63**	**1.00**
Been teased/called names	0.24	0.40	**0.83**	**0.94**	0.10	0.36	**0.75**	**0.82**
Been slapped/hit/physically hurt	0.06	0.14	**0.75**	**0.97**	0.04	0.21	0.41	**0.81**
Used substance	0.07	0.14	0.20	0.32	0.04	0.08	0.16	0.36
Malawi	**Boys (*n* = 1,017)**				**Girls (*n* = 999)**			
	WA (44%)	EP (21%)	BP (19%)	MA (16%)	WA (38%)	EP (27%)	BP (21%)	MA (14%)
Blame myself when things go wrong	**0.64**	**0.94**	**0.66**	**0.95**	**0.71**	**0.85**	**0.65**	**0.94**
Worry for no good reason	0.32	**0.88**	0.40	**1.00**	0.37	**0.88**	0.46	**0.90**
So unhappy I can't sleep at night	0.13	**0.83**	0.22	**0.87**	0.08	**0.83**	0.14	**0.93**
Feel sad	0.40	**0.95**	0.44	**0.94**	0.36	**0.95**	0.49	**0.98**
So unhappy I think of self-harm	0.07	**0.54**	0.16	**0.72**	0.06	**0.59**	0.19	**0.77**
Bullied/threatened	0.06	0.17	**0.62**	**0.72**	0.02	0.10	0.37	**0.70**
Slapped/hit/physically hurt	0.05	0.04	**0.78**	**0.89**	0.04	0.09	**0.56**	**0.86**
Been teased/called names	0.35	**0.60**	**0.87**	**0.89**	0.22	0.48	**0.82**	**0.90**
Been slapped/hit/physically hurt	0.19	0.34	**0.84**	**0.86**	0.07	0.30	**0.77**	**0.90**
Used substance	0.12	0.25	0.46	0.45	0.06	0.14	0.20	0.36
Indonesia	**Boys (*n* = 2,188)**				**Girls (*n* = 2,469)**			
	WA (47%)	EP (24%)	BP (21%)	MA (8%)	WA (52%)	EP (33%)	BP (10%)	MA (5%)
Blame myself when things go wrong	0.48	**0.91**	**0.55**	**0.90**	0.44	**0.88**	0.46	**0.95**
Worry for no good reason	0.26	**0.88**	0.35	**0.98**	0.28	**0.85**	0.43	**0.92**
So unhappy I can't sleep at night	0.12	**0.79**	0.21	**0.90**	0.07	**0.56**	0.18	**0.81**
Feel sad	0.08	**0.68**	0.17	**0.89**	0.09	**0.61**	0.25	**0.86**
So unhappy I think of self-harm	0.03	**0.55**	0.15	**0.86**	0.02	0.32	0.11	**0.82**
Bullied/threatened	0.01	0.04	**0.52**	**0.89**	0.01	0.03	0.30	**0.57**
Slapped/hit/physically hurt	0.02	0.03	**0.54**	**0.82**	0.01	0.03	**0.51**	**0.59**
Been teased/called names	0.40	**0.51**	**0.91**	**0.88**	0.33	**0.57**	**0.90**	**0.97**
Been slapped/hit/physically hurt	0.05	0.16	**0.71**	**0.79**	0.00	0.04	**0.53**	**0.75**
Used substance	0.12	0.19	0.36	**0.52**	0.01	0.01	0.08	0.18
China	**Boys (*n* = 903)**				**Girls (*n* = 855)**			
	WA (65%)	EP (24%)	BP (0%)	MA (11%)	WA (59%)	EP (32%)	BP (0%)	MA (9%)
Blame myself when things go wrong	**0.67**	**0.95**	**-**	**0.75**	**0.66**	**0.93**	**-**	**0.80**
Worry for no good reason	0.20	**0.81**	**-**	**0.59**	0.21	**0.83**	**-**	**0.82**
So unhappy I can't sleep at night	0.08	**0.65**	**-**	0.49	0.07	**0.67**	**-**	**0.58**
Feel sad	0.08	**0.69**	-	0.44	0.08	**0.67**	-	**0.61**
So unhappy I think of self-harm	0.02	0.45	-	0.28	0.04	0.31	-	**0.58**
Bullied/threatened	0.01	0.00	**-**	0.41	0.01	0.01	**-**	0.39
Slapped/hit/physically hurt	0.02	0.00	**-**	**0.55**	0.01	0.00	**-**	0.22
Been teased/called names	0.25	**0.56**	**-**	**0.90**	0.17	0.40	**-**	**0.89**
Been slapped/hit/physically hurt	0.10	0.22	**-**	**0.80**	0.04	0.02	**-**	**0.59**
Used substance	0.22	0.35	**-**	0.48	0.22	0.30	**-**	**0.52**

Note: WA = Well-Adjusted; EP = Emotional Problems; BP = Behavioral Problems; MA = Maladjusted. Multi-group models estimated separately for each study country. Item-response probabilities greater than 0.50 are bolded to highlight distinctions between classes.

Supplemental Table 4. Estimated class prevalences and item-response probabilities for the partially invariant multi-group latent class models in each country

DRC	**Boys (*n* = 973)**				**Girls (*n* = 1,033)**			
	WA (54%)	EP (16%)	BP (25%)	MA (5%)	WA (66%)	EP (12%)	BP (18%)	MA (3%)
Blame myself when things go wrong	**0.74**	**0.86**	**0.73**	**0.81**	**0.63**	**0.87**	**0.62**	**0.82**
Worry for no good reason	0.08	0.42	0.10	**0.50**	0.06	0.42	0.08	0.35
So unhappy I can't sleep at night	0.04	**0.55**	0.08	**0.70**	0.04	**0.55**	0.08	**0.70**
Feel sad	0.03	**0.56**	0.10	**0.62**	0.11	**0.73**	0.12	0.35
So unhappy I think of self-harm	0.01	0.16	0.02	0.36	0.01	0.16	0.02	0.36
Bullied/threatened	0.04	0.17	**0.74**	**0.91**	0.04	0.17	**0.74**	**0.91**
Slapped/hit/physically hurt	0.06	0.14	**0.71**	**0.95**	0.06	0.14	**0.71**	**0.95**
Been teased/called names	0.23	0.40	**0.82**	**0.95**	0.11	0.36	**0.77**	**0.87**
Been slapped/hit/physically hurt	0.06	0.15	**0.72**	**0.93**	0.05	0.23	0.44	**0.95**
Used substance	0.05	0.12	0.19	0.32	0.05	0.12	0.19	0.32
Malawi	**Boys (*n* = 1,017)**				**Girls (*n* = 999)**			
	WA (44%)	EP (21%)	BP (19%)	MA (16%)	WA (39%)	EP (27%)	BP (21%)	MA (14%)
Blame myself when things go wrong	**0.67**	**0.89**	**0.66**	**0.94**	**0.67**	**0.89**	**0.66**	**0.94**
Worry for no good reason	0.35	**0.89**	0.44	**0.95**	0.35	**0.89**	0.44	**0.95**
So unhappy I can't sleep at night	0.11	**0.83**	0.18	**0.91**	0.11	**0.83**	0.18	**0.91**
Feel sad	0.38	**0.96**	0.47	**0.96**	0.38	**0.96**	0.47	**0.96**
So unhappy I think of self-harm	0.07	**0.57**	0.17	**0.75**	0.07	**0.57**	0.17	**0.75**
Bullied/threatened	0.06	0.16	**0.62**	**0.71**	0.02	0.10	0.37	**0.69**
Slapped/hit/physically hurt	0.05	0.04	**0.79**	**0.86**	0.05	0.09	**0.56**	**0.85**
Been teased/called names	0.35	**0.59**	**0.87**	**0.89**	0.22	0.48	**0.82**	**0.90**
Been slapped/hit/physically hurt	0.19	0.33	**0.84**	**0.85**	0.07	0.31	**0.77**	**0.90**
Used substance	0.12	0.25	0.44	0.46	0.07	0.14	0.19	0.37
Indonesia	**Boys (*n* = 2,188)**				**Girls (*n* = 2,469)**			
	WA (45%)	EP (25%)	BP (21%)	MA (9%)	WA (53%)	EP (33%)	BP (10%)	MA (4%)
Blame myself when things go wrong	0.46	**0.89**	**0.51**	**0.90**	0.46	**0.89**	**0.51**	**0.90**
Worry for no good reason	0.28	**0.86**	0.36	**0.93**	0.28	**0.86**	0.36	**0.93**
So unhappy I can't sleep at night	0.11	**0.78**	0.19	**0.89**	0.07	**0.58**	0.17	**0.76**
Feel sad	0.09	**0.65**	0.17	**0.86**	0.09	**0.65**	0.17	**0.86**
So unhappy I think of self-harm	0.03	**0.54**	0.13	**0.85**	0.02	0.34	0.09	**0.80**
Bullied/threatened	0.01	0.04	0.49	**0.88**	0.01	0.04	0.30	**0.67**
Slapped/hit/physically hurt	0.02	0.03	**0.52**	**0.78**	0.02	0.03	**0.52**	**0.78**
Been teased/called names	0.36	**0.56**	**0.90**	**0.91**	0.36	**0.56**	**0.90**	**0.91**
Been slapped/hit/physically hurt	0.04	0.16	**0.69**	**0.79**	0.00	0.05	**0.53**	**0.79**
Used substance	0.11	0.19	0.35	**0.52**	0.01	0.01	0.07	0.21
China	**Boys (*n* = 903)**				**Girls (*n* = 855)**			
	WA (65%)	EP (23%)	BP (0%)	MA (13%)	WA (59%)	EP (33%)	BP (0%)	MA (7%)
Blame myself when things go wrong	**0.67**	**0.93**	**-**	**0.77**	**0.67**	**0.93**	**-**	**0.77**
Worry for no good reason	0.21	**0.83**	**-**	**0.67**	0.21	**0.83**	**-**	**0.67**
So unhappy I can't sleep at night	0.08	**0.66**	**-**	**0.52**	0.08	**0.66**	**-**	**0.52**
Feel sad	0.08	**0.68**	-	**0.50**	0.08	**0.68**	-	**0.50**
So unhappy I think of self-harm	0.02	0.45	-	0.29	0.04	0.33	-	**0.59**
Bullied/threatened	0.01	0.02	**-**	0.39	0.01	0.02	**-**	0.39
Slapped/hit/physically hurt	0.01	0.00	**-**	0.41	0.01	0.00	**-**	0.41
Been teased/called names	0.25	**0.54**	**-**	**0.89**	0.17	0.42	**-**	**0.90**
Been slapped/hit/physically hurt	0.11	0.18	**-**	**0.80**	0.03	0.04	**-**	**0.65**
Used substance	0.22	0.33	**-**	**0.50**	0.22	0.33	**-**	**0.50**

Note: WA = Well-Adjusted; EP = Emotional Problems; BP = Behavioral Problems; MA = Maladjusted. Multi-group models estimated separately for each study country. Italicized items are those that were constrained to be equal for boys and girls. Item-response probabilities greater than 0.50 are bolded to highlight distinctions between classes

Supplemental Table 5. Associations between sociodemographic covariates and psychosocial risk classes

	DRC (*n* = 2,006)	**Malawi (*n* = 2,016)**	**Indonesia (*n* = 4,657)**	**China (*n* = 1,758)**
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Emotional Problems Class				
Female	0.67 (0.47, 0.97)*	1.87 (1.37, 2.08)***	1.45 (1.17, 1.81)**	1.66 (1.43, 1.91)***
Household size	0.99 (0.92, 1.07)	0.98 (0.89, 1.07)	1.04 (0.97, 1.10)	0.99 (0.80, 1.22)
Caregiver separated/widowed/unmarried	1.26 (0.77, 2.07)	-	0.82 (0.58, 1.16)	0.69 (0.50, 0.96)*
Caregiver secondary school[a]	1.60 (0.67, 3.82)	-	0.98 (0.73, 1.31)	1.35 (0.80, 2.28)
Caregiver trade school/university[a]	1.94 (0.77, 4.88)	-	0.67 (0.46, 0.98)*	1.04 (0.56, 1.93)
Caregiver unemployed	0.62 (0.37, 1.02)	-	0.87 (0.73, 1.04)	0.83 (0.34, 2.04)
Behavioral Problems Class				
Female	0.70 (0.51, 0.96)*	1.69 (1.37, 2.10)***	0.52 (0.43, 0.64)***	-
Household size	0.98 (0.92, 1.04)	1.02 (0.98, 1.06)	0.95 (0.85, 1.06)	-
Caregiver separated/widowed/unmarried	0.78 (0.53, 1.17)	-	1.00 (0.59, 1.68)	-
Caregiver secondary school[a]	1.79 (0.77, 4.12)	-	1.20 (0.84, 1.73)	-
Caregiver trade school/university[a]	2.01 (0.88, 4.59)	-	0.83 (0.51, 1.34)	-
Caregiver unemployed	0.97 (0.64, 1.46)	-	0.70 (0.52, 0.94)*	-
Maladjusted Class				
Female	0.61 (0.28, 1.34)	1.56 (1.34, 1.81)***	0.96 (0.56, 1.65)	0.71 (0.52, 0.98)*
Household size	1.12 (0.97, 1.30)	0.98 (0.94, 1.02)	0.92 (0.77, 1.10)	0.94 (0.72, 1.23)
Caregiver separated/widowed/unmarried	0.92 (0.41, 2.08)	-	0.88 (0.38, 2.06)	1.02 (0.46, 2.24)
Caregiver secondary school[a]	4.28 (0.25, 73.76)	-	0.60 (0.38, 0.96)*	0.85 (0.12, 5.84)
Caregiver trade school/university[a]	5.69 (0.33, 98.47)	-	0.47 (0.30, 0.74)**	0.73 (0.26, 2.10)
Caregiver unemployed	1.75 (0.84, 3.63)	-	0.88 (0.62, 1.27)	0.53 (0.28, 1.01)

Note. Well-Adjusted Class is the reference class. [a] Reference is primary school or less; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. OR = Adjusted Odds Ratio; CI = Confidence Interval. In Malawi, primary caregiver's marital status, education, and employment status are not reported.

Appendix E. Qualitative Interview Materials

E.1 Qualitative Protocol and Semi-Structured Interview Guide

Overarching Research Questions:

RQ 1. What are the motivations, perceptions, and beliefs that early adolescents in Semarang, Indonesia have regarding interpersonal violence?

2a. To what extent do they differ based on an adolescent's broader constellation of psychosocial risks?

2b. To what extent do they differ based on an adolescent's gender?

RQ 2. What are early adolescents' views on the social environmental factors that play a role in interpersonal violence?

2a. How do different social environments change the ways in which adolescents behave, if at all?

Introduction & Warm-Up Questions:

"Hello, my name is [interviewer's name], and today we are going to be talk about the behaviors of young people in your community. Thank you so much for taking the time to speak with me. Before we begin, I'd like to explain our project to you.

[Review assent form, explaining each point and pausing for questions. If participant assents, proceed with interview.]

Thank you. As I mentioned, I will need to record this interview in order to keep track of what you say. I want to remind you that everything you tell me is confidential. This means that I will not share anything that you tell me with anyone outside of the research team, and I will never use your name. There is one exception, which is if you report a situation where you have been abused. In this case, we will report it to legal authorities, because it is required by the law.

Do you have any questions for me right now? Great! Let's get started."

Interview Guide:

Warm-up Questions:

1. First, I'd like to learn more about you. Can you please tell me a little bit about yourself?
2. Please take a moment to draw me a picture of your family. *[Provide paper and pen, and give participant time to draw family.]* Can you please tell me a little bit about the people in this picture?

"For the next part of the interview, we are going to talk about different behaviors of young people in your community, including things like fighting and bullying. Remember, if you feel uneasy about any of the topics, you can choose to skip them. You can also stop at any time. You can say okay now, and you can change your mind later. All you have to do is tell me. No one will be mad at you

if you change your mind. If you're not sure you understand a question that I am asking, please say so and I will find another way to ask that makes more sense to you."

Motivations, Perceptions, and Beliefs about Interpersonal Violence:

1. As you know, we're interested in better understanding why so many young people in the Global Early Adolescent Study report that they have been involved in bullying.
   - **a.** What does the term "bullying" mean to you?
   - **b.** What are some of the different ways that young people bully each other?
   - **c.** Where does bullying happen?
     - **i.** [*Probe]* Does it happen at school? Where at school?
     - **ii.** [*Probe]* How about other places in the community?
   - **d.** Aside from bullying, what are other ways that young people act violently or aggressively towards others? Please describe them.
   - **e.** In your opinion, what are some of the reasons that young people bully others?
     - ***i.*** [*Probe]* What are some of the reasons for the person *doing* the bullying? For example, reasons related to how they feel or what's going on at home?
     - ***ii.*** *[Probe]* What are some of the reasons why someone might *get* bullied? For example, reasons related to how they look, what they wear, or how they act?

2. How might boys and girls act differently with bullying?
   - **a.** Can you describe or give me an example of a *boy* who bullies others?
     - **i.** [*Probe]* What kinds of behaviors is he doing? Who is he bullying? What kinds of language or name-calling does he use?
     - **ii.** [*Probe]* Who is he with, if anyone?
     - **iii.** [*Probe]* Where is he? Does he behave that way everywhere, or only in certain environments?
   - **b.** Can you describe or give an example of a *girl* who bullies others?
     - **i.** [*Probe*] What kinds of behaviors is she doing? Who is she bullying? What kinds of language or name-calling does she use?
     - **ii.** [*Probe*] Who is she with, if anyone?
     - **iii.** [*Probe*] Where is she? Does she behave that way everywhere, or only in certain environments?
   - **c.** What are the reasons that *boys* bully others? How about *girls*? In your opinion, are there differences between boys and girls in terms of these reasons?
   - **d.** What are the consequences when *boys* bully others? How about *girls*? In your opinion, are there differences between boys and girls in terms of these consequences?
   - **e.** Do you think that it's normal for *boys* to bully others? How about *girls*? Please explain.

3. Now I would like to talk about specific behaviors that you may have witnessed or experienced. Remember, everything you tell me will stay completely confidential. This means that I will not share anything that you tell me with anyone outside of the research team, and I will never use your name or anyone else's name. Have you ever seen or heard about a friend or peer bullying someone else? Please describe what happened.
   - **a.** In your opinion, what caused this event?
   - **b.** In your opinion, how did this make your friend or peer feel?
   - **c.** How did *you* feel when you saw or heard about it?

d. Did your friend or peer get into trouble for what happened? How?
e. Did your friend or peer talk to anyone about what happened? Who did they talk to?

4. Have you ever seen or heard about a friend or peer who was the *victim* of bullying? Please describe what happened.
a. In your opinion, what were the reasons that they were bullied?
b. In your opinion, how did this make your friend or peer feel?
c. How did *you* feel when you saw or heard about it?
d. Did your friend or peer talk to anyone about what happened? Who did they talk to?

5. Have you ever had a friend or peer bully you? Please describe what happened.
a. In your opinion, what were the reasons that they bullied you?
b. How did you feel during the event? How about right after it happened? How do you feel about it now?
c. What did you do in response to what happened, if anything?
d. Who did you talk to about what happened, if anyone?
i. [*Probe if yes]* Did talking about what happened help? How did it help?
ii. [*Probe if no]* Who could have helped you with this situation, if anyone?

6. We know from the Global Early Adolescent Study that many young people sometimes bully one another. Have you ever bullied someone? Please describe what happened. Remember, it's okay to tell us about this: it won't get you in trouble.
a. What were the reasons that you acted this way?
b. How did you feel during the event? How about after it happened? How do you feel about it now?
c. Did you get in trouble for what happened? How?
d. What did you do in response to what happened, if anything?
e. Who did you talk to about what happened, if anyone?
i. [*Probe if yes]* Did talking about what happened help? How did it help?
ii. [*Probe if no]* Who could have helped you with this situation, if anyone?

Social Environmental Factors and Interpersonal Violence:

7. How might families impact their child's bullying, if at all?
a. What things do parents do that might encourage their children to bully? How about other family members, like brothers or sisters?
b. What things do parents do that might stop their children from bullying? How about other family members, like brothers or sisters?
c. We learned from the Global Early Adolescent Study that many young people report that their parents have threatened or said mean things to them. In your opinion, what are the reasons that parents would do or say these things?
i. [*Probe]* In your opinion, how does this make children feel?
ii. [*Probe]* In your opinion, how does this influence children's behavior?
iii. [*Probe]* In your opinion, what kinds of things can help children who have experienced this?

d. We learned from the Global Early Adolescent Study that many young people report feeling unloved or unprotected by their parents. In your opinion, what are the reasons that a young person would report this?
  i. [*Probe]* In your opinion, how does this make children feel?
  ii. [*Probe]* In your opinion, how does this influence children's behavior?
  iii. [*Probe]* In your opinion, what kinds of things can help children who feel this way?

8. How do young people's friends impact their bullying, if at all?
  a. In what ways do young people's friends encourage them to bully?
  b. In what ways do young people's friends stop them from bullying?
  c. We learned from the Global Early Adolescent Study that many young people report seeing their friends bully, threaten, or fight with someone. What do you think about this?
    i. [*Probe]* If you saw your friends act this way, how might it change the way *you* behaved?
    ii. [*Probe]* If you saw your friends *being* bullied or hurt, how might it change the way *you* behaved?

9. How do young people's schools impact their bullying, if at all?
  a. Do you ever feel unsafe at your school? Can you tell me about what makes you feel this way?
  b. In your opinion, what could your school do to prevent bullying among students?
  c. What is the role of teachers at your school in helping to prevent bullying?
  d. In your opinion, how could your school support students who have been victims of bullying?
  e. What is the role of teachers at our school in supporting students who have been victims of bullying?

10. How do young people's communities impact their bullying, if at all?
  a. Do you ever feel unsafe in your community? Can you tell me about what makes you feel this way?
  b. What are the places in your community where bullying is the most likely to occur? How about the least likely?
  c. What are the times of day when bullying is the most likely to occur? How about the least likely?
  d. What are the places in your community that young people go to feel "safe"? How is this different for boys and girls, if at all?
  e. In your opinion, what could your community do to help young people feel safer?

Conclusion:

11. Is there anything else that you would advise us to tell schools, communities, and city leaders about how they could help young people like you feel safe?

12. Is there anything else that you would advise us to tell schools, communities, and city leaders about how they could help young people like you deal with bullying?

13. Is there anything else that you would like to tell us that we haven't already covered?

Ending the Interview:

Provide incentive:

"Thank you very much for taking the time to talk to me today. We really appreciate it, and we have learned a lot from speaking with you. To thank you for your time, we would like to give you this souvenir."

Screen for distress:

"I know the questions that I asked may have been sensitive or uncomfortable to talk about. How are you feeling now? Are you feeling upset? Would you like me to connect you with support services?"

If there is indication of distress:

"Based on your telling me that our interview may have upset you, I would like to share this with your parent/caregiver or teacher, and let them know that there are support services that might be useful. Would it be okay if I talk to your parent/caregiver or teacher?"

E.2 Adolescent Assent Form

We want to talk to you about a research study we are doing. A research study is a way to learn information about something that is important to the community. We would like to understand how young people like you think about different behaviors, including things like bullying and fighting. We are also interested in how these different behaviors may be influenced by young people's families, friends, schools, and neighborhoods. From the Global Early Adolescent Study, we have learned that many children in your school or community report that they feel unsafe, and some are involved in bullying or are being bullied. We think that speaking with you and other students can help us to better understand why this happens and how it makes young people feel. We hope that the results of this research will help schools, communities, and local government to understand why these things happen and what they can do to make it better.

We are asking you to join the study because you are 13-14 years old and attend one of our study schools. Your parent or caregiver has already given us permission to talk to you about this study, but it is up to you whether you choose to join. If you decide to be in this study, we will ask you questions about the things I just mentioned. Your answers will be strictly confidential, and we will do everything we can to protect your privacy. We will have our conversation in a quiet room at school, and it will last between 60 and 90 minutes. We will also make a recording of our conversation so that we can remember your responses later. We will keep this recording and your answers completely private, and we will not share them with your parent or guardian. However, if you share with us that you have a serious problem – if someone is harming you or has harmed you in some way – we will end the interview and connect you to someone who can help you.

There is a possibility that results from this research will be shared through academic and non-academic publications. It is our priority to keep your identity confidential, thus the results that we share will never include your name or any other information that can identify you.

We do not know if being in this study will help you in any way, although you may learn some things about the health of young people as we talk. What we learn from you may help improve young people's health in Indonesia. As a thank you for your time, you will receive a souvenir.

You do not have to join this study. It is up to you. You can say okay now, and you can change your mind later. All you have to do is tell us. No one will be mad at you if you change your mind. Also, if any of the questions make you uncomfortable, or if you don't want to answer a question, you don't have to answer. All you have to do is tell us. No one will be mad at you if you choose not to answer a question.

If you or have any questions or concerns about this study, or are injured or ill as a result of being in this study, you may call the following numbers:

- Field Coordinator of Semarang: Solia Mince Muzir (+62 878-3831-6992)
- Researcher of CRH FKKMK UGM: Anggriyani Wahyu Pinandari (+62 857-5457-8118)

You may contact the Universitas Gadjah Mada Ethical Committee if you have questions about your rights as a study participant, if you feel you are not being treated well, or if you have other concerns:

Ethical Committee, Faculty of Medicine, Universitas Gadjah Mada
Jl. Farmako Sekip Utara, Yogyakarta 55281 Telephone: +62 274 560 300
Fax: + 62 274 581 876; Website: http://fk.ugm.ac.id/; E-mail: mhrec_fmugn@ugm.ac.id

Before you decide about joining this study, do you have any questions you would like to ask? If you want to join this study, and it is okay for us to record our conversation by audio, please sign your name. We will give you a copy of this form to keep for yourself.

_____	_____
Participant Signature	Date
_____	_____
Signature of Person Obtaining Assent	Date
_____	_____
Signature of Witness to Assent	Date

E.3 Parent/Guardian Consent Form

Key Information about the Study

We are asking you to give permission for your child to volunteer for a research study about young people's experiences growing up, and about how these experiences may differ between girls and boys. Specifically, we are interviewing young people between the ages of 13-14 years old to learn more about how they think about different behaviors, including things like fighting and bullying. We are also interested in how these different behaviors may be influenced by young people's families, friends, schools, and neighborhoods. We are conducting this study to help the government, community organizations, health institutions, and schools to understand how they can better support young people's safe and healthy transition from childhood to adulthood.

Your child is eligible for this study because he or she is 13-14 years old, and is a current participant in the Global Early Adolescent Study. You do not have to allow your child to join this study; it is your choice and there is no penalty for not joining. Ask as many questions as you need to help you make your decision. We will also ask your child for his or her agreement to join the study. If your child does not agree to participate, then we will honor that choice and will not enroll your child.

If you permit your child to join, we will ask your child to participate in an interview about the topics above. The interview will take place in a private room at your child's school, and will last between 60 and 90 minutes. The interview will also be recorded so that we can remember your child's responses later. Your child's participation will provide us with a better understanding of how girls and boys have different experiences and challenges with growing up, and what strategies can be used in your community to help young men and women grow up healthy. There are no direct personal benefits for you or your child from participating in the study, although your child may enjoy sharing his or her thoughts with us. It is also possible that some of the questions we ask may make your child uncomfortable or upset, or that your child will get tired or bored when we are asking questions. Your child does not have to answer any questions that he or she does not want to answer, and may stop the interview at any time. As a thank you for your child's time, he or she will receive a souvenir.

What will happen if your child joins this study?

As we mentioned earlier, this study is about what young people think about different behaviors, including things like bullying and fighting. If you agree to allow your child be in this study, we will ask your child to participate in one 60 to 90 minute interview, which will take place in a private room at school. As part of this study, we will also need your permission to make and audio recording of the interview to help answer the research questions. These recordings are required for your child's participation, but we will not use the recording for any non-study related purposes. You and your child should know that:

- You or your child may ask us to stop recording at any time.
- If you agree to allow the audio recording of your child, and then change your mind, just ask us to destroy that recording.
- We will only use these recordings for the purposes of this research.

- Audio recordings need to be transcribed for analysis. We will use an outside company that has agreed to keep all data confidential.

What happens to data that are collected in the study?

There is a possibility that results from this research will be shared through academic and non-academic publications. It is our priority to keep your child's identity confidential, thus the results that we share will never include personal identifiers. Also, individual transcripts from interviews will not be shared directly outside of the central study collaborators.

How will the confidentiality of your child's data be protected?

To guarantee confidentiality, all interviews will be conducted in a private setting. We will do our best to keep your child's information safe by using an identifying code instead of his or her name, and locking up the information so that only the leader of the study team can see it. We will also not share with you information that your child provides to us in this study. The only time that we may tell someone else about what your child tells us is if we learn that he or she has been harmed or abused. If we think that your child may have been harmed or abused, we will share that information with an authorized party in our referral system so that they can help you and your child get any help that is needed.

What other things should you know about this research study?

This study has been reviewed by an Institutional Review Board (IRB), a group of people including scientists and community people that reviews human research studies. The IRB can help you if you have questions about your rights as the parent of a research participant or if you have other questions, concerns, or complaints about this research study:

Ethical Committee, Faculty of Medicine, Universitas Gadjah Mada
Jl. Farmako Sekip Utara, Yogyakarta 55281 Telephone: +62 274 560 300
Fax: + 62 274 581 876; Website: http://fk.ugm.ac.id/; E-mail: mhrec_fmugn@ugm.ac.id

If you or your child has any questions or concerns about this study, or are injured or ill as a result of being in this study, you may contact the IRB or call the following numbers:

- Field Coordinator of Semarang: Solia Mince Muzir (+62 878-3831-6992)
- Researcher of CRH FKKMK UGM: Anggriyani Wahyu Pinandari (+62 857-5457-8118)

Assent Statement

This research study has been explained to my child in my presence in language my child can understand. He or she has been encouraged to ask questions about the study now and at any time in the future.

What does your signature on this consent form mean?

Your signature (or thumbprint/mark) on this form means:

- You have been given information about the purpose of this study, procedures, and possible advantages and disadvantages.
- You have been given the opportunity to ask questions.
- You voluntarily agree for your child to be involved in this research.

Do you agree to let us talk to your child about participating in the study? If you agree to let us talk to your child, and if is okay for us to record the conversation by audio, please sign your name. **We will give you a copy of this signed and dated consent form.**

Signature of Parent/Guardian of Minor Participant	(Print Name)	Date/Time
Signature of Person Obtaining Consent	(Print Name)	Date/Time
Signature of Witness to Consent	(Print Name)	Date/Time

Appendix F. Johns Hopkins Bloomberg School of Public Health Institutional Review Board Approval

FWA #00000287

JHSPH Institutional Review Board Office
615 N. Wolfe Street / Room E1100
Baltimore, Maryland 21205-2179
Phone: 410-955-3193
Toll Free: 1-888-262-3242
Fax: 410-502-0584
Email: jhsph.irboffice@jhu.edu
Website: www.jhsph.edu/irb

APPROVAL/DETERMINATION MEMO

INITIAL APPLICATION APPROVAL NOTICE

Date: November 12, 2019

To: Robert Blum, MD, PhD
Department of Population, Family and Reproductive Health

From: Joanne Katz, ScD
Chair, IRB- FC

Study Title: "Early Adolescents in Adversity: A Global Mixed Methods Study"

IRB No.: 00009484

☒ Approved	Approval/Determination Date: August 28, 2019
☐ Approved, minor change (single reviewer)	Approval Lapse Date: August 27, 2020
☐ Approved Expedited Cat:	
☐ Determined to be Exempt Cat:	

As Principal Investigator for this IRB approved study, you are responsible for conducting the study in accordance with the ethical principles of the Belmont Report, in compliance with all relevant laws and regulations, and in accordance with JHU institutional policy.

This approval is inclusive of the following documentation:

Research Plan:
- Research Plan (version #3, October 14, 2019).

Parental Permission/Assent Form(s):
- Informed Consent Form – Parent Permission Form - (version #1, August 28, 2019)
- Informed Consent Form – Parent Permission Form – (version#1, August 28, 2019 – IND)
- Informed Adolescent Assent Form – (version#1, August 28, 2019)
- Informed Adolescent Assent Form – (version#1, August 28, 2019 – IND).

Instruments:

- Qualitative Protocol and Interview Guide - (July 19, 2019)
- Qualitative Protocol and Interview Guide – (October 14, 2019 – IND).

DHHS ☒ 45 CFR 46 ☐ CR ☒ Revised CR **FDA** ☐ 21 CFR 50, 56 ☐ IND, 21 CFR 312 ☐ IDE, 21 CFR 812 ☐ IND/IDE held by JHSPH PI ☐ Dept. of Defense Funding ☐ Min. Risk ☐ Greater than min. risk ☐ GWAS ☐ Reliance Agreement ☐ Clinical Trial/GCP **Study Site(s):** ☐ U.S. ☒ International **List Country(ies):** Indonesia	**Consent/Parental Permission Required From:** ☐ Adult Participant ☐ LAR ☒ One Parent ☐ Two Parents 46.406, 50.53 ☐ Legal Guardian of Children in Foster Care ☐ Minor Consent as Adult **Vulnerable Populations:** ☒ Children ☐ Foster Care Children **DHHS** **FDA** ☒ 46.404 ☐ 50.51 ☐ 46.405 ☐ 50.52 ☐ 46.406 ☐ 50.53 ☐ Preg. Women/Fetuses 46.204 ☐ Neonates ☐ Prisoners	**Adult Consent:** ☐ Written Consent ☐ Waiver of Signature ☐ Alteration of Consent; meets 46.116 (f)(3) criteria ☐ Waiver of Informed Consent; meets 46.116 (f)(3) criteria **Assent:** ☒ Written (signed) ☐ Oral ☐ Statement in Parent Permission Form ☐ Waived for all children ☐ Waived for children **HIPAA**: ☐ JHM ☐ Non-JHM ☐ Authorization ☐ Prep. To Research ☐ HIPAA Alteration/Waiver ☐ JHM Data Tracking ☐ Limited Data Set ☐ DUA	**Parental Permission:** ☒ Written Permission ☐ Waiver of Signature ☐ Alteration of Permission; meets 46.116 (f)(3) criteria ☐ Waiver of Permission; ☐ Meets 46.116 (f)(3) ☐ 46.408, with Substitute Mechanism provided **Sample Size:** (screened plus enrolled) **40** **Secondary Data Analysis**: specimens/participants)

As principal investigator of IRB approved research, you are responsible for meeting the following requirements of approval:

1) Informing the co-investigators listed on the application of the status of the research.

2) Submitting an Amendment Application or Administrative Amendment for any changes in research. These changes in research are required to be reviewed and approved prior to the activation of the changes, unless you are correcting or clarifying language in approved instruments.

3) Reporting Unanticipated problems involving risk of harm to participants or others that are related to the study procedures to the JHSPH IRB within 10 days of the time that the PI learns of such problems. Submit a Problem Event Report Form must be submitted to the IRB immediately.

4) Using only the most recently approved JHSPH IRB approved consent forms, with the JHSPH stamp or logo, unless otherwise approved by the IRB. All consent forms signed by subjects enrolled in the study should be stored securely, in paper or electronic form, until 3 years following study completion unless otherwise approved by the IRB.

5) Submitting in a timely fashion Continuing Review Applications or Progress Reports. The Approval Lapse Date above marks the end of this approval; no study activity may take place after that date without new IRB approval. Submit your report to the IRB Office no later than six weeks prior to the approval lapse date to allow time for IRB review to be completed prior to that date.

6) If your study is an NIH funded clinical trial, e.g., “A research study in which one or more human participants are prospectively assigned to one or more interventions (which may include placebo or other control) to evaluate the effects of those interventions on health-related biomedical or behavioral outcomes”, it must be registered on clinicaltrials.gov, and one IRB approved consent form used in the study must be posted on a publicly available Federal website.

7) If your research involves international travel, please don’t forget to register with the International Travel Registry https://travelregistry.johnshopkins.edu/Travel so that the School may locate you in the event of an emergency.

JK/rch

Appendix G. University of Gadjah Mada Ethics Committee Approval

MEDICAL AND HEALTH RESEARCH ETHICS COMMITTEE (MHREC)
FACULTY OF MEDICINE, PUBLIC HEALTH AND NURSING
UNIVERSITAS GADJAH MADA – DR. SARDJITO GENERAL HOSPITAL

ETHICS COMMITTEE APPROVAL

Ref. No. : KE/FK/1220 /EC/2019

Title of the Research Protocol	:	Motivasi, Persepsi, Nilai dan Faktor Risiko Perilaku Psikososial pada Remaja Awal
Document(s) Approved and version	:	1. Study Protocol version 02 2019 2. Information for Subjects version 01 2019 3. Informed consent form version 01 2019
Principle Investigator	:	Prof. dr. Siswanto Agus Wilopo, SU., M.Sc., Sc.D.
Participating Investigator(s)	:	1. Anggriyani Wahyu Pinandari, SKM., MPH. 2. Shoshaana Fine, BA., MPH.
Date of Approval	:	21 OCT 2019 (Valid for one year beginning from the date of approval)
Institution(s)/place(s) of research	:	Semarang, Jawa Tengah

The Medical and Health Research Ethics Committee (MHREC) states that the document above meets the ethical principle outlined in the International and National Guidelines on ethical standards and procedures for researches with human beings.

The Medical and Health Research Ethics Committee (MHREC) has the right to monitor the research activities at any time.

The investigator(s) is/are obliged to submit:
- ☐ Progress report as a continuing review (state its due time)
- ☐ Report of any serious adverse events (SAE)
- ☒ Final report upon the completion of the study

Prof. Dr. dr. Sri Sutarni, Sp.S(K).
Panel's chairperson

dr. Yunita Widyastuti, Sp.An., M.Kes., KAP., Ph.D.
Panel's secretary

Recognized by Forum for Ethical Review Committees in Asia and the Western Pacific (FERCAP)
17-Oct-19

Appendix H. Curriculum Vitae

Shoshanna Leah Fine, MPH

University Address:
624 N. Broadway, Room 780
Baltimore, MD 21205

Permanent Address:
2436 Madison Square
Philadelphia, PA 19146

Email: slfine@jhu.edu
Phone: +1 (617) 777-3510
Skype: slfine

EDUCATION

2020 **Johns Hopkins Bloomberg School of Public Health**
PhD (expected), Mental Health. Baltimore, MD.
Dissertation: *Early adolescents in adversity: A mixed methods approach to understanding psychosocial risks across four low- and middle-income countries.*

2016 **Harvard T.H. Chan School of Public Health**
MPH, Global Health and Population. Boston**,** MA.
Thesis: *Experiences of war, reintegration, and reconstruction among female child soldiers: Qualitative evidence from Sierra Leone*.

2010 **Harvard College**
AB, English. Cambridge, MA
Graduated magna cum laude. Thesis in Creative Writing: *Pondside House: Stories.*

RESEARCH EXPERIENCE

2018-present **Department of Population, Family and Reproductive Health**, Johns Hopkins Bloomberg School of Public Health. *Graduate Research Assistant.* Baltimore, MD.

- Support PI Robert Blum on two projects focused on adolescent health: 1) the Global Early Adolescent Study (GEAS), a longitudinal multi-country study which aims to understand risk and protective factors for health development among over 15,000 early adolescents living in low-resource urban settings worldwide; and 2) the National Adolescent Mental Health Surveys (NAMHS), nationally representative population surveys of adolescent mental health in Kenya, Vietnam, and Indonesia.
- Responsibilities include survey instrument and protocol development, interviewer training, quantitative and qualitative data collection and analysis, and manuscript writing.

2016-present **Department of Mental Health**, Johns Hopkins Bloomberg School of Public Health. *Global Mental Health Pre-Doctoral Training Fellow.* Baltimore, MD.

- Support the Global Mental Health Research Group (PI: Judith Bass) with a number of projects, including a qualitative evaluation of mental health and psychosocial problems among conflict-affected adults in Bougainville (PI: Paul Bolton), a randomized controlled trial of a psychotherapeutic intervention addressing intimate partner violence and alcohol use among families in Zambia

(PI: Laura Murray), and a community-based intervention planning project to target suicidal behaviors among refugees living in Thailand (PI: Emily Haroz).
- Responsibilities include quantitative and qualitative data collection and analysis, formative research, stakeholder engagement, project coordination, literature reviews, and manuscript writing.

2018-2019 **International Rescue Committee.** *Consultant.* New York, NY.
- Led data analysis and manuscript writing for the pilot of the World Health Organization's Early Adolescent Skills for Emotions (EASE) program, a transdiagnostic psychological intervention targeting early adolescents affected by adversity, which was implemented among Burundian refugees living in Tanzania.

2014-2016 **Harvard Research Program on Children and Global Adversity**, Harvard T.H. Chan School of Public Health. *Graduate Research Assistant.* Boston, MA.
- Supported the Research Program on Children and Global Adversity (PI: Theresa Betancourt) with a range of projects, including a longitudinal study of mental health outcomes among former child soldiers in Sierra Leone, an investigation of the social impacts of Ebola Virus Disease among adults living in Sierra Leone, and a baseline evaluation of early child development and parenting practices among vulnerable families in Rwanda.
- Responsibilities included quantitative and qualitative data collection and analysis, manuscript and presentation preparation, report writing, and literature reviews.

2015 **Population Services International.** *Program Management Division Intern.* Yangon, Myanmar.
- Led analysis efforts to determine the effectiveness of using performance-based incentives to motivate community health workers in rural regions of Myanmar. Assisted in data analysis for a baseline evaluation of maternal, neonatal, and child health practices.

2015 **Harvard T.H. Chan School of Public Health.** *Lead Researcher.* Boston, MA.
- Collaborated with Burmese refugee students to develop and implement a qualitative research project on access to family planning education for adolescents living in a refugee camp in Thailand (as part of a course on field research methods in humanitarian crises). Performed a needs assessment, developed research tools, analyzed data, and presented results.

PROFESSIONAL EXPERIENCE

2012-2014 **JSI Research & Training Institute, Inc.** *Project Associate.* Boston, MA.
- Supported a range of domestic public health-related projects, including those focused on teen pregnancy, childhood asthma, HIV, and health insurance access.

2011-2012 **2Seeds Network, Inc.** *Project Coordinator.* Korogwe, Tanzania.
- Co-founder of an agricultural development project in a rural village with the purpose of improving food and income security for local farmers.

2010-2011 **Leake and Watts Services, Inc.** *Medicaid Service Coordinator.* New York, NY.
- Provided case management services for children and young adults with developmental disabilities.

AWARDS, HONORS, & DISTINCTIONS

2019-2021 **NICHD Ruth L. Kirschstein National Research Service Award Individual Predoctoral Fellowship (F31)**
2020 **Alberta B. Szalita Award**, Department of Mental Health, Johns Hopkins Bloomberg School of Public Health
2016-2019 **NIMH Global Mental Health Predoctoral Training Fellowship (T32)**, Department of Mental Health, Johns Hopkins Bloomberg School of Public Health
2015 **Departmental Scholarship**, Department of Global Health and Population, Harvard T.H. School of Public Health
2015 **Michael von Clemm Traveling Fellowship**, Harvard T.H. Chan School of Public Health
2010 **Center for Public Interest Careers Fellowship**, Harvard College
2010 **Magna Cum Laude**, Harvard College
2009 **Robert Kiely Prize for Outstanding Junior Essay**, Harvard College

TEACHING EXPERIENCE

2019 **Teaching Assistant.** Promoting Equity for Adolescents and Young Adults: Problem-Solving Seminar. Prof. Tamar Mendelson, Johns Hopkins Bloomberg School of Public Health.
2019 **Teaching Assistant.** Promoting Mental Health and Preventing Mental Disorders in Low- and Middle-Income Countries. Prof. Wietse Tol, Johns Hopkins Bloomberg School of Public Health.
2019 **Teaching Assistant.** Methods in Implementation Science. Prof. Emily Haroz, Johns Hopkins Bloomberg School of Public Health.
2018 **Teaching Assistant.** Psychopathology for Public Health. Prof. Adam Spira, Johns Hopkins Bloomberg School of Public Health.
2016 **Teaching Assistant.** Applied Qualitative Methods for Global Health Research. Prof. Theresa Betancourt, Harvard T.H. Chan School of Public Health.

EDITORIAL ACTIVITIES

Peer Review

- Journal of Interpersonal Violence

Proposal Review

- World Health Organization

PUBLICATIONS

Journal Articles

- **Fine, S.L.,** Blum, R.W., Bass, J.K., Lulubo, A.M., Pinandari, A.W., Stones, W., Wilopo, S.A., Zuo, X., & Musci, R.J. (under review). A latent class approach to understanding patterns of emotional and behavioral problems among early adolescents across four low- and middle-income countries.
- Erskine, H.E., Blondell, S.J., Enright, M.E., Shadid, Scott, J.G., Wado, Y.D., Wekesah, F.M., Wahdi, A.E., Wilopo, S.A., Loi, V.M., Hoa, D.T.K., Vinh, N.D., Emerson, M., **Fine, S.L.**, Li, M., Blum, R., Whiteford, H.A. (under review). Measuring the prevalence of mental disorders in adolescents in Kenya, Indonesia, and Vietnam: Study protocol for the National Adolescent Mental Health Surveys (NAMHS).
- **Fine, S.L.**, Malik, A., Guimond, M., Nemiro, A., Temu, G., Likindikoki, S., Annan, J., & Tol, W.A. (under review). Improving the mental health of adolescent refugees and their caregivers in low-resource settings: A feasibility randomized controlled trial of a potentially scalable psychological intervention.
- Haroz, E.E., **Fine, S.L.**, Lee, C., Wang, Q., Hudhud, M., & Igusa, T. (under review). Planning for suicide prevention in a Thai refugee camp: Using community based system dynamics modeling as a process for prioritizing intervention approaches
- **Fine, S.L.**, Augustinavicius, J.L., Barnabas, E., Poli, M.K., Tierney, D., & Bolton, P. (in press). Perceptions of the interconnections between violence, substance use, and psychological distress among conflict-affected adults in North Bougainville: Results of a rapid qualitative assessment. *Transcultural Psychiatry.*
- Murray, S.M., Skavenski, S., Metz, K., Munthali, S., Mwenge, M., Kane, J.C., Alto, M., Venturo-Conerly, K., Wasil, A.R., **Fine, S.L.**, & Murray, L.K. (in press). A qualitative exploration of mechanisms of intimate partner violence reduction for Zambian couples receiving the Common Elements Treatment Approach (CETA) intervention. *Social Science & Medicine.*
- Haroz, E.E, Nguyen, A.J., Lee, C.I., Tol, W.A., **Fine, S.L.**, Bolton, P. (2020). What works in psychosocial programming in humanitarian contexts in low- and middle-income countries: A systematic review of the evidence. *Intervention*, 18(1), 3-17.
- **Fine, S.L.**, Kane, J.C., Murray, S.M., Skavenski, S., Munthali, S., Mwenge, M., Paul, R., Mayeya, J., & Murray, L.K. (2019). The role of violence acceptance and inequitable gender norms in intimate partner violence severity among couples in Zambia. *Journal of Interpersonal Violence*, 0886260519876722.
- Kane, J.C., Murray, S.M., Vinikoor, M.J., Greene, M.C., **Fine, S.L.**, Paul, R., & Murray, L.K. (2019). Concordance of self- and partner-reported alcohol consumption among couples experiencing intimate partner violence in Zambia. *Alcoholism: Clinical and Experimental Research, 43*(12), 2568-2577.
- Sharma, M., **Fine, S.L.**, Brennan, R.T., & Betancourt, T.S. (2017). Coping and mental health outcomes among Sierra Leonean War-affected Youth: Results from a longitudinal study. *Development and Psychopathology*, 29(1), 11-23.

Scientific Publications

- What Works to Prevent Violence. (2019). The Common Elements Treatment Approach: A proven way to treat violence against women and alcohol abuse. Prepared by Murray, L.K., Kane, J.C, Skavenski, S., **Fine, S.L.** et al.
- UNICEF Rwanda. (2015). Early Childhood Development and Family Services: Baseline Evaluation in 20 Sites in Rwanda. Prepared by Betancourt, T.S., Kirk, C., Fink, G., Jeong, J., **Fine, S.L.**, et al.

PRESENTATIONS

- "The role of violence acceptance and inequitable gender norms in intimate partner violence severity among couples in Zambia." Poster accepted for presentation at the Consortium of Universities for Global Health Annual Conference, Washington, DC, 2020. (Conference cancelled.)
- "Planning for suicide prevention in refugee contexts: A community-based system dynamics modeling approach." Presented at the Johns Hopkins Bloomberg School of Public Health Department of Mental Health weekly seminar, Baltimore, MD, 2019.
- "Mental health and psychosocial problems among conflict-affected adults in northern Bougainville: A rapid qualitative assessment." Presented at the Society for the Study of Psychiatry and Culture Annual Meeting, San Diego, CA, 2018.

GRANTS

Current Research

F31HD100161 (PI: Fine)
National Institute of Child Health & Human Development
$90,032
09/01/2019-08/31/2021
Early adolescents living in adversity: A global mixed methods study