

KOÇ UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES & HUMANITIES

THE ROLE OF SOCIOECONOMIC ADVERSITY, ARMED CONFLICT, AND FAMILIAL
FACTORS IN YOUTH PSYCHOLOGICAL WELL-BEING

BY

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A dissertation submitted in partial fulfilment of the requirements for the degree of

Doctor of Philosophy in Psychology

in the Graduate School of Social Sciences & Humanities

of

Koç University

November 2019

STATEMENT OF AUTHORSHIP

This dissertation contains no material which has been accepted for any award or any other degree or diploma in any university or other institution. It is affirmed by the candidate that, to the best of her knowledge, the thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.



Signed

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THESIS ABSTRACT

Exposure to adversity poses a major risk to the psychological well-being in youth and may lead to immediate, and in some cases prolonged psychological problems. The investigation of how these adverse experiences are associated with child outcomes is critical for the formulation of remedial strategies, interventions, and policies to improve the psychological well-being in youth. With this broad perspective, the current thesis aimed to investigate the psychological well-being of youth living in the east of Turkey, where socioeconomic adversity, low-intensity armed conflict, and familial risk factors (e.g., family violence, maternal psychological distress) might pose a threat to their well-being and development. Study I investigated the emotional and behavioral problems in children in relation to their exposure to the potential risk factors in the region - poverty, armed conflict, and family violence. According to caregiver reports, children manifested moderate levels of internalizing problems, externalizing problems, total problems, and post-traumatic stress symptoms, and they were exposed to extreme poverty, as well as frequent armed conflict events and family violence. The findings showed that armed conflict experiences predicted the level of emotional and behavioral problems in children. Yet, family violence was the most robust predictor of the level of externalizing problems and total problems in children, above and beyond poverty and armed conflict. These findings suggested that violence in the family is crucial for the psychological well-being of children as political violence, and any intervention program tailored to improve the psychological well-being of these children should address not just their exposure to armed conflict but also family violence experiences. Study II focused on the executive functions (EF) and problem behaviors in children in relation to their exposure to poverty, armed conflict experiences, and maternal psychological distress and explored how these risk factors exerted their effects on these child outcomes. The findings

revealed that children's scores in EF tasks were low, and EF was negatively associated with problem behaviors (i.e., internalizing and externalizing problems), armed conflict experiences, and maternal psychological distress. Further, maternal psychological distress appeared to be one of the mechanisms that poverty and armed conflict exerted their effects on children's EF skills as well as on psychological well-being. This result suggested that interventions focused on building parental well-being would be essential to promote EF skills and psychological well-being in children. The third study of the current thesis examined the cumulative risk and promotive factors for externalizing behavior in adolescents and tested the models of resiliency (i.e., compensatory, risk-protective) in this sample. Results showed that exposure to multiple risks increased the level of externalizing behavior in adolescents, and the cumulative promotive factors counteracted the negative effect of cumulative risk by directly reducing the level of externalizing behavior. Supporting the risk-protective model of resiliency, our findings revealed that promotive factors operated as *protective* and moderated the association between risk exposure and externalizing behavior in adolescents. These results have important implications for possible future interventions and policies aiming to build resilience in disadvantaged youth.

Altogether, the current thesis contributed to the existent literature on child development in war zones by providing additional comparative information from a low-intensity armed conflict zone, rather than a full-blown war; investigating new aspects of child outcomes such as EF; exploring the mechanisms underlying poor emotional and behavioral outcomes in children; and testing models of resiliency in this sample. Furthermore, this study adds to the progress of developmental science and practice in Turkey by investigating youth psychological well-being in the east of Turkey for the first time. The findings of this thesis can be used in the formulation of effective prevention and intervention programs to improve psychological well-being in youth.

Keywords: psychological well-being, internalizing problems, externalizing problems, executive function, resilience, risk, armed conflict, poverty, familial factors, youth



TEZ ÖZETİ

Zorlu yaşam olaylarına maruz kalmak, gençlerin psikolojik iyi oluşları (psychological well-being) açısından büyük bir risk teşkil etmekte ve anında, kimi zaman da uzun süreli, psikolojik sorunlara yol açabilmektedir. Bu zorlu deneyimlerin çocuk sonuçları (child outcomes) ile ilişkisini araştırmak, gençlerdeki psikolojik iyi oluşun güçlendirilmesine yönelik iyileştirici stratejiler, müdahale programları ve politikaların oluşturulması açısından kritik öneme sahiptir. Bu perspektifle, mevcut tez Türkiye'nin doğusunda yaşayan gençlerin psikolojik iyi oluşlarını incelemeyi amaçlamaktadır. Sosyoekonomik zorluklar, düşük yoğunluklu silahlı çatışma ortamı ve ailevi risk faktörleri (örneğin, aile içi şiddet, annenin psikolojik stresi) bu bölgede yaşayan gençlerin iyi oluşlarına ve gelişimlerine yönelik bir tehdit oluşturmaktadır. Birinci çalışma, gençlerdeki duygusal ve davranışsal sorunları, bölgedeki risk faktörleri (yoksulluk, silahlı çatışma ve aile içi şiddet) kapsamında incelemiştir. Bakımverenlerin verdikleri bilgiye göre, çocuklar orta düzeyde içselleştirme ve dışsallaştırma sorunları, toplam sorunlar ve travma sonrası stres belirtileri göstermiş; ayrıca aşırı yoksulluğa, sık sık silahlı çatışma olayları ve aile içi şiddete maruz kalmışlardır. Bulgular, çatışma yaşantılarının çocuklarda duygusal ve davranışsal sorunların seviyesini öngördüğünü göstermiştir. Dahası, aile içi şiddet, yoksulluk ve silahlı çatışmaların ötesinde, çocuklardaki dışsallaştırma sorunlarının ve toplam sorunların en kuvvetli yordayıcısı olarak bulunmuştur. Bu bulgular, aile içi şiddetin çocukların psikolojik iyi oluşlarına, siyasi şiddetle eşit derece veya siyasi şiddetten daha fazla zarar verebileceğini; dolayısıyla, bu çocukların psikolojik iyi oluşlarını iyileştirmek için tasarlanacak herhangi bir müdahale programının sadece silahlı çatışma yaşantılarını değil aynı zamanda aile içi şiddet yaşantısını da hedef alması gerektiğini göstermiştir. İkinci çalışma, çocuklardaki yürütücü işlevlere (EF) ve problem davranışlara odaklanmış, yoksulluk, silahlı çatışma deneyimleri ve annenin psikolojik

stresi gibi risk faktörlerinin çocuk sonuçları (child outcomes) üzerindeki etkilerini nasıl ortaya koyduklarını araştırmıştır. Bulgular, çocukların EF uygulamalarından düşük puan aldıklarını ve EF'nin problem davranışlarla (içselleştirilme ve dışsallaştırılma sorunları), silahlı çatışma yaşantıları ve annenin psikolojik stresi ile negatif ilişkili olduğunu ortaya koymuştur. Dahası, bulgular annenin psikolojik stresinin, yoksulluk ve çatışma yaşantıları ile çocukların EF becerileri ve psikolojik iyi oluşları arasındaki ilişkilere aracılık ettiğini göstermiştir. Bu sonuç, ebeveynlerin iyi oluşlarını güçlendirmeye odaklanan müdahalelerin, çocuklarda EF becerilerini ve psikolojik iyi oluşu güçlendirmek için gerekli olduğunu göstermiştir. Mevcut tezin üçüncü çalışması, ergenlerde dışsallaştırma davranışına yönelik kümülatif risk ve koruyucu faktörleri incelemiş ve psikolojik sağlamlık modellerini (telafi edici, risk-koruyucu, zorluk) bu örnekleme test etmiştir. Sonuçlar, çoklu riske maruz kalmanın, ergenlerde dışsallaştırma davranış seviyesini arttırdığını, dahası kümülatif koruyucu faktörlerin, dışsallaştırma davranış seviyesini doğrudan azaltarak kümülatif riskin olumsuz etkisini önlediğini göstermiştir. Bulgular, risk-koruyucu ve zorluk modellerini desteklemiş, koruyucu faktörlerin riske maruz kalma ve dışsallaştırma davranışı arasındaki ilişkiyi düzenlediğini, ayrıca orta seviyede risk yaşantısının daha az dışsallaştırma davranışıyla ilişkili olduğunu göstermiştir. Bu bulgular, dezavantajlı gençlerde psikolojik sağlamlığı arttırmaya yönelik geliştirilecek olası müdahale programlarının ve politikalarının oluşturulması için önemlidir.

Sonuç olarak, mevcut tez çalışması, savaş bölgelerindeki çocuk gelişimi literatürüne düşük-yoğunluklu silahlı çatışma bölgesinden karşılaştırmalı bilgi sağlayarak, EF gibi yeni değişkenleri araştırarak, duygusal ve davranışsal sorunların altında yatan mekanizmaları inceleyerek ve psikolojik sağlamlık modellerini böyle bir örnekleme test ederek katkıda bulunmuştur. Ayrıca, bu çalışma, Türkiye'nin doğusundaki gençlerin psikolojik iyi oluşlarını

inceleyen ilk çalışma olmuştur, bu nedenle Türkiye'deki gelişim biliminin ve uygulamasının ilerlemesine katkıda bulunmuştur. Çalışmanın bulguları, gençlerde psikolojik iyi oluşu artırmak için etkili önleme ve müdahale programlarının oluşturulmasında kullanılabilir.

Anahtar Kelimeler: psikolojik iyi oluş, içselleştirme sorunları, dışsallaştırma sorunları, yürütücü işlev, psikolojik sağlamlık, risk, silahlı çatışma, yoksulluk, ailevi faktörler, gençlik



DEDICATION

I dedicate this thesis to the children of *East*,

who grew up amidst poverty and political violence.

I know what you have been going through,

I know it from my childhood in the *West*.

I am sorry we shared these unfair, horrible realities.

But I believe, with all my heart, that peace will win.

ACKNOWLEDGEMENTS

I would like to start with expressing my sincere gratitude to my academic advisor, Professor Ayşe Bilge Selçuk, for her helpful advice, guidance, and support during my PhD studies. I have met her during a dark period, both on a personal and societal level, that I was questioning my academic work and my contribution to society as a scientist. By joining her team and involving in her new research project (which later became my thesis topic), I have discovered my role in this world as a scientist as well as my true research interests and motivation. Bilge Hoca gave me this opportunity and then helped me to gain authority and become an independent researcher. Similarly, I would like to extend my gratitude to the members of my thesis monitoring committee – Dr. Gizem Erdem Gürel and Dr. Zeynep Ceren Acartürk – for all their feedback, advice and support during my PhD studies. Also, I am thankful to other academics – Dr. Ted Ruffman, Dr. Yasemin Kisbu Sakarya, Dr. Yasemin G. Acar, Dr. Suna Eryigit-Madzwamuse and anonymous reviewers – for their contributions to my work.

I would also like to thank my friends and peers from the Child and Family Studies Laboratory, Müge Ekerim, Gamze Turunç, Seçil Gönültaş, Ceymi Doenyas, Özlem Sumer and Wenke Niehues, who have been great sources of academic help as well as emotional support. Also, thanks to all undergraduate assistants, particularly Ömer Yoluk, İlayda Coşgun, Pınar Demir and Atahan Karadağ, for their help with coding the data. I also thank the administrative team of GSSSH, particularly to Tuğçe Erim Şatana, for their support and help through the years.

I am also thankful to the Scientific and Technological Research Council of Turkey (Türkiye Bilimsel ve Teknolojik Araştırma Kurumu - TÜBİTAK) for granting me a graduate scholarship and to the Society of Research in Child Development for the Patrice L. Engle Dissertation Grant for Global Early Child Development to fund my research.

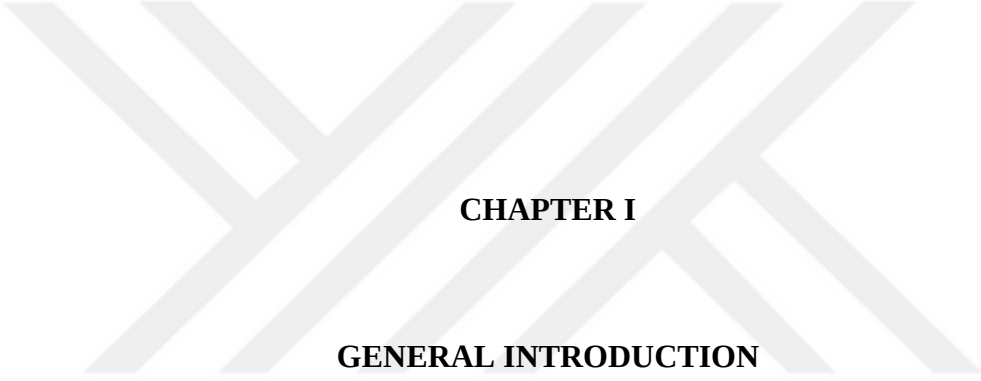
I want to give special thanks to the families who opened their houses to us and participated in our research. Despite the adverse conditions they were living in, they all welcomed us. It was both heartbreaking and promising to meet them and to see the tears and hope in their eyes. Similarly, I am sincerely thankful to the local people and my research assistants, without whom I would not have been able to complete this research.

I thank all my (extended) family for giving me unconditional love, support and encouragement. Particularly, Gül Hancı and Pınar Hancı Sarıkaya, you have been a great support to me, and for that, I will always be grateful. Thank you for letting me stay with you and provide every opportunity to finalize my thesis. And my mom, Naime Emlik, you are the most amazing, brave, resilient woman I have ever known. You are my first and foremost teacher, my inspiration, and my comrade. Pursuing a PhD was a struggle - and a quite difficult one in my case. I could not finish it if I haven't learnt resistance and determinedness from you. Then, Biljana Ginova, my dearest person – thank you for believing in me when I did not, for being with me through the darkest times and making them brighter, and for dreaming and fighting along with me for a just, equal and peaceful future.

I want to finish by acknowledging two special people. First, my brother Fikret Kara, who has been challenged me to find my path *to contribute to the world*. And a dear person, Murat Yurtgöl, whose loss shaped my life entirely. Fikret and Murat led me to question my responsibilities both as an individual and as a scientist. I believe that, thanks to them, I become a better person and a researcher.

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CHAPTER I

GENERAL INTRODUCTION

General Introduction

Child well-being is an essential area of research in developmental science. While the definition and operationalization of well-being vary greatly, in a broad sense, it can be considered as the quality of life (Ben-Arieh & Frønes, 2007). The consensus from the research is that well-being is a multidimensional construct reflecting the opportunities for development with the incorporation of physical, psychological, cognitive, social, and economic domains (e.g., Bradshaw & Richardson, 2009; Pollard & Lee, 2003). Research on youth psychological well-being is key to inform policy decision-making about the need and strategies to develop effective early-stage interventions and policies to promote the well-being in youth. Implications of such research are critical both at the individual and societal level as the findings may directly improve the life quality of youth and indirectly contribute to the well-being of families and society, both today and in the future. In this regard, developmental psychopathology discipline offers valuable insights to understand the development of psychological disorders across the life course in relation to biological, psychological, and social-contextual factors (Cicchetti & Toth, 2009). The knowledge on the course and development of psychopathology also increases understanding of normative functioning, provides evidence-based strategies to prevent and remedy maladaptive and pathological outcomes and aims to contribute to whole society by promoting healthy generations and reducing economic burden for the treatment of disorders (Cicchetti & Toth, 2009). Hence, a wealth of research has been devoted to identifying and investigating factors that pose a risk to the psychological well-being of youth such as poverty (Aber, Bennett, Conley, & Li, 1997; Evans & Kim, 2012), familial factors (e.g., parental psychological symptoms, Walker et al., 2007), and traumatic experiences (e.g., armed conflict exposure, Qouta, Punamäki, & El

Sarraj, 2008), as well as the factors that help youths overcome the negative influence of risk exposure (Masten & Narayan, 2012).

Turkey is a country where multiple risk factors may disrupt the psychological well-being of youth. Child poverty, for instance, is a persistent and prominent risk for the well-being of youth in Turkey. According to the report of the Organization for Economic Co-operation and Development (OECD, 2015), in 2011, among 34 countries, Turkey has the second-highest rate of child poverty, with nearly 30% of youths resided in poor households. This rate is two times higher than the average of all these countries and more than seven times higher compared to child poverty in Denmark, where the rate is lowest. On the national level, child poverty is particularly high in the east of Turkey reaching up to 55% (Gürsel, Uysal, & Kökkızıl, 2016), where low-intensity armed conflict has been taking place at times since the mid-1980s, between the Turkish state and the non-state Kurdish armed forces. The lowest rates of urbanization, household wealth, educational attainment and literacy, and highest rates of fertility and early childhood mortality (Hacettepe University Institute of Population Studies, 2014), as well as the lowest rates of annual equivalized household disposable income (Turkish Statistical Institute, 2017) in Turkey have been reported in this region. It is also highly likely that the severe socioeconomic adversity and low-intensity armed conflict may cause or exacerbate several risk factors within the family context such as family violence, parental psychological distress, and problems in family functioning. These findings lay emphasis on the need for research in eastern Turkey, where the well-being of youth can be under threat due to poverty, low-intensity armed conflict, and some familial risk factors. The current thesis was conducted with such an aim.

Until recently, the literature on child well-being in a context of armed conflict was often dominated by a *dose-effect* approach, where the main focus was on investigating the type and

degree of war incidents that children were exposed and reporting prevalence rates of psychological problems that children manifested (e.g., Dimitry, 2012; Macksoud, 1992; Macksoud & Aber, 1996). An armed conflict, however, uncontrollably and repeatedly destroys the ecological subsystems surrounding the children at multiple and interacting levels, as it causes poverty, unsafe or inadequate housing, limited access to life-sustaining materials, lack of access to education, disrupts family functioning and support system, destroys daily lifestyle, damages community functioning and support systems, leads to economic collapse, disintegrated public services, and emerging culture of violence. Only recently have researchers begun to investigate the role and importance of post-war daily stressors and adversities in child well-being across multiple ecological domains (Betancourt & Khan, 2008; Boothby, 2008; Miller & Jordans, 2016). The current thesis, therefore, investigated the child outcomes in the east of Turkey in relation to factors from multiple ecological domains. Rather than a mere investigation of psychological symptoms, it aimed to provide an understanding of the mechanisms underlying child outcomes across multiple domains.

The current thesis

The current thesis aimed to investigate the psychological well-being of youth living in the east of Turkey, where socioeconomic adversity, low-intensity armed conflict, and familial risk factors might pose a threat to healthy development. Study I, which is presented in Chapter 2, investigates the emotional and behavioral problems in 6-to18-year-old children and explores the predictive value and relative importance of potential risk factors - poverty, armed conflict experiences, and family violence - in these problems. This research is of particular importance because, to our knowledge, this is the first scientific endeavor to examine psychological well-being in youth in the east of Turkey in relation to their adverse experiences. Presented in Chapter

3, Study II focuses on the executive function (EF) skills and problem behaviors in 3-to-8-year-old children in relation to their exposure to poverty, armed conflict, and maternal psychological distress. In the literature, EF is proposed as a cognitive skill linking chronic stress to poor behavioral outcomes (Blair, 2010; Evans & Kim, 2012). Therefore, Study II explores whether the risk factors exert their effect on problem behaviors through EF skills. Further, given the literature indicating connections between poverty, armed conflict and parental psychological symptoms, and studies showing robust associations between maternal psychological symptoms, EF, and psychological symptoms in children, Study II also explored the role of maternal psychological symptoms in the relations of risk factors (i.e., poverty and armed conflict) with EF and problem behaviors. The third study, in Chapter 4, examined the association between the cumulative risk and promotive factors and externalizing problems in 11-to-15-year-old adolescents and tested the models of resiliency (Fergus & Zimmerman, 2005) in this sample. The resilience theory posits conceptual models to understand how risk and promotive factors are associated with externalizing behavior. Such understanding is important for the formulation of intervention programs to build resilience among youth facing adversity. The final chapter engages in a general discussion, where, after a brief summary of the findings across these three studies, the pattern of findings across the studies were discussed and the contribution of this research to the literature is elaborated.

This is a “thesis by publication”, meaning that each study has been written as a stand-alone journal article. Therefore, there might be some repetition across the literature review sections that introduce each chapter/study. For the convenience of the reader, references and appendices of each chapter have been presented after the particular chapter, and tables and figures were presented in a separate page, immediately after they were first referred.

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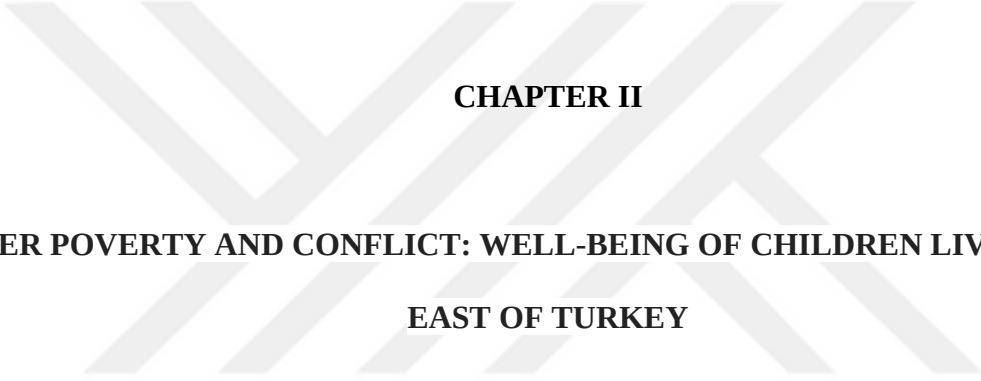
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CHAPTER II

UNDER POVERTY AND CONFLICT: WELL-BEING OF CHILDREN LIVING IN THE EAST OF TURKEY

Kara, B. & Selçuk, B. (in press). Under poverty and conflict: Well-being of children living in the east of Turkey. *American Journal of Orthopsychiatry*.

Abstract

Children living in armed conflict zones are often exposed to political violence and other risk factors that may be caused or exacerbated by the conflict, such as poverty and family violence. If left untreated, these experiences may cause psychological problems throughout life. This study investigates the psychological well-being of children living in the low-intensity armed conflict zone in Turkey in relation to their adverse experiences. We collected data from 409 caregivers for their children (236 girls) aged 5.5 to 18 years ($M = 11.50$, $SD = 3.65$). Caregivers provided information regarding their children's emotional and behavioral problems (internalizing, externalizing and total problems, post-traumatic stress symptoms -PTSS), income, family violence and armed conflict experiences. Caregivers reported moderate levels of problems among children. The prevalence of borderline/clinical ($T \geq 60$) scores were 14.3% for internalizing, 12.6% for externalizing and 14% for total problems, and 7.9% for PTSS. Notably, almost all families resided in extreme poverty. The prevalence of family violence was 36%. Children were frequently exposed to conflict-related events. Hierarchical regressions showed that, after controlling for the role of demographic variables and other risk factors, income predicted total problem level ($\beta = -.10$), and family violence (β 's = .17 to .26) and armed conflict (β 's = .13 to .20) experiences predicted internalizing, externalizing and total problems, and PTSS levels. Our findings suggest that family violence and armed conflict pose a significant risk to children's psychological well-being and inform intervention strategies and policy decisions to promote welfare in such disadvantaged contexts.

Keywords: internalizing problems, externalizing problems, post-traumatic stress symptoms, armed conflict, poverty, family violence, childhood

Introduction

Contemporary wars originate from the armed conflicts within a country, instead of between nations, resulting in battles fought in streets and villages that serve to transform habitats into war zones (Pedersen, 2002). With the changing characteristics of warfare, children have become the deliberate targets of armed conflict rather than accidental damage (the United Nations Children's Fund - UNICEF, 1996). Consequently, at least half of the civilian victims of armed conflicts have been children. Alarming, in 2015 alone, 16 million babies (i.e., one in eight of all births) were born in the middle of armed conflict, and at least 250 million children (i.e., one in nine in the world) lived within a conflict zone (UNICEF, 2016). Armed conflicts create an environment where children are often repeatedly exposed to life-threatening and violent events. Beyond armed conflict, children experience malnutrition, impoverishment, unsafe or inadequate housing, and lack of access to health services and education, as well as parental distress, maltreatment and domestic violence. Altogether, armed conflicts threaten the development and well-being of children throughout several, if not all, layers of their ecological system (Betancourt & Khan, 2008), and the negative outcomes hold the capacity to result in long-term consequences unless addressed by effective intervention programs and policies.

Turkey is one of the countries where the development and well-being of some children can be under threat due to armed conflict and other stressors that may be caused or exacerbated by the conflict, such as poverty and family violence. Since the mid-1980s, the east of Turkey has been under the influence of a low-intensity armed conflict particularly felt in rural areas as well as political tension and socioeconomic adversity. Following the failure of years-long negotiation and peace talks, the conflict reignited in July 2015 both in rural areas and cities, dramatically altering the lives of people living in the region, including children. The present study aimed to

investigate factors that pose a risk to the psychological well-being of children living in the east of Turkey, which serves to inform research, practice and policy to improve the life quality of children and families, particularly those residing in armed conflict zones.

Armed Conflict

Children living in armed conflict zones may experience life-threatening situations, injuries, malnutrition, maltreatment, bereavement, separation from family, home, friends, school or community, and in many cases, a combination of several such events (Macksoud & Aber, 1996; UNICEF, 1996). Explosions, shootings, bombings, landmines, or attacks may cause severe injuries in children, which may sometimes result in permanent disability. This means long-term or lifetime loss of physical capacity, prolonged suffering, hospitalization, and rehabilitation. During or after the conflict, children may also be deprived of life-sustaining materials, such as food, water, shelter, and vaccines. Children become easier targets for physical abuse as well as sexual abuse in the context of an armed conflict, which may cause sexually transmitted diseases, pregnancy, and unsafe abortions (Pedersen, 2002) besides the psychological trauma. Conflicts also bring impoverishment, unsafe or inadequate housing, lack of access to health services and education and disrupt family functioning (Betancourt & Khan, 2008; Boothby, 2008).

During and after an armed conflict, children may display acute stress responses, which can be considered as natural reactions to traumatic events. Chronic and severe conflict experiences, on the other hand, may result in immediate, and even prolonged, psychological problems among children, such as post-traumatic stress disorder (PTSD), internalizing problems (e.g., depression, withdrawal, anxiety), and externalizing problems (e.g., antisocial and aggressive behaviors) (for a review, see Dimitry, 2012). Indeed, in a systematic review, Attanayake and colleagues (2009) indicated that the prevalence of mental health disorders was

higher among children who experienced war compared to the general youth population. Exposure to an armed conflict in childhood also increases the susceptibility for both physical and psychiatric disorders in adulthood (e.g., Llabre, Hadi, Greca, & Lai, 2015; Sack, Him, & Dickson, 1999). Another pathway that armed conflict may lead to detrimental psychological outcomes in children is through parents' exposure to the armed conflict, even in cases when children were not directly exposed to the conflict. Studies showed that parental trauma resultant from exposure to an armed conflict might be transmitted to subsequent generations through epigenetic mechanisms (Bowers & Yehuda, 2016) or through narratives (Fargas-Malet & Dillenburger, 2016), increasing the susceptibility of psychological problems in children (Daud, Skoglund, & Rydelius, 2005).

A wealth of research has been devoted to identifying and investigating the factors that are associated with the severity and duration of psychological problems that conflict-exposed children experience. Among them, the nature and degree of armed conflict incidences (e.g., Macksoud, 1992; Smith, Perrin, Yule, Hacam, & Stuvland, 2002; Thabet & Vostanis, 1999), personal characteristics such as age, gender, coping skills, previous exposure to trauma (e.g., Betancourt & Khan; Masten & Narayan, 2012; Shaw, 2003) as well as ecological factors such as socioeconomic status, parental influences, and cultural/contextual characteristics (Barber, 2008; Betancourt & Khan, 2008; Boothby, 2008; Miller & Jordans, 2016) are highlighted as prominent factors determining child outcomes. Some of these environmental stressors, including poverty, substandard and unsafe housing, impaired parenting, family violence, and lack of social support, might have a strong influence on child well-being above and beyond their armed conflict experiences. In Sri Lanka, Fernando, Miller and Berger (2010) showed that abuse and material deprivation predicted PTSD level in children more strongly than war exposure.

Poverty

Poverty is a major risk factor for child well-being in multiple domains and via several pathways (Aber, Morris, & Raver, 2012; Bradley & Corwyn, 2002; Brooks-Gun & Duncan, 1997). Two of the most common approaches examining the link between poverty and children's well-being mainly focus on the family unit and parental behaviors. Accordingly, income falling lower than the poverty line serves to decrease the investment of parents in their children's development by reducing opportunities for parents to provide an intellectually stimulating environment (e.g., the purchase of books, toys), day-care or preschool education, and also non-monetary goods (e.g., time spent with children; Becker, 1981). Another pathway highlights the impact of poverty on parents' stress and child-rearing practices. Living in poverty is associated with increased economic pressure, financial insecurity, unemployment, all of which may lead to marital conflict (Conger, Ge, Elder, Lorenz, & Simons, 1994), as well as high levels of distress, depression and anxiety in parents (McLoyd, Jayaratne, Ceballo, & Borquez, 1994), abuse and neglect (Gillham et al., 1998), and harsh or unresponsive parenting (McLeod & Shanahan, 1993). Hence, poverty exerts its adverse effect on the well-being of children through parental investment level, parental well-being and parenting practices leading to non-optimal social, emotional and cognitive development.

Biological/neurobiological and environmental/contextual perspectives also provide a broader understanding on the link between poverty and child well-being by taking additional factors into account such as birth weight, malnutrition, chronic stress, allostatic load, and household and neighborhood characteristics. For instance, prenatal poverty is linked to lower birth weight (Strully, Rehkopf, & Xuan, 2010), which is predictive of various negative outcomes across the life course such as infant mortality, poor health in childhood and adulthood, lower

educational attainment, and lower social status in adulthood (Brooks-Gun & Duncan, 1997; Case, Fertig, & Paxson, 2005). Malnutrition may impair brain development (e.g., axon and synapse growth) and function (e.g., neurotransmitter syntheses) in children (Prado & Dewey, 2014), and further predicts their education level, socioeconomic status, and health in adulthood (Akresh, Lucchetti, & Thirumurthy, 2012). Poverty also sets the stage for exposure to repeated or chronic stressors which may lead to dysfunctions in the stress-response system known as the hypothalamic-pituitary-adrenal (HPA) axis and allostatic load, increasing likelihood of developing health problems and psychological disorders (e.g., depression, anxiety) both in childhood and adulthood, even if the quality of life has been improved in the following years (Bick et al., 2012).

Research suggests that the physical environment and neighborhood in which children reside are important factors to their well-being. Poverty is associated with adverse environmental conditions such as low housing quality, inadequate heating and sanitary conditions, crowding in the household, exposure to environmental pollutants and toxins (e.g., mercury, lead), chronic and loud noise, few resources for development (e.g., parks, playgrounds, libraries, health care or education facilities), and social disorganization (e.g., high rate of crimes and unemployment). In his review, Evans (2006) documented that housing quality, crowding, exposure to toxins and chronic noise are associated with cognitive deficits and higher levels of emotional and behavioral problems in children as well as less parental responsiveness and monitoring, higher child maltreatment, and psychological distress in adults. Moreover, a more extended period of living in substandard housing was associated with stronger associations for all such outcomes (Evans, 2006). Likewise, general neighborhood poverty (as opposed to an individual's level of household poverty) is also associated with adverse developmental outcomes in children (Brooks-Gunn &

Duncan, 1997; Evans, 2006), as well as with higher psychosocial stress and allostatic load in adolescents (Brody, Lei, Chen, & Miller, 2014) and adults (Schultz et al., 2012). Additionally, living in a neighborhood in violence and disorder may lead to social, emotional and cognitive problems in children (Duncan, 1996; Leventhal & Brooks-Gun, 2000; Sharkey, Tirado-Strayer, Papachristos, & Raver, 2012) as well as lower academic achievement (Milam, Furr-Holden, & Leaf, 2010).

Family Violence

Family violence is a broad term utilized to describe abuse and violence against a family member by another in a domestic setting, including child abuse and domestic violence (a.k.a. intimate partner violence). Systematic and meta-analytic reviews show that exposure to child abuse and witnessing domestic violence increase the likelihood of a full range of psychological problems for children (e.g., Herrenkohl, Sousa, Tajima, Herrenkohl, & Moylan, 2008; Kitzmann, Gaylord, Holt, & Kenny, 2003). Child abuse and domestic violence often co-occur, and factors such as socioeconomic hardship, parental substance use, and other adverse conditions in the surrounding community increase the likelihood of family violence (for review, Herrenkohl et al., 2008). Supporting this claim, Catani, Schauer and Neuer (2008) reported that a history of war exposure predicted family violence in samples from Afghanistan and Sri Lanka.

The Context in the East of Turkey

Armed conflict. Since the 1980s, the east of Turkey has been under the influence of a low-intensity armed conflict between the Turkish state and the non-state Kurdish armed forces which has resulted in numerous periods of combat, particularly in rural areas. Kurds are the largest non-Turkish ethnic minority group in Turkey, constituting 17.2% of the overall population, and mainly reside (60%) in the eastern part of Turkey (Eryurt & Koç, 2015).

According to the report of the Human Rights Inquiry Committee of the Grand National Assembly of Turkey (2013), between 1984 and 2012, the conflict culminated in more than 35 thousand deaths in 14 cities of the region. Between 1986 and 2005, around 1 million people were displaced from these cities (Hacettepe University Institution of Population Studies, 2006). During this period, many families migrated from the conflict zone to urban areas which posed other difficulties such as socioeconomic adversity, discrimination, child labor, and an increased instance of drop-outs from schools (e.g., Basak Culture and Art Foundation, 2010; Sevim, 2001; Yüksek, 2011). These difficulties were accompanied by problems in adaptation, language and communication, and psychological well-being (Basak Culture and Art Foundation, 2004).

In 2013, a negotiation and ceasefire period started, raising hopes for a lasting peace; however, negotiations ended, and armed conflict resumed in 2015. For the one-year period, from August 2015 to August 2016, the Human Rights Foundation of Turkey (2016) reported 111 officially confirmed, open-ended and day-long curfews in at least nine cities in Eastern Turkey, affecting at least 1.67 million residents in the region. At least 355 thousand people were forced to leave their cities, and at least 321 people (79 children) lost their lives. During this time, hundreds of thousands of youths might have been exposed to direct or indirect conflict-related incidents such as combats, physical wounding, the death or injury of family members, relatives or significant others, separation from family members, relatives or friends, or residence or school changes. Moreover, the Educators for Peace Initiative (“Because of curfews”, 2015) reported that at least 325 thousand children in the region were devoid of education during the autumn of 2015.

Socioeconomic adversity. Turkey overall holds critically high rates of child poverty and material deprivation, with the most severe poverty observed in the eastern part of Turkey (Gürsel, Uysal, Kökkızıl, 2016). According to a report of Bahçeşehir University Center for

Economic and Social Research (Gürsel et al., 2016), in 2014, 36% of children aged under 16 in Turkey were experiencing severe material deprivation. Contrasting sharply, in the eastern regions of Turkey severe material deprivation rates ranged from 49% to 55%, indicating that child poverty is a critically alarming problem in this area.

The Income and Living Conditions Survey of the Turkish Statistical Institute (2017) reported that the eastern cities, particularly those affected from the armed conflict, had the lowest rates of annual equivalized household disposable income both in 2015 and 2016. Furthermore, according to the Turkey Demographic and Health Survey in 2013, people living in the east of Turkey have been challenging with substantial socioeconomic underdevelopment indicated as lowest rates of urbanization, household wealth, educational attainment, and literacy, and highest rates of fertility and early childhood mortality in Turkey (Hacettepe University Institute of Population Studies, 2014).

Family violence. An epidemiologic study conducted in three cities in the western part of Turkey shows that child abuse and neglect is a prominent risk factor for the well-being of 11-to-16-year-old children, with prevalence rates as high as 58% for exposure to physical abuse and 31% for witnessing domestic violence (e.g., Sofuoğlu et al., 2014). Low parental education and the number of children in the household were stated as factors associated with child abuse (e.g., Güler, Uzun, Boztaş, & Aydoğan, 2002; Ulukol, Kahilogullari, & Sethi, 2014). These studies also indicated the co-occurrence of child maltreatment and physical abuse of women in the domestic setting. Physical abuse of women, on the other hand, was reported to be higher in the eastern part of Turkey with the prevalence rates ranging from 47% to 53%, while the average rate of abuse in Turkey was 39%, and higher among illiterate women (52%) and among women who had low welfare status (47%; Jansen, Yüksel, & Çağatay, 2009).

The Current Research

As summarized above, the extant literature shows that exposure to armed conflict may cause immediate, and even long-term, detrimental outcomes on psychological well-being of children. Additionally, poverty and family violence, too, are risk factors for child outcomes, and they mostly go hand in hand in armed conflict zones. This exemplifies the need for a research in eastern Turkey, where the development and well-being of some children can be under threat due to a low-intensity armed conflict, poverty, and family violence. Despite a history of socioeconomic and political adversities in the region, the psychological functioning of children living in the east of Turkey has not been studied before. There are only a few studies which focused primarily on the experiences of children who have migrated from the east of Turkey to conflict-free cities within the country (Basak Culture and Art Foundation, 2004; 2010; Sevim, 2001; Yükeker, 2011). However, these studies primarily investigated the migration-related problems that children experienced, such as socioeconomic hardship, difficulties in education, and psychosocial adjustment. Besides, they were conducted several years after the families migrated, and hence, their findings are not informative regarding the experiences of children still residing in the region or about the role of living in conflict zone in well-being of children in the context of poverty and family violence. Such knowledge, on the other hand, is essential to know the adversities and associated psychological problems that children experience, and to help the formulation of best practices including specific intervention strategies and potential policy decisions regarding the well-being of these children.

With this broader perspective, the current study aimed to investigate the psychological well-being of children living in the east of Turkey in relation to the prominent risk factors in the region: poverty, family violence and low-intensity armed conflict, which tend to co-occur.

Particularly, the present study, firstly, examined the levels of emotional and behavioral problems (i.e., internalizing problems, externalizing problems, total problems, and post-traumatic stress symptoms) in 6-to-18-year-old children. However, solely reporting the level of these problems in children who lived in cities where armed conflict was experienced would not be informative by itself. Therefore, we compared the level of emotional and behavioral problems in children living in the conflict zone with the results of another research (i.e., Saçan, Artan, Erol, & Şimşek, 2014) that reported the level of these problems in children living in other disadvantaged contexts, such as child-rearing institutions and low-income families. Next, we aimed to explore the factors that were linked to emotional and behavioral problems in children. As the literature highlights the importance of poverty, family violence and armed conflict in child well-being, we examined the emotional and behavioral problems in children in relation to household income and children's family violence experiences and armed conflict experiences (e.g., battles, injury, armed assault, residence or school change, separation from family members). And then, we further investigated the predictive value and relative importance of these risk factors in emotional and behavioral problems in children.

Method

Participants

Data was collected from 409 households in three conflict-affected cities of Turkey: Diyarbakir ($n = 291$), Hakkari ($n = 99$) and Van ($n = 19$). The majority of the data (70%) was collected in city centers, whereas 30% were collected in towns and villages. Participant selection criteria were; 1) to have a child (target child) between the ages of 6 and 18 in the household; and 2) the child should not have a clinically diagnosed developmental disorder (e.g., cognitive impairment, autistic spectrum disorder). The sample included 409 primary caregivers (393

mothers, 5 fathers, and 11 close relatives) giving information about their children ($N = 409$; 236 girls) aged 5.5 to 18 years ($M = 11.50$, $SD = 3.65$).

In terms of family composition, 91.7% of children came from intact families, 2.4% had separated or divorced parents, and 5.9% had lost their fathers. The majority of children (96.6%) had at least one sibling, with the number of siblings ranging from 0 to 13 ($M = 3.85$, $SD = 2.31$). In 56.9% of families, the Kurdish language was reported as the primary language spoken in the household between the family members, while Turkish was also spoken. And in 16% of families, Turkish was the primary language, while Kurdish was also spoken. Twenty-one percent of the parents reported Kurdish as the only spoken language in family, and 5.7% reported speaking only Turkish within the family.

The families were from very disadvantaged socioeconomic backgrounds in terms of the education level and employment status of the caregivers, monthly household income, household size/crowding, fertility rate (i.e., number of children), and healthcare status. Fifty-four percent of the caregivers were illiterate, 13.5% were literate but did not complete primary school, 21.9% completed primary school, 5.4% completed secondary school, 3.7% finished high school, and only 1% had a university degree. The majority of caregivers were unemployed (94.9%), and one (0.2%) was retired. Twenty caregivers (4.9%) had paid work, and among them, only 12 (2.9%) had a full-time job. Among the jobholder caregivers, 17 had low-status occupations (e.g., janitor, driver), while three were working in established professions (e.g., preschool teacher, public officer). Monthly household income was in general very low: For 75.1% of the families, the monthly income was below the minimum wage (1,300 TRY; ~430 USD), 22.7% had a monthly income ranging from 1,300 to 2,800 TRY (~430 to 925 USD), seven families (1.7%) had a monthly income ranging from 2,801 to 4,800 TRY (~925 to 1,590 USD), one family (0.2%) had

a monthly income ranging from 4,801 to 7,300 TRY (~1,590 to 2,417 USD), and one family (0.2%) had a monthly income ranging from 7,301 to 10,300 TRY (~2,417 to 3,410 USD).

Households were generally crowded, with up to 17 people in some houses and an average of seven people ($M = 7.08$, $SD = 2.52$, range = 2 to 17). The number of children ranged from 1 to 15 children, with an average of 5 ($SD = 2.38$). The healthcare status of families also reflected the disadvantaged conditions; the majority (61%) utilized a green card (i.e., healthcare entitlement issued by the Ministry of Health for poor citizens to receive health services) and 3.7% were without any health insurance at all.

Measures

Caregiver reports were used in the assessment of background information as well as children's emotional and behavioral problems, income, family violence experiences, and armed conflict experiences. Descriptive statistics are presented in Table 1.

Background information form. Caregivers completed a background information form where they provided information about the child (e.g., age, gender, education, siblings), caregiver's background (e.g., relation to the child, age, education, employment status, and marital status), and household characteristics (e.g., monthly household income, household size, language, healthcare and social security status).

Emotional and behavioral problems. The Child Behavior Checklist/6-18 (CBCL/6-18) developed by Achenbach and Rescorla (2001; adapted to Turkish by Erol & Şimşek, 2007) was used to measure emotional and behavioral problems in children. The CBCL/6-18 is composed of 118 items that parents/caregivers rate on a 3-point Likert-type scale (from 0 = *not true* to 2 = *very true/often true*) to indicate whether the item describes their child currently or within the past six months.

Table 1

Descriptive Statistics, Zero-order Correlations and Partial Correlations between Study Variables Controlling for Age

Variables	Age	1	2	3	4	5	6	7
1. Internalizing problems (0-64)	-.02	-	.49***	.81***	.84***	-.11*	.23***	.23***
2. Externalizing problems (0-70)	-.11*	.49***	-	.87***	.66***	-.13**	.31***	.20***
3. Total problems (0-236)	-.14*	.81***	.87***	-	.86***	-.14**	.32***	.23***
4. PTSS (0-26)	-.04	.84***	.66***	.86***	-	-.09	.24***	.25***
5. Income (1-8)	.02	-.11*	-.13**	-.14**	-.09	-	-.12*	-.06
6. Family violence experience (0-9)	-.06	.23***	.32***	.32***	.25***	-.13*	-	.26***
7. Armed conflict experience (0-150)	-.01	.23***	.20***	.23***	.25***	-.06	.26***	-
N	409	406	406	406	406	409	392	408
Mean	11.50	14.34	11.65	44.15	7.22	1.28	1.35	17.32
SD	3.65	9.16	9.42	26.44	4.64	0.53	2.02	9.76
Min	5	0	0	0	0	1	0	0
Max	18	54	47	157	25	5	7	51

Note. PTSS = Post-traumatic stress symptoms. Pairwise deletion operation was performed regarding the missing values in the data (n 's = 389 to 409). Hyphens represent the diagonal. Below the diagonal, zero-order correlations are presented; above the diagonal, partial correlations controlling for children's age are presented. * $p < .05$. ** $p < .01$. *** $p < .001$.

The CBCL/6-18 involves eight subscales: Anxious/depressed (13 items), withdrawn/depressed (8 items), somatic complaints (11 items), rule-breaking behavior (17 items), aggressive behavior (18 items), social problems (11 items), thought problems (15 items), and attention problems (10 items). From these subscales, two broad dimensions of emotional and behavioral problems are identified: internalizing problems (i.e., anxious/depressed, withdrawn/depressed, and somatic complaints; 32 items) and externalizing problems (i.e., rule-breaking behavior, and aggressive behavior; 35 items). In addition, a total problem score is calculated by summing the scores from all items. The DSM-oriented subscales can also be derived from the CBCL/6-18, including a subscale indicative of PTSD symptoms (13 items). Although the CBCL/6-18 was not originally developed for the assessment of trauma symptomology, the CBCL-PTSD subscale is considered as to be heuristic for the evaluation of trauma symptoms among children (Milot et al., 2013; Erol & Şimşek, 2007).

Accordingly, in the present study, we computed scores for internalizing problems (Cronbach's $\alpha = .86$), externalizing problems (Cronbach's $\alpha = .91$), total problems (Cronbach's $\alpha = .96$), and post-traumatic stress symptoms (PTSS; Cronbach's $\alpha = .77$) for each child.

Income. As an indicator of poverty, the monthly household income was rated on an 8-point scale ranging from 1 = *below 1,300 TRY* (~430 USD; the minimum wage in Turkey at the time of data collection;) to 8 = *above 18,000 TRY* (~5,960 USD).

Family violence experiences. We formed a questionnaire to assess family violence experiences of children. Through yes/no questions, caregivers provided information whether their child was directly exposed to (i.e., personally experienced) an event of physical abuse in the home (e.g., beating, slapping, or kicking), and whether the child was indirectly exposed to domestic violence by witnessing physical abuse (e.g., beating, slapping, or kicking) against

another family member in the domestic setting. Based on these questions, we created a variable to indicate the exposure severity as 0 = *no exposure*, 1 = *indirect exposure*, 2 = *direct exposure*. Next, caregivers who reported violence exposure rated the frequency of indirect and direct exposure choosing from the options of *once*, *a few times*, and *very often*. From these ratings, we created two 4-point scale variables, one for indirect exposure and one for direct exposure, where 0 indicated *not applicable* (for those with no exposure), 1 indicated *once*, 2 indicated *a few times*, and 3 indicated *very often*.

For each child, a family violence experience score was calculated based on the frequency and exposure severity of abuse experiences. We first calculated an ‘indirect exposure’ score by multiplying frequency score (i.e., 0 = *not applicable* to 3 = *very often*) with exposure severity (i.e., 0 = *no exposure*, 1 = *indirect exposure*). Then, we calculated a ‘direct exposure’ score by multiplying frequency (i.e., 0 = *not applicable* to 3 = *very often*) with exposure severity (i.e., 0 = *no exposure*, 2 = *direct exposure*). A total ‘family violence experience score’ was then obtained by summing the weighted scores for indirect and direct exposure scores, where higher scores indicated higher levels of family violence experience. If a child did not experience family violence, a score of 0 was given. A child, on the other hand, who witnessed abuse very often [3 (i.e., *very often*) x 1 (i.e., *indirect exposure*) = 3] and personally experienced abuse once [1 (i.e., *once*) x 2 (i.e., *direct exposure*) = 2] received a score of 5.

Armed conflict experiences. Caregivers were asked to complete two questionnaires where they provided information about the armed conflict experiences of their children. These experiences included conflict-related events (e.g., battle, armed assault) as well as incidents such as residence or school change, separation from parents or close associates that took place due to battles and curfews.

Conflict-related events. To assess the type and frequency of conflict-related events that children experienced, we created a questionnaire by using a selection of items from the Childhood War Trauma Questionnaire (CWTQ), which was developed by Macksoud (1992) to measure the type and frequency of war-related experiences that Lebanese children were exposed to during the civil war. The CWTQ is composed of two main sections: General Information and War Experiences. The General Information section assesses demographic characteristics, and the War Experiences section includes 45 traumatic events under ten trauma categories: displacement, emigration, separation from parents, exposure to shelling or combat, bereavement, witnessing violent acts, suffering physical injuries, victim of violent acts, involvement in the hostilities, and extreme deprivation. For each event, a score of 1 is given if the child experienced the event, and a score of 0 is given if the child had no such experience. A total ‘number of war traumas’ variable was calculated for each child by adding the scores from these events.

In the current study, we used fourteen conflict-related events from the CWTQ that were appropriate for the context of Turkish-Kurdish conflict and two additional conflict-related events that could be common in the armed conflict zone in Turkey (i.e., being forced to participate in the protests and being intercepted by the armed forces while walking). This led to a total of sixteen events. Considering that a traumatic event might have been experienced on different levels (e.g., personal experience with a traumatic event, witnessing it, or learning about it; see the Life Events Checklist developed by Gray, Litz, Hsu, & Lombardo, 2004), we assessed children’s experiences for each event on two exposure levels: direct (i.e., personal experience) and indirect (i.e., witnessing the event, or hearing that it happened to a close associate). Accordingly, caregivers reported whether their child was indirectly or directly exposed to an event or not.

Caregivers, then, rated the frequency of the exposure to the event on a 3-point Likert-type scale ranging from 1 = *once* to 3 = *very often*.

From questions assessing children's exposure to conflict-related events, we created a variable to indicate the exposure severity as 0 = *no exposure*, 1 = *indirect exposure*, 2 = *direct exposure*. Next, we created two 4-point scale variables for frequency of indirect exposure and direct exposure, ranging from 0 = *not applicable* (for those with no exposure) to 3 = *very often*. Similar to the calculation of the family violence experience score, for each conflict-related event, we calculated an 'indirect exposure' and 'direct exposure' score as multiplying the frequency score by the exposure severity. Then, scores for indirect and direct exposure were summed to obtain an overall exposure score for that particular event. For instance, a child who witnessed a conflict-related event once [1 (i.e., *once*) x 1 (i.e., *indirect exposure*) = 1] but did not personally experience the same event [0 (i.e., *not applicable*) x 2 (i.e., *direct exposure*) = 0] received a score of 1 for that event. The scores from conflict-related events were used in the calculation of an overall 'armed conflict experience' score.

Residence/school change and separation. In a separate questionnaire, we assessed the occurrence of other experiences that many children were exposed due to the battles and curfews in the region. This included residence change, school change, parental separation, and separation from other close associates. Through "yes or no" questions, caregivers responded whether their child experienced a residence or a school change and whether the child was separated from parents (i.e., mother, father, or both) or close associates (e.g., siblings, friends, and relatives). If the child experienced the event, caregivers were asked to provide additional information regarding the reason (e.g., "Why did the child change residence?"), the frequency (e.g., "How many times did the child change residence?"), and the age of the child (e.g., "How old was the

child when s/he changed residence?”). To be used in the calculation of the overall ‘armed conflict experience’ score, children were given scores for their experiences of residence change and school change (i.e., 0 = *no change*, 1 = *once*, and 2 = *twice or more*), and separation from parents and other close associates (i.e., 0 = *no separation*, and 1 = *separated*).

From these two questionnaires, we calculated an overall ‘armed conflict experience’ score, by summing the scores that children were given regarding their experiences of conflict-related events, residence change, school change, separation from parents, and separation from close associates, where higher scores indicated higher levels of armed conflict experience.

Procedure

After obtaining the approval of the University Institutional Review Board, the data was collected with interviews at one time point, between June and October 2016. Random house visits and exponential non-discriminative snowball sampling were used to reach the participants. As the literacy rate was low in the region, particularly among women (Hacettepe University Institute of Population Studies, 2014), we recruited research assistants to conduct the interviews one-on-one. Majority of the assistants (89.5%) were native Kurdish-Turkish bilingual speakers, and all met the criterion of having previous experience collecting data in social/field studies. The study material was in Turkish, but the assistants administered them in the language that the participant preferred. In cases that the participant only spoke Kurdish or did not understand the item/question in Turkish, the assistants orally translated them in Kurdish. Assistants were given training for data collection by the first author before the field study started, and were provided with a guideline (e.g., for simultaneous Kurdish translations).

Research assistants read the informed consent to the caregivers and explicitly informed them that they had the right to stop the interview at any time, avoid answering any questions, and

to subsequently withdraw any data that they gave. After receiving the oral consent of caregivers, the forms and scales were administered. In compensation for their participation, the caregivers were given 20 TRY (~6.5 USD) worth of shopping cards.

Data Analysis Plan

We first examined the levels of emotional and behavioral problems in children and calculated the prevalence rates for these problems. For this, we obtained *T* scores for internalizing problems, externalizing problems, total problems, and PTSS, and used these scores to determine whether children's score fell within the normal, subclinical or clinical range provided for a representative Turkish sample (Erol & Simsek, 2007). Next, we compared the emotional and behavioral problem scores of children sampled in this study with the scores of children sampled in another study from other disadvantaged contexts in Turkey (Saçan, Artan, Erol, & Şimşek, 2014) that used the same measurement tool (i.e., CBCL/6-18 parent form) and age range (6 to 18 years) as the current study. We used independent samples *t*-tests for this comparison. Then, we examined the relations between children's age and emotional and behavioral problems via the Pearson product-moment correlation coefficients. Gender differences in emotional and behavioral problems in children were examined via the analysis of variance (ANOVA).

After providing frequency and detailed descriptions of the children's exposure to risk factors (i.e., income, family violence, and armed conflict), we examined the partial correlations between the emotional and behavioral problems in children and income, family violence experiences and armed conflict experiences, controlling for child's age. Then, we used hierarchical regression to explore the predictive value of the three risk factors (in Step 2) in emotional and behavioral problems over and above child's age and gender (controlled for in Step

1). We conducted the regression analyses separately for internalizing problems, externalizing problems, total problems, and PTSS.

Results

Emotional and Behavioral Problems

As presented in Table 1, children manifested moderate levels of internalizing problems, externalizing problems, total problems, and post-traumatic stress symptoms (PTSS). The prevalence rates were calculated based on the cut-off scores of a representative Turkish sample (Erol & Simsek, 2007): For internalizing, externalizing and total problems, scores that fell below the 84th percentile ($T < 60$) were considered *normal*, scores between the 84th and 90th percentile ($T = 60$ to 63) were considered *subclinical*, and scores above the 90th percentile ($T > 63$) were *in the clinical range*. For PTSS, scores that fell below the 93rd percentile (T value < 65) were considered *normal*, scores between the 93rd and 97th percentile ($T = 65$ to 69) were considered *subclinical*, and scores above the 97th percentile ($T > 69$) were *in the clinical range*. Accordingly, in our sample, 10.1% of children were in the clinical range and 4.2% were in the subclinical range for internalizing problems; 11.6% of children fell in the clinical range and 1% were in the subclinical range for externalizing problems; 10.3% of children fell in the clinical range and 3.7% were in the subclinical range for total problems; 4.7% of children were in the clinical range and 3.2% were in the subclinical range for PTSS.

Because we were interested in understanding the severity of emotional and behavioral problems experienced by children in our sample relative to those who experienced other forms of disadvantages, in the next step of our analysis, we compared the level of emotional and behavioral problems in children sampled in the present study with children sampled from child-rearing institutions in Turkey and children from low-income families (i.e., Saçan et al., 2014).

Among children in institutions ($n = 65$), 3.1% were under institutional care from 13 to 36 months of age, 24.6% from 3 to 6 years of age and 72.3% from 6 years of age and older because of disruption of family unit (58.5%), poverty (18.5%), abuse and neglect (13.8%), or other reasons (9.2%). Children in the low-income group ($n = 81$) were living in the central part of Turkey, and their families were receiving financial aid. To compare problem scores of children in these groups, we used the mean and standard deviation scores reported for these samples (i.e., institution, low-income in Saçan et al., 2014) and the ones in our study, and conducted independent samples t -test. Compared to the institution-reared children, children in our sample manifested significantly higher levels of internalizing problems, $t(469) = 6.21, p < .001$, externalizing problems, $t(469) = 2.26, p = .02$, and total problems, $t(469) = 4.45, p < .001$. Likewise, the scores of children sampled in the current study were also higher for internalizing problems, $t(485) = 1.95, p = .05$, externalizing problems, $t(485) = 3.72, p < .001$, and total problems, $t(485) = 3.95, p < .001$, in comparison to the scores of children from low-income families living in the central part of Turkey in the Saçan et al. study (2014).

Zero-order correlations showed that child's age was not associated with internalizing problems and PTSS. The correlations of age with externalizing problems and total problems were significant and negative (see Table 1).

The analysis of variance (ANOVA) revealed significant gender differences in the level of internalizing and externalizing problems. Accordingly, compared to boys ($M = 12.98, SD = 9.73$), girls ($M = 15.36, SD = 8.62$) were reported to manifest higher levels of internalizing problems, $F(1, 403) = 6.76, p = .01, \eta_p^2 = .02$. Boys ($M = 13.30, SD = 10.71$) were also reported to display higher levels of externalizing problems compared to girls ($M = 10.43, SD = 8.18$), F

(1, 403) = 9.32, $p = .003$, $\eta_p^2 = .02$. There was no significant gender difference for total problems and PTSS, F 's = 0.09 to 0.37, p 's = *ns*.

Frequency of Risk Factors

As outlined in the Participants section, the caregivers reported very low levels of monthly household income. According to the Income and Living Conditions Survey of the Turkish Statistical Institute (2018), the median household disposable income for a family of four was 5,693 TRY (~1,885 USD) in the financial year ending 2016. This means that income lower than this indicated poverty for a family of four. Furthermore, income 50% lower than the poverty threshold indicates extreme poverty (see Aber et al., 2012). Based on this definition, extreme poverty threshold in Turkey in 2016 was 2,847 TRY (~942 USD) for a family of four. Regarding this, in our sample, 97.8% of the families resided in what can be classified as extreme poverty, and 1.7% of the families were in poverty.

According to caregiver reports, at some point in their life, 36% of children were exposed to family violence. Overall, 29.1% of children were directly exposed to physical abuse in the home. Among children who were exposed ($n = 114$), 83.3% experienced physical abuse on more than one occasion. Also, 10.5% of children were indirectly exposed to (i.e., witnessed) physical abuse against family members in their household. The rate of children who were exposed to both direct and indirect forms of family violence was 3.6%.

Caregivers also reported that their children were directly or indirectly exposed to various forms of conflict-related events at some point in their lives. The frequency of these conflict-related events that children were exposed to is represented in Figure 1. Overall, 88.5% of children were directly exposed to combat. Among them ($n = 346$), 78.3% were frequently (i.e., a few times or more) amid combat.

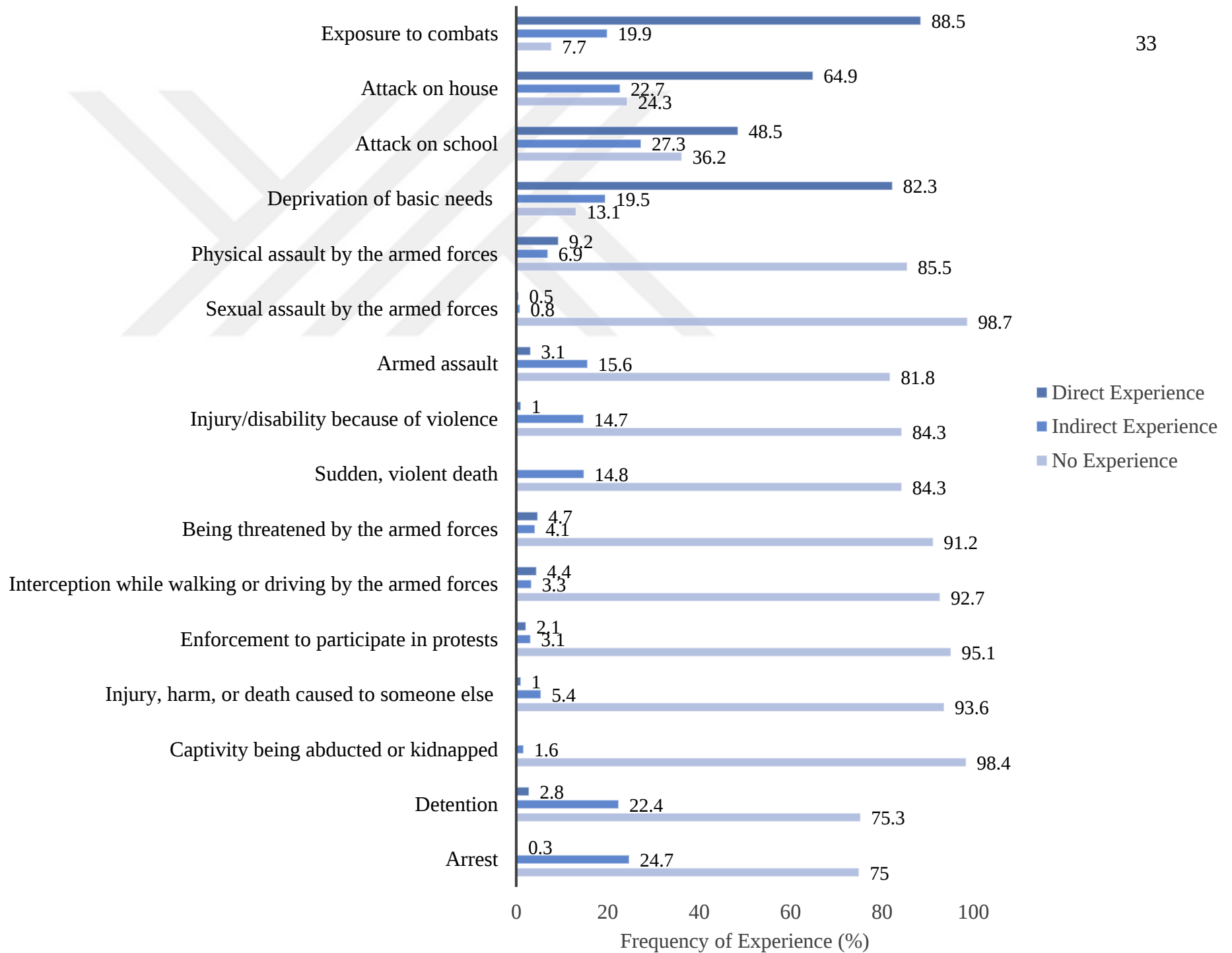


Figure 1. Frequency of conflict-related events that children were directly or indirectly exposed

Many children experienced attacks on their house, school, or both. Sixty-five percent of children experienced at least one attack on their house, and 24.5% were exposed to house attacks frequently. For nearly half of the children (48.5%), schools were reported as attacked or ruined; 15.8% frequently experienced attacks on their schools. About eighty-two percent of children ($n = 320$) were reported to be deprived of fundamental needs (e.g., food, water, shelter, and clothing) because of the combat exposure and extended curfews. Furthermore, 9.2% of the children were physically assaulted by the armed forces. Caregivers reported that children were also indirectly exposed to certain events: 15.6% witnessed or heard an event including armed assault, 14.7% witnessed or heard someone experiencing injury/disability because of politic violence and conflict, and 14.8% witnessed or heard a sudden and violent death. Besides, 22.4% of the children witnessed someone being taken into custody or heard that a close person was detained; and 24.7% witnessed or heard an arrest.

Additionally, caregivers reported that because of exposure to the reignited armed conflict between 2015 and 2016, 77.5% of children changed their residence at least once ($M = 1.80$, $SD = 1.55$, range = 0-8), while 40.6% of the school-age children ($n = 397$) changed their school at least once ($M = 0.60$, $SD = 0.83$, range = 0-3). Also, 15.6% of children could not attend school for a period ranging between 1 and 12 months ($M = 7.90$, $SD = 4.11$). During and after the armed the reignited armed conflict and curfews between 2015 and 2016, 21.3% of children were separated from at least one of their parents, and 35.4% of children were separated from close associates such as siblings, friends or close relatives.

Predictors of Emotional and Behavioral Problems

Partial correlations, controlling for age (see Table 1), revealed that income was significantly and negatively correlated with internalizing, externalizing and total problems in

children, but was not associated with PTSS. Both the levels of family violence and armed conflict that children experienced were positively correlated with their internalizing problems, externalizing problems, total problems, and PTSS levels.

To better understand the contribution of risk factors to the emotional and behavioral problems in children, we carried out four hierarchical regression analyses for internalizing problems, externalizing problems, total problems, and PTSS as outcome variables. Because emotional and behavioral problems tend to vary with child's age and gender, we controlled for them in Step 1; and then in Step 2, we examined the predictive value of income, family violence experience, and armed conflict experience over and above child's age and gender (see Table 2). Appendix I on p. 54 presents the interaction of family violence with income and armed conflict experiences.

Internalizing problems. Gender significantly predicted internalizing problems in Step 1, with $R^2 = .02$, $F(2,385) = 3.20$, $p = .04$. In Step 2, gender, family violence experiences and armed conflict experiences further added to the prediction of internalizing problems (total variance accounted for, $R^2 = .11$, $F(5,382) = 9.32$, $p < .001$). In addition, income was a marginally significant predictor of internalizing problems. These findings showed that girls and children who experienced higher levels of family violence and armed conflict displayed higher levels of internalizing problems. Also, children whose families had higher income displayed slightly lower levels of internalizing problems.

Externalizing problems. Age and gender significantly predicted externalizing problems in Step 1, with $R^2 = .03$, $F(2,385) = 6.07$, $p = .003$.

Table 2

Hierarchical Regression Analysis for Variables Predicting Emotional and Behavioral Problems in Children

Variables	DV: Internalizing			DV: Externalizing			DV: Total			DV: PTSS		
	Problems			Problems			Problems					
	β	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2
<i>Step 1</i>												
Age	-.03			-.11*			-.14**			-.03		
Gender ^a	.13*	.02	.02*	-.14**	.03	.03**	-.02	.02	.02*	-.00	.00	.00
<i>Step 2</i>												
Age	-.01			-.09 ⁺			-.11*			-.01		
Gender ^a	.13**			-.13**			-.01			-.00		
Income	-.09 ⁺			-.09 ⁺			-.10*			-.06		
Family violence experience	.17**			.26***			.26***			.18***		
Armed conflict experience	.19***	.11	.09***	.13**	.15	.12**	.16**	.15	.14**	.20***	.10	.10***

Note. PTSS = Post-traumatic stress symptoms. Listwise deletion operation was performed regarding the missing values in the data ($n = 387$). ^a Boys were coded as 0; girls were coded as 1. ⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Adding risk factors in the second step significantly contributed to the model, $R^2 = .15$, $F(5,382) = 13.53$, $p < .001$, and gender, family violence experiences and armed conflict experiences significantly predicted externalizing problems in children. Age and income were also marginally significant predictors. Accordingly, boys and children who had higher levels of family violence and armed conflict experiences displayed higher levels of externalizing problems. Children who were older and those whose families had higher income manifested slightly higher levels of externalizing problems.

Total problems. Age was a significant predictor of total problems in the first step, $R^2 = .02$, $F(2,385) = 3.68$, $p = .03$. In Step 2, age, income, family violence experience and armed conflict experience significantly predicted total problems, $R^2 = .15$, $F(5,382) = 13.83$, $p < .001$, and age, income, family violence and armed conflict experiences significantly predicted total problems. These findings revealed that children who were younger, whose families had lower income, and who had higher levels of family violence and armed conflict experiences manifested higher levels of total problems.

PTSS. Introducing demographic variables to the regression equation in Step 1 did not significantly contribute to the model, $R^2 = .00$, $F(2,385) = 0.19$, $p = ns$. In Step 2, family violence experience and armed conflict experience significantly contributed to the model, $R^2 = .10$, $F(2,383) = 12.80$, $p < .001$. Children who experienced higher levels of family violence and armed conflict manifested higher levels of PTSS.

Overall, when all variables included, the models accounted for 11% of the variance in internalizing problems, 15% of the variance in externalizing problems, 15% of the variance in total problems and 10% of the variance in PTSS.

Discussion

To the best of our knowledge, the current study was the first to examine the psychological well-being of children living in the east of Turkey. This region has been under the influence of substantial poverty as well as political tension, and low-intensity armed conflict has resulted in periods of combat in rural areas. In 2015, the conflict reignited both in rural areas and cities, and families and children were sometimes caught in the crossfire. Following the battles and curfews, this study was conducted to 1) examine the level of emotional and behavioral problems in children, and 2) investigate the role of prominent risk factors in the region, poverty, family violence and armed conflict, in these problems.

According to the caregiver reports in our study, the children in our sample manifested moderate levels of emotional and behavioral problems. However, the levels of internalizing, externalizing and total problems they displayed were significantly higher compared to the level of these problems previously reported for children sampled from other disadvantaged contexts in Turkey, such as child-rearing institutions and low-income families (Saçan et al., 2014).

Caregivers in our sample reported that their children were frequently exposed to the risk factors under examination: Poverty, family violence, and armed conflict. In line with the earlier studies, a lower level of income (e.g., Jansen et al., 2009), as well as higher level of armed conflict exposure (Catani et al., 2008) were associated with a higher level of family violence experience. Literature suggests that socioeconomic hardship that may cause or exacerbate psychological distress within the family members (McLoyd et al., 1994) and harsh or unresponsive parenting (McLeod & Shanahan, 1993). It is also suggested that the armed conflict environment may create a culture of violence (e.g., Fernando et al, 2010; Somasundaram, 2007). Combined, socioeconomic hardship in the armed conflict zone might increase the incidents of abuse and violence in households. Yet, compared to the earlier studies conducted in the conflict-

free cities in Turkey (e.g., Sofuoğlu et al., 2014), the prevalence of family violence was lower in the current sample. This might be due to the culture of violence created by the armed conflict context or feudalism that has governed the region for a long time, which may change the norms and attitudes regarding violence and lead to normalization of violence. Relatedly, caregivers' understanding and perception, and subsequently reporting, of abuse and violence might have differed from the general population.

We explored poverty, family violence, and armed conflict as possible predictors of emotional and behavioral problems, however poverty (as indicated by very low-income levels in the majority of our participants) did not appear to play a significant role in these outcomes. Although the association of lower income with internalizing, externalizing and total problems was significant, it was quite weak. And when examined together with family violence and armed conflict, its predictive value became nonsignificant, except a significant but low beta coefficient for total problem scores. This finding is in contradiction with the literature which clearly and consistently reveals the detrimental effects of poverty on children's psychological well-being and development (Aber et al., 2012; Bradley & Corwyn, 2002; Hackman & Farah, 2009). In many systematic reviews and meta-analyses (e.g., Brooks-Gun & Duncan, 1997; Letourneau, Duffett-Leger, Levac, Watson, & Young-Morris, 2011; Piotrowska, Stride, Croft, & Rowe, 2015), poverty is emphasized as a critical factor that plays a major role in early internalizing and externalizing problems. It is highly likely that this unexpected finding that appeared for our sample was due to the very low variance in this variable. The families in our sample, all had very low incomes. Seventy-five percent of the caregivers reported an income that was below the minimum wage, and 23% reported the second lowest level of income. Such a low variance might degrade the results, preventing us to reliably examine associations between variables

(Tabachnick & Fidell, 2012). However, in line with the literature (e.g., Dimitry, 2012; Herrenkohl et al., 2008; Macksoud & Aber, 1996), other two risk factors, family violence and armed conflict experiences, were found to be significant predictors of emotional and behavioral problems in children.

Altogether, these findings indicated the critical role of family violence and armed conflict experiences, and potentially poverty, in emotional and behavioral problems in children and highlighted the need for intervention programs and policies to improve the life quality of children and families living in the east of Turkey. On the other hand, our models accounted for 10%-15% of the variance in child outcomes, and a substantial amount of variance remains unexplained by the factors that we examined in this study. Future research that examines additional factors may help explain more variation in emotional and behavioral problems in children. These would include individual factors such as temperament (Oldehinkel, Hartman, de Winter, Veenstra, & Ormel, 2004) and self-regulation (Lengua, 2003) as well as familial/environmental factors such as child rearing practices (McLeod & Shanahan, 1993) and parent-child attachment (Roelofs, Meesters, ter Huurne, Bamelis, & Muris, 2006), parental stress (Costa, Weems, Pellerin, & Dalton, 2006), intergenerational transmission of stress (Bowers & Yehuda, 2016) and peer relations (Bukowski, Brendgen, & Vitaro, 2007) as well as the interactions among these factors.

This study is, to our knowledge, the first study to investigate the psychological well-being of children living in the eastern part of Turkey in relation to their adverse experiences. Therefore, this study contributes to the progress of developmental science in Turkey by filling a significant gap in the literature, and to the general well-being of children in Turkey. In addition, this study provides information about child well-being in a zone of low-intensity conflict rather

than full-blown war, thereby contributing to the general literature on child development in war zones. The associations between family violence, poverty and armed conflict exposure provided new understandings related to the normalization of violence in families, informing future research and practice. Showing that family violence and armed conflict experiences, and potentially poverty, have been linked to the psychological functioning of children, the present study has implications both at the individual and societal level. Childhood trauma and socioeconomic adversity might cause substantial individual costs in childhood and adulthood such as increased susceptibility to illness and psychological issues (e.g., Bick et al., 2012), but also societal costs, such as increased medical expenses for the treatment of health and psychological problems or expenses for special education (e.g., Fang, Brown, Florence, & Mercy, 2012). Having established the nature of exposure to poverty, family violence and armed conflict experiences, interventions can assist families living in the eastern part of Turkey to ensure their recovery, and at the same time, reduce the burden on society that results from adverse outcomes.

Lack of standardized measures in Kurdish and low literacy in the region were challenges for the current study. To compensate, we recruited native Kurdish-Turkish bilingual assistants for data collection, who administered the materials via face-to-face interviews in the language that participants preferred. The reports of the assistants revealed that four caregivers preferred to answer the questions in Kurdish, while the rest completed the measures in Turkish and asked once or twice for clarification in Kurdish. Although there might be variations in Kurdish translations, we minimized this by providing the assistants with guidelines and common terminology for Kurdish translation. Nevertheless, the translation and standardization of the psychological measures in Kurdish are needed for future research.

The current study provided rich data for understanding the risks of living in a low-intensity armed conflict zone regarding child well-being. However, its cross-sectional nature limited the study to examine the trajectories of psychological well-being of children in time and to provide more conclusive observations. In future work, longitudinal research methodology can be implemented to prevent this limitation. Future studies should also investigate other factors that may pose a further risk for the well-being of children living in an armed conflict zone, particularly child rearing practices, parent-child attachment, and parental stress. Research on other developmental outcomes such as the cognitive development of children and their academic attainment, and also on the factors that may contribute to children's resilience, would provide a more comprehensive picture to formulate intervention programs and policies to promote child well-being in this disadvantaged environment.

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APPENDIX I

Hierarchical Regression Analysis for Interaction Terms Predicting Emotional and Behavioral Problems in Children

Table 1. Hierarchical Regression Analysis for Family Violence*Armed Conflict Interaction Term Predicting Child Outcomes

Variables	DV: Internalizing Problems			DV: Externalizing Problems			DV: Total Problems			DV: PTSS		
	β	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2
<i>Step 1</i>												
Age	-.03			-.11*			-.14**			-.03		
Gender ^a	.13*	.02	.02*	-.14**	.03	.03**	-.02	.02	.02*	-.00	.00	.00
<i>Step 2</i>												
Age	-.01			-.09 ⁺			-.11*			-.01		
Gender ^a	.13**			-.13**			-.01			-.00		
Income	-.09 ⁺			-.09 ⁺			-.10*			-.06		
Family violence experience	.17**			.26***			.26***			.18***		
Armed conflict experience	.19***	.11	.09***	.13**	.15	.12**	.16**	.15	.14**	.20***	.10	.10***
<i>Step 3</i>												
Age	-.01			-.09 ⁺			-.11*			-.01		
Gender ^a	.13**			-.13**			-.01			.00		
Income	-.08 ⁺			-.09 ⁺			-.10*			-.06		
Family violence experience	.19***			.24***			.26***			.20***		
Armed conflict experience	.20***			.12*			.16**			.21***		
Family violence*Armed Conflict	-.08	.11	.01	.09 ⁺	.16	.01 ⁺	.00	.15	.00	-.04	.10	.00

Note. PTSS = Post-traumatic stress symptoms. ^a Boys were coded as 0; girls were coded as 1. ⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2. Hierarchical Regression Analysis for Income*Family Violence Interaction Term Predicting Child Outcomes

Variables	DV: Internalizing Problems			DV: Externalizing Problems			DV: Total Problems			DV: PTSS		
	β	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2
<i>Step 1</i>												
Age	-.03			-.11*			-.14**			-.03		
Gender ^a	.13*	.02	.02*	-.14**	.03	.03**	-.02	.02	.02*	-.00	.00	.00
<i>Step 2</i>												
Age	-.01			-.09 ⁺			-.11*			-.01		
Gender ^a	.13**			-.13**			-.01			-.00		
Income	-.09 ⁺			-.09 ⁺			-.10*			-.06		
Family violence experience	.17**			.26***			.26***			.18***		
Armed conflict experience	.19***	.11	.09***	.13**	.15	.12**	.16**	.15	.14**	.20***	.10	.10***
<i>Step 3</i>												
Age	-.01			-.09 ⁺			-.11*			-.01		
Gender ^a	.12*			-.14**			-.02			.00		
Income	-.13*			-.12*			-.14**			-.10 ⁺		
Family violence experience	.14**			.25***			.24***			.16**		
Armed conflict experience	.19***			.13**			.17**			.21***		
Income*Family violence	-.13*	.12	.02*	.09 ⁺	.16	.01 ⁺	-.13*	.17	.01*	-.12*	.12	.01*

Note. PTSS = Post-traumatic stress symptoms. ^a Boys were coded as 0; girls were coded as 1. ⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

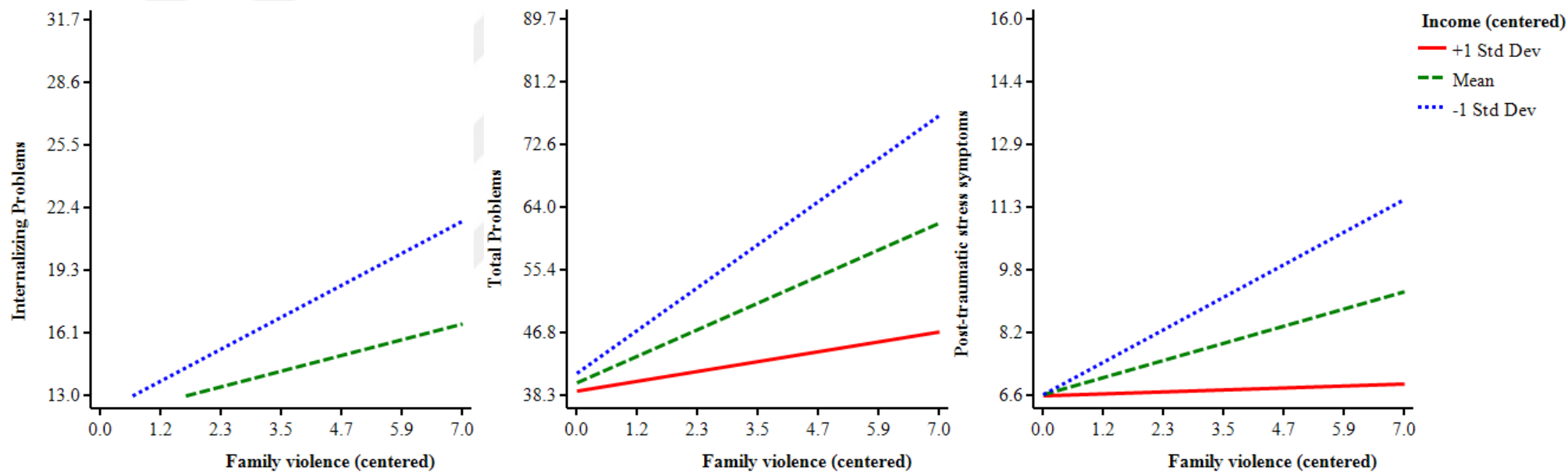


Figure 1. The interaction of income and family violence experience for internalizing problems, total problems and post-traumatic stress symptoms.

CHAPTER III

EXECUTIVE FUNCTION AND PROBLEM BEHAVIORS IN CHILDREN: ROLE OF MATERNAL PSYCHOLOGICAL DISTRESS AND ARMED CONFLICT

Kara, B. & Selçuk, B. (2019). Executive function and problem behaviors in children: Role of maternal psychological distress and armed conflict. Manuscript submitted to *Child Development*.

Abstract

This study investigates executive function (EF), internalizing problems, and externalizing problems in children regarding their exposure to poverty, armed conflict, and maternal psychological distress. We collected data from 93 mothers and their 115 children (60 girls) aged 39 to 95 months ($M = 68.22$, $SD = 14.62$) in eastern Turkey. The prevalence of borderline and clinical ($T \geq 60$) scores was 15.6% for internalizing and 14.8% for externalizing problems. EF was negatively correlated with internalizing and externalizing problems, armed conflict experiences, and maternal psychological distress. Path analysis showed that maternal psychological distress mediated the links from income and armed conflict experiences to EF and to internalizing and externalizing problems. Armed conflict experiences predicted internalizing problems when other factors were accounted.

Keywords: executive function, internalizing problems, externalizing problems, armed conflict, maternal psychological distress

Introduction

Early childhood, the period in life when brain development is rapid, is critical for cognitive development as well as health and well-being through the life course. Environmental risk factors, however, may prevent children from reaching their developmental potential by leading to non-optimal cognitive development, lack of readiness for school, poor academic performance in childhood, and subsequently low socioeconomic status in adulthood (Grantham-McGregor et al., 2007) as well as disruptions in associated systems such as social and emotional competence and self-regulation (Blair, 2010).

A range of environmental factors are associated with poor cognitive development in children such as poverty (Evans & Kim, 2012), familial factors (e.g., maternal depression; Hughes, Roman, Hart, & Ensor, 2013), and violent experiences (e.g., community violence; Walker et al., 2007). Non-optimal cognitive development is observable throughout many parts of the world today, in high-income countries such as the United States, Australia, and United Kingdom (Siddiqi, Kawachi, Berkman, & Hertzman, 2007) as well as in developing countries (Grantham-McGregor et al., 2007). In some countries, particularly in developing countries, however, risk factors often co-occur, and their cumulative effect compromises children's development to a greater extent (Walker et al., 2007). Turkey is one of these countries where multiple risk factors such as poverty, armed conflict, and maternal psychological distress might interfere with children's cognitive development and psychological well-being. In this study, we aimed to investigate the executive function skills and problem behaviors in children in regard to these risk factors.

Executive Function and Psychological Well-being in the Context of Adversity

Executive function (EF) is defined as a collection of cognitive processes involved in conscious control of thought and action in goal-directed behavior (Zelazo & Müller, 2002). Early EF is shown to be an important predictor of educational achievement (Bull, Espy, &

Wiebe, 2008), socioemotional competence (Gündüz, Yagmurlu, & Harma, 2015), as well as other socio-cognitive skills such as theory of mind (Hughes & Ensor, 2007). Conceptualized as the cognitive component of self-regulation (Rueda, Posner, & Rothbart, 2005), EF also leads to behavioral competence in individuals by organizing complex information, shifting attention flexibly, and inhibiting undesired or impulsive responses to adjust behavior with respect to their goals and environmental demands (Blair, 2010). Consistently, EF is robustly associated with problem behaviors in children (Hughes & Ensor, 2008). Meta-analytic reviews show that internalizing problems (e.g., depression; Wagner, Müller, Helmreich, Huss, & Tadić, 2014) and externalizing problems (e.g., aggressive behavior; Schoemaker, Mulder, Deković, & Matthys, 2012) are associated with lower EF.

EF emerges in infancy and develops rapidly in early childhood from the interplay of biological, psychological, and social factors (Blair & Raver, 2012). Adverse experiences during this period may cause structural and functional changes in the brain, including the prefrontal cortex (i.e., the key neural substrate for EF) and stress-response systems (e.g., the hypothalamic-pituitary-adrenal axis; Blair, 2010), and may lead to a phenomenon termed as *allostatic load*, the overall physiological wear-and-tear of the body over the life course which is associated with negative health outcomes and mental health problems (Juster, McEwen, & Lupien, 2010). Thus, early stressful life experiences such as poverty, political violence, and parental psychological symptoms pose a major risk to EF and to psychological well-being in children.

Poverty. Poverty is linked with poor EF and behavioral outcomes in children (Aber, Bennett, Conley, & Li, 1997; Evans & Kim, 2012; Huston, McLoyd, & Coll, 1994; Raver, Blair, & Willoughby, 2013). Poverty may exert its adverse effect on EF development and psychological well-being in children through malnutrition, low parental investment, high parental distress, and negative parenting practices. Malnutrition may impair brain

development and function in children (Prado & Dewey, 2014), which may lead to disruption in EF development (Strupp & Levitsky, 1995). In poor households, as a function of limited economic resources of parents to invest, opportunities that would otherwise support cognitive development of children such as intellectually stimulating facilities (e.g., books, toys), day-care or preschool education, and nonmonetary goods (e.g., time spent with children) may be less (e.g., Bradley, Corwyn, McAdoo, & Coll, 2001; Zill, Moore, Smith, Stief, & Coiro, 1991). Poverty is also linked with parental adversity by increasing economic pressure, financial insecurity, and unemployment that may lead to marital conflict (Conger, Ge, Elder, Lorenz, & Simons, 1994), stress and psychological problems in parents (McLoyd, Jayaratne, Ceballo, & Borquez, 1994), child maltreatment (Gillham et al., 1998), and harsh or unresponsive parenting (McLeod & Shanahan, 1993). And maternal psychological symptoms (Hughes et al., 2013), child abuse (DePrince, Weinzierl, & Combs, 2009), as well as lack of parental stimulation and sensitivity (Fay-Stammach, Hawes, & Meredith, 2014) and supportive caregiving (Blair, 2010) have all been shown to be linked with poor EF as well as poor behavioral outcomes in children.

Political violence. Another adversity that may pose a risk to EF and psychological well-being in children is political violence. Children might be exposed to a range of violent acts that includes isolated violent events such as terrorist attacks, or a broader context of violence such as an armed conflict. Studies showed that exposure to terrorist attacks may lead to attention and memory problems in children (e.g., Scrimin, Moscardino, Capello, & Axia, 2009). In the broader level, contexts where armed conflict occurs are highly stressful, and they usually bring additional adversities such as malnutrition, poverty, parental unemployment, unsafe or inadequate housing, and lack of access to health services and education. In this violent environment, parents' psychological trauma and distress, combined with the safety concerns and economic challenges, may further lead to child abuse, harsh or

unresponsive parenting, and disruptions in the family functioning. In such environment, research shows that armed conflict experience may disrupt cognitive functioning in children. In Gaza Community Mental Health Programme, for instance, Qouta, Punamäki and El Sarraj (2008) reported that severely traumatized 10-to-11-year-old children had more difficulty in information processing such as attention, recall and concentration compared to less traumatized peers, while they showed no difference in more stable structural characteristics such as IQ and creativity.

Beyond problems in cognitive functioning, a wealth of research indicates that children who have been exposed to political violence may experience acute psychological problems such as post-traumatic stress disorder, internalizing problems (e.g., depression, withdrawal, anxiety), and externalizing problems (e.g., aggressive behavior; for a review, see Dimitry, 2012), as well as increased vulnerability for psychological disorders in adulthood (Llabre, Hadi, Greca, & Lai, 2015).

Parental psychological distress. Several studies have also highlighted parental psychological symptoms as a major risk for EF development (Hughes et al., 2013) and psychological well-being (Bryant et al., 2018) in children. In the context of poverty and armed conflict, parents may experience increased levels of psychological distress, which in turn may result in harsh and unresponsive parenting practices, even in the form of maltreatment, and disruptions in family functioning, and may overall jeopardize EF and psychological well-being in children (Blair, 2010; Blair & Raver, 2012; Bryant et al., 2018; Evans & Kim, 2012).

In armed conflict settings, parental psychological trauma is robustly associated with psychological well-being in children even in cases when children were not directly exposed to the armed conflict. A large body of research shows that parents' conflict-related trauma might be transmitted to subsequent generations epigenetic mechanisms (Bowers & Yehuda,

2016) as well as narratives of parents regarding their past (Fargas-Malet & Dillenburger, 2016) increasing the susceptibility of psychological problems in children. Opposite interaction is also possible in cases when only children were exposed to a violent event. Hock and colleagues (Hock, Hart, Kang, & Lutz, 2004) showed that after their children's exposure to a terrorist attack, mothers developed greater worry concerning their children's safety, and mothers' distress in turn increased fear and anxiety in children.

The Context in the East of Turkey

Turkey is a developing country where the development and well-being of some children may be compromised because of poverty, armed conflict, and associated trauma in children and families. According to a report of Bahçeşehir University Center for Economic and Social Research (Gürsel, Uysal, & Kökkızıl, 2016), among 28 European countries, Turkey had the highest rate (36.2%) of child material deprivation in 2014, which was three times higher than average. The child poverty rate was reported to be particularly high in the east of Turkey reaching up to 55,1% (Gürsel et al., 2016), where Kurds, the largest non-Turkish ethnic group, constitute the majority. According to the Turkey Demographic and Health Survey conducted in 2013 (Hacettepe University Institute of Population Studies, 2014), people living in the east of Turkey have been challenged with lowest rates of urbanization, household wealth, and literacy, and highest rates of fertility and early childhood mortality in Turkey. Consistently, in 2017, the lowest rates of annual income were reported in the eastern cities (Turkish Statistical Institute, 2018a).

Besides socioeconomic challenges, the east of Turkey is also under the influence of a low-intensity armed conflict between the Turkish state and the Kurdish armed forces, which resulted in periods of combat, particularly in the rural areas. Between mid-1980s and early 2000s, the conflict culminated in more than 35 thousand deaths (Human Rights Inquiry Committee of the Grand National Assembly of Turkey, 2013) and displacement of more than

1 million civilians (Hacettepe University Institute of Population Studies, 2006). Following a period of ceasefires in the early 2000s, the negotiation attempts failed in July 2015, and the armed conflict reignited both in rural and urban areas. In the following one-year period, fierce battles took place, and emergency state and open-ended curfews were announced in nine cities, affecting 1.67 million residents living in the area (Human Rights Foundation of Turkey -HRFT, 2016). During the curfews, people, including children, were confined in their house for a period ranging from a day to consecutive months (HRTF, 2016) in stressful conditions, sometimes without access to life-sustaining materials such as food, water, or medicine, or to education. Furthermore, reports from both governmental authorities and non-governmental organizations revealed that civilians, including children, were sometimes caught in the crossfire. Accordingly, during 2015-2016 battles, 323 civilians (79 children) died (HRFT, 2016), and 2,040 civilians were wounded (Office of the United Nations High Commissioner for Human Rights, 2016).

This longstanding socioeconomic hardship, armed conflict, and associated stress might lead to negative psychological outcomes in children living in the east of Turkey. In support, in an earlier study that we conducted immediately after the 2015-2016 battles and presenting data from 506 children aging from 5.5 to 18 years in three conflict-affected cities, parents reported extremely poor socioeconomic conditions as well as exposure to various forms of armed conflict events and family violence, which were in turn associated with higher levels of emotional and behavioral problems in children (Authors, 2019).

The Current Research

The literature summarized above shows that early EF is critical for academic outcomes and educational attainment as well as social and emotional competence, and further, has implications for developmental models of psychopathology. Indeed, EF is proposed as a critical skill which links chronic stress experienced by children to poor

behavioral outcomes (Blair, 2010; Evans & Kim, 2012). Accordingly, chronic stress may cause disruption in the functioning of neural networks that underlie EF, which in turn leads to difficulties in self-regulation, and hence, increased psychological problems in children. Literature further shows that poverty is a risk factor for both EF and psychological well-being in children indicated as poor cognitive outcomes as well as poor self-regulation and high levels of psychological symptoms (Aber et al., 1997; Raver et al., 2013). Exposure to political violence is also associated with poor cognitive functioning and well-being in children indicated as attention and memory problems as well as physical and mental health problems through the life-course (Quota et al., 2008). Although the link between armed conflict exposure and EF in children, to our knowledge, has not been studied yet, based on the literature it is reasonable to assume that exposure to armed conflict may be associated with lower EF skills. Finally, both in poverty and armed conflict literature, one of the critical determinants of children's responses in the aftermath of exposure to adversity is proclaimed as parental psychological problems (Bryant et al., 2018; Evans & Kim, 2012). Research shows that parental psychological problems are associated with poor cognitive, emotional and behavioral outcomes in children.

In the east of Turkey, poverty and low-intensity armed conflict might pose a significant risk to EF and psychological well-being in children and also increase parental psychological distress. Within the limited literature on the well-being of children living in the east of Turkey, we showed that armed conflict experiences were shown to be related to the emotional and behavioral problems in a sample of children aged between 6 and 18 (Authors, 2019). Yet, in this context, EF development and psychological well-being in early childhood in relation to potential risk factors has never been studied.

In the current study, we investigated EF skills and problem behaviors in 3-to-8-year-old children living in the east of Turkey with respect to their exposure to adverse experiences

posing a risk for normative development: Poverty, armed conflict, and maternal psychological distress. For this, we assessed the level of EF and problem behaviors (i.e., internalizing problems and externalizing problems) in children and examined how potential risk factors (i.e., poverty, armed conflict, maternal psychological distress) were associated with these outcomes. We further tested whether EF and maternal psychological distress mediated the links from poverty and from armed conflict experience to problem behaviors in children. Drawing upon the previous literature indicating that poverty and violent experiences were associated with EF as well as the psychological well-being in children, and EF further contributed to the psychological well-being in children, we hypothesized that EF would mediate the links from poverty and from armed conflict experience to internalizing and externalizing problems. Mostly co-occurring with poverty and armed conflict, literature also identifies parental psychological problems as a major risk to both EF and psychological well-being in children. Therefore, we predicted that maternal psychological distress would mediate the links from poverty and from armed conflict experience to EF as well as to internalizing and externalizing problems in children.

Method

Participants

Data was collected in two eastern cities of Turkey where we reached 93 households. Participant selection criteria were 1) to have a child between the ages of 3 and 8 in the household, and 2) the child not having a clinically diagnosed developmental disorder (e.g., mental retardation, autistic spectrum disorder). Seventy-one mothers provided information about one child, while 22 mothers gave information about their two children by completing questionnaires separately for each child. Overall, the data included information about 115 children ($M_{\text{age}} = 68.22$ months, $SD = 14.62$, range = 39-95 months): Sixty girls ($M_{\text{age}} = 67.02$ months, $SD = 14.66$) and 55 boys ($M_{\text{age}} = 69.53$ months, $SD = 14.59$), with similar ages

($F(1,113) = 0.85, p = .36$). Among children, 10.4% were aged 3 years (39 to 47 months), 16.5% aged 4 years (48 to 58 months), 27.8% aged 5 years (60 to 69 months), 27% aged 6 years (72 to 82 months), and 18.3% aged 7 years (84 to 95 months). According to mother reports, none of them had a known developmental disorder, and only two children had a chronic health problem (i.e., atrial septal defect and hypothyroidism), and were on prescribed medication. Overall, the mothers evaluated their children's physical health (from 1 = *bad* to 5 = *perfect*) in the past six months as *fine* ($M = 2.83, SD = 0.60$).

Regarding the family composition, 96.5% of children came from intact families, one child (0.9%) had separated or divorced parents, and three children (2.6%) had lost their fathers. Households were generally crowded, ranging from 3 to 15 individuals, with an average of 6 people ($M = 6.25, SD = 2.33$). Twenty-four families (25.8%) were living with extended family members. The number of siblings ranged from 0 to 11 ($M = 3.11, SD = 2.42$), while 27% of children had two siblings and 20% had three siblings. In 57% of families, the Kurdish language was reported as the primary language spoken in the household, while Turkish was also spoken. In 25.8% of families, Turkish was the primary language, but Kurdish language was also spoken. In 10.8% of families, Kurdish was reported as the only spoken language between the family members, and in 6.5%, Turkish was the only spoken language.

The families were coming from socioeconomically disadvantaged backgrounds. The education level of parents was low. Among mothers, 28% were illiterate, 20.4% were literate but did not complete primary school, 34.4% completed primary school, 9.7% completed secondary school, 5.4% finished high school, one mother (1.1%) had college degree, while none had a university degree except one mother (1.1%) who had post-graduate degree. Likewise, 10.8% of fathers were illiterate, 9.7% were literate but did not complete primary school, 38.7% completed primary school, 14% completed secondary school, 19.4% finished

high school, two fathers (2.2%) had college degree and five fathers (5.2%) had university degree. With regard to the occupation status, 96.8% of mothers did not have a paid work; only two mothers (2.2%) reported having a full-time job, and one mother (1.1%) had a part-time job. Among fathers, 31.5% were unemployed; 47.3% had a full-time job, and 21.5% had a part-time or seasonal job. Among the jobholder parents, 71.2% had low-status occupations (e.g., janitor, driver), 21.2% were tradesmen, and 7.6% were working in established professions (e.g., preschool teacher, public officer). Mothers also reported low levels of monthly household income: In 65.6% of families, the monthly income was below the minimum wage (1,300 TRY; ~350 USD at the time of data collection), 32.3% had a monthly income ranging from 1,300 to 2,800 TRY (~350 to 755 USD), and two families (2.2%) had a monthly income ranging from 2,801 to 4,800 TRY (~755 to 1,290 USD). According to the Income and Living Conditions Survey of the Turkish Statistical Institute (2018b), the poverty line calculated for a family of four was 5,693 TRY (~1,885 USD) in 2016. Incomes lower than this indicated poverty. Furthermore, incomes 50% lower than the poverty line (i.e., 2,847 TRY; ~942 USD) is considered as extreme poverty (see Aber et al., 1997). Based on these definitions of poverty and extreme poverty, the vast majority (97.8%) of families in our sample were living in extreme poverty, while the rest (2.2%) were living in poverty.

Measures

Children were administered two computerized tasks measuring their EF. Mothers were administered questionnaires to assess background information, their children's problem behaviors and armed conflict experiences, as well as their own psychological distress. In cases where a mother provided information for two children, the forms and scales were administered separately for each child, and the mothers were instructed to respond keeping that particular child's behaviors, characteristics and experiences in mind (the target child). Table 1 includes the descriptive statistics for the study variables.

Table 1

Descriptive Statistics for Study Variables (N = 115)

Variable	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Demographic variables				
Age (in months)	68.22	14.62	39	95
Maternal education (1-8)	2.46	1.33	1	8
Paternal education (1-8)	3.46	1.52	1	7
Income (1-8)	1.35	0.51	1	3
Household size	6.45	2.43	3	15
Number of siblings	3.11	2.42	0	11
EF (0-10)	2.93	2.10	0	8.40
Problem behaviors in 3-to-5-year-old children				
Internalizing problems (0-72)	22.42	9.86	6	46
Externalizing problems (0-48)	18.53	8.22	3	38
Problem behaviors in 6-to-8-year-old children				
Internalizing problems (0-64)	15.09	7.54	4	33
Externalizing problems (0-70)	14.38	9.33	0	43
Armed conflict experience (0-159)	29.15	14.49	6	68
Maternal psychological distress (0-360)	110.59	53.75	2	230

Background information form. Mothers completed a background information form where they provided information about the child (e.g., age, gender, number of siblings), parents (e.g., education, occupation, employment status, marital status), and household characteristics (e.g., monthly household income, social security conditions, household size, language). The education level of parents was measured on an 8-point Likert-type scale ranging from 1 = *illiterate* to 8 = *has a graduate degree*. Monthly household income was measured on an 8-point scale ranging from 1 = *below 1,300 TRY* (the minimum wage in Turkey at the time of data collection; ~350 USD) to 8 = *above 18,001 TRY* (~4,850 USD).

Executive function. Computerized version of the Flanker task was administered to measure children's inhibitory control and attention, and the Dimensional Change Card Sorting (DCCS) task was administered to measure children's cognitive flexibility (Zelazo et al., 2013). These tasks are standardized measures in NIH Toolbox Cognition Battery with excellent test-retest reliability (Zelazo et al., 2013). During the tasks, children were required to hold the rules in mind, inhibit dominant natural response when irrelevant, and shift attention to relevant stimuli. The tasks were presented on a touchscreen computer via E-Prime software (Schneider, Eshman, & Zuccolotto, 2002). Children were first administered a short practice game to train them to use the touchscreen for responding, then the EF tasks.

Flanker task. The computerized version of the Flanker task was developed by Zelazo et al. (2013) to measure inhibitory control of children aging between 3 and 8. The task consisted of a practice block, a fish block, and an arrows block. In each trial, children were presented five stimuli (either fish or arrows) in a line. In congruent trials, all stimuli pointed to the same direction; while in incongruent trials, the central stimulus pointed the opposite direction. Children were instructed to look at the central stimulus and show the direction that the central stimulus was pointing by touching the left or the right arrow below the screen. In order to remind children to respond to the central stimulus, the word "middle" was auditorily

and visually presented in each trial.

Children were first presented the practice trials, where they received verbal instructions and feedback related to their performance. In order to proceed to the fish block, children had to pass the practice trials (i.e., at least three correct responses in four trials). Children who failed to pass the practice trials were presented another round of practice. Failure in four rounds of practice trials led to the termination of the task, where children received a score of 0 for their performance. Children who passed the practice trials, then, received the fish block including 13 congruent and seven incongruent trials presented in a pseudorandom order where one to three congruent trials preceded an incongruent trial. Children who correctly responded to five or more incongruent trials, then, proceeded to an additional block of trials, where they were presented arrows as stimuli instead of fish.

For each child, an accuracy score was calculated on a scale from 0 to 5 by giving 0.125 points for every correct response. The accuracy score was the final score for children who responded less than 80% accuracy. For children who responded with 80% or higher accuracy, a reaction time (RT) score was also calculated and added to their final score. For this, first, trials with RTs lower than 100 msec or greater than 3 SDs from each child's mean RT were considered as outliers and removed. Then, each child's median RT on correctly responded incongruent trials was calculated. In order to rescale the median RT scores of each child between 0 and 5, a log (Base 10) transform was applied to the median RT scores. Then, the minimum RT was set to 500 msec and the maximum to 3,000 msec, and the values were algebraically rescaled to a 0-5 scale in reverse order where smaller RT values were at the upper end of the 0-5 range (for details, see Zelazo et al., 2013). The rescaled RT scores (0 to 5) were added to the accuracy scores (0 to 5) for children whose accuracy were at least 80%. Thus, the scores were yielded from 0 to 10.

Dimensional change card sorting task. In the computerized DCCS task developed

for ages 3 to 8 (Zelazo et al., 2013), children were presented cards that had colored shapes (e.g., a ball or a truck in yellow or blue) on them. In each trial, children were instructed with the dimension (i.e., shape or color) that they should regard, and then presented three cards on a triangle position. Children were required to evaluate the dimension on the card positioned on the top and select the other card matching with the dimension. If the dimension was 'shape', then children were required to regard the shape of the upper card (e.g., blue *truck*) and sort the card matching in shape (e.g., yellow *truck*) instead of the card matching in color (e.g., blue ball). Throughout the task, children sorted for one dimension first and then for the other dimension, receiving a mixed block of trials that switched back and forth between sorting directions.

The task consisted of a practice block (four trials), a pre-switch block (five trials for the first dimension), a post-switch block (five trials for the second dimension), and a mixed block (23 trials for dominant dimension and seven trials for non-dominant dimension). Dimension order and dominance were counterbalanced across participants. As in the Flanker task, during the practice trials, children were presented instructions and feedback on their performance. For children who failed to pass the practice trials up to three times, the task was terminated, and children received a score of 0. Children who passed the practice trials proceeded to the pre-switch and post-switch trials. Then, children who responded accurately during the pre-switch and post-switch trials (i.e., at least four correct responses out of five in each) proceeded to the mixed block including trials presented in a pseudorandom order where two to five dominant trials precede a non-dominant trial.

As in the Flanker task, children who passed the practice trials in the DCCS task were given an accuracy score (i.e., $.125 \times$ number of correct response), and children who responded accurately in at least 80% of the trials received both accuracy and RT scores to be summed up as their final DCCS scores yielding from 0 to 10.

The correlation between children's Flanker and DCCS scores was significant, $r(113) = .52, p < .001$. Hence, a total EF score was calculated for further analysis by taking the average of the Flanker and DCCS task scores (see Hughes & Ensor, 2008 for similar procedures).

Problem behaviors. Problem behaviors in children were measured by the age-appropriate, Turkish versions (Erol & Şimşek, 2007) of the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000; 2001).

To assess the levels of problem behaviors in children younger than 6 ($n = 59$), we used the preschool version of the CBCL (for ages 1.5 to 5). This version included 99 items that mothers rated on a 3-point Likert scale (from 0 = *not true* to 2 = *very true/often true*) as to whether the item describes the target child currently or within the past six months. From this form, two broad dimensions of problem behaviors were identified: Internalizing problems, including symptoms of anxiety or depression, withdrawal or depression, somatic complaints, and emotional reactivity; and externalizing problems, including symptoms of attention problems, and aggression. Accordingly, in the present study, for each child younger than 6 years of age, we computed scores for internalizing problems (36 items, Cronbach's $\alpha = .85$) and externalizing problems (24 items, Cronbach's $\alpha = .85$).

We used the school-age version of the CBCL (for ages 6-18) when the target child was older than 6 years of age ($n = 56$). This version was composed of 118 items that mothers responded whether the item described their child currently or within the past six months by rating the item on a 3-point Likert scale (from 0 = *not true* to 2 = *very true/often true*). From the scale, two broad dimensions of problem behaviors were calculated: Internalizing problems, including symptoms of anxiety or depression, withdrawal or depression, and somatic complaints; and externalizing problems, including symptoms of rule-breaking and aggressive behavior. For each child older than 6 years of age, we computed scores for internalizing (32

items, Cronbach's $\alpha = .82$) and externalizing problems (35 items, Cronbach's $\alpha = .89$).

As the number of items used in the calculation of internalizing and externalizing problem scores, hence, the minimum and maximum scores that children could obtain, were different in the preschool and school-age versions of the CBCL, we standardized the problem behavior scores to be used in further analysis.

Armed conflict experience. To assess the type and frequency of armed conflict events that children experienced, a questionnaire was administered to mothers. The questionnaire included two sections assessing children's exposure to conflict-related events and other experiences such as residence or school change, and separation. The first section included a selection of 14 events from the Childhood War Trauma Questionnaire (Macksoud, 1992), developed to measure the type and frequency of war experiences that Lebanese children were exposed to during the civil war, and three additional conflict-related events that could be common in the armed conflict zone in Turkey (i.e., exposure to tear gas, being forced to participate in the protests, and being intercepted by the armed forces while walking). Considering that a traumatic event might have been experienced in different levels (e.g., personal experience with a traumatic event, witnessing it, or learning about it; see the Life Events Checklist developed by Gray, Litz, Hsu, & Lombardo, 2004), we assessed children's experiences for each event on two exposure levels, as direct or indirect. Overall, the mothers reported for a total of 17 conflict-related events as to whether the target child was exposed to the event or not; and if exposed, whether the experience was direct (i.e., personal experience) or indirect (i.e., witnessing the event, or hearing that it happened to a close associate). Mothers rated the frequency of the exposure to the event on a 3-point Likert-type scale ranging from 1 = *once* to 3 = *very often*. From this section, we created a variable to indicate the exposure severity as 0 = *no exposure*, 1 = *indirect exposure*, 2 = *direct exposure*. Next, we created two 4-point scale variables for the frequency of indirect exposure and direct

exposure, ranging from 0 = *not applicable* (for those with no exposure) to 3 = *very often*. For each conflict-related event, we calculated an ‘indirect exposure’ and ‘direct exposure’ score as multiplying the frequency score by the exposure severity. Scores for indirect and direct exposure were then summed to obtain an overall exposure score for that particular event. For instance, a child who witnessed a conflict-related event a few times [2 (i.e., *a few times*) x 1 (i.e., *indirect exposure*) = 2] but did not personally experience the same event [0 (i.e., *not applicable*) x 2 (i.e., *direct exposure*) = 0] received a score of 2 for that event. The scores from conflict-related events were used in the calculation of an overall ‘armed conflict experience’ score.

In the second section, mothers provided information about their children's stressful experiences resulted from the armed conflict such as residence or school change, separation from parents or other close associates (e.g., siblings, friends, or relatives). If the child experienced the event, caregivers were asked to provide additional information regarding its frequency (e.g., “How many times did the child change residence?”). To be used in the calculation of the overall ‘armed conflict experience’ score, children were given scores with respect to their experiences of residence and school change (0 = *no change*, 1 = *once*, and 2 = *twice or more*), and separation from parents and other close associates (0 = *no separation*, and 1 = *separated*).

The overall ‘armed conflict experience’ score was calculated by summing the scores that children received from these two sections of the questionnaire, where higher scores indicated higher levels of armed conflict experience.

Maternal psychological distress. The Brief Symptom Inventory (SCL-90-R) developed by Derogatis and Melisaratos (1983) and adapted to Turkish by Dag (1991) was used to screen for psychological symptoms in mothers. The SCL-90-R consists of 90 items for broad categories of symptoms: Somatization, anxiety, obsessive-compulsive behavior,

depression, interpersonal sensitivity, hostility, phobic anxiety, paranoid ideation, psychoticism, and additional problems. Mothers rated themselves for each item on a 5-point Likert-type scale (0 = *never* to 4 = *always*). By adding up the scores of all items, we calculated overall psychological distress for each mother (Cronbach's $\alpha = .96$).

Procedure

After obtaining the approval of the University Institutional Review Board (IRB), data was collected at one time-point in 2017. We reached the participants via random house visits and exponential non-discriminative snowball sampling. Data was collected by the first author and research assistants who were native Kurdish-Turkish bilingual speakers and had previous experience in social or field studies. Before the field study, the assistants were given training for data collection by the first author.

All forms, scales, and tasks were translated from Turkish into the Kurdish language by a professional bilingual translator and then reviewed by three bilingual psychologists. Depending on the language preference of participants, Turkish or Kurdish version of the materials were administered. Seven mothers and two children preferred to complete the measures in Kurdish language, while the rest completed the measures in Turkish and asked once or twice for clarification in Kurdish language. Mothers were explicitly informed that they had the right to stop the interview at any time, avoid answering any question and to subsequently withdraw any data that they gave. After their oral consent was obtained, the forms and scales were administered to mothers. Children were asked for their assent, and then, administered the computerized tasks (lasting about 20-30 min), if possible in a separate room, or else in a quiet environment. In compensation, the mothers were provided 20 TRY (~5.5 USD) worth of shopping cards for each child they provided information.

Data Analysis Plan

The analyses proceeded in three stages. First, we examined descriptive statistics on

child outcomes: EF, internalizing problems and externalizing problems. Further, we calculated prevalence rate of problem behaviors in children. For this, separately for internalizing and externalizing problems, we obtained *T* scores of the raw scores obtained from the preschool and school-age versions of CBCL. Based on cut-off scores provided for a representative Turkish sample (Erol & Simsek, 2007), we obtained the percentages of children whose score fell within the normal, borderline or clinical range.

Second, we examined the associations between the child outcomes (i.e., EF, internalizing problems, externalizing problems) and possible risk factors (i.e., income, children's armed conflict experiences, maternal psychological distress). For this, we first computed Pearson product-moment correlation coefficients between the study variables. Because EF develops rapidly in early childhood (Blair & Raver, 2012), we computed partial correlations between EF and other study variables controlling for child's age. Then, we took the problem behavior scores as categorical to examine whether children who fell in normal, borderline and clinical range for internalizing and externalizing problems differed in EF, income, armed conflict experience, and maternal psychological stress using analyses of variance (ANOVA). Pairwise post-hoc comparisons were conducted using the Scheffe test.

Third, to address our research questions, we examined the relations among the risk factors (i.e., income, children's armed conflict experiences, maternal psychological distress) and child outcomes (i.e., EF, internalizing problems, externalizing problems) simultaneously and to test the hypothesized mediation models by computing path analyses. The analyses were performed using Mplus 6.12 (Muthén & Muthén, 2010). As several mothers provided information on two children, we controlled the cluster effect in the analysis by identifying family as the cluster unit. We evaluated fitting of the model regarding the following criteria: Model chi-square to be nonsignificant, RMSEA to be lower than .08 with 90%, CFI to be at or higher than .90, and SRMR to be less than .08 (Hu & Bentler, 1999). Bootstrapping with

1,000 samples was employed to test indirect effects, with any effect that did not contain the value of 0 deemed significant. Finally, post hoc power analyses were conducted to test statistical power of path models based upon RMSEA fit indices (Preacher & Coffman, 2006). For the analysis, alpha level (i.e., $p < .05$), degrees of freedom of the model, sample size, null RMSEA (i.e., H_0 RMSEA = .0), and alternative RMSEA (i.e., H_1 RMSEA = .08) were used.

Results

Executive Function and Problem Behaviors

As presented in Table 1, EF scores were overall low. No ceiling or floor effects were observed. Mothers reported moderate levels of internalizing and externalizing problems in their children. Based on the cut-off scores provided for a Turkish sample (see Erol & Şimşek, 2007), scores below the 84th percentile ($T < 60$) are considered in the *normal range*, those between the 84th and 90th percentile ($T = 60$ to 63) are considered in the *borderline range*, and whose scores are above the 90th percentile ($T > 63$) are in the *clinical range*. Accordingly, in our sample, 11.3% of children were in the clinical ($n = 13$) and 4.3% were in the borderline range ($n = 5$) for internalizing problems; and 9.6% of children were in the clinical ($n = 11$) and 5.2% were in the borderline range ($n = 6$) for externalizing problems.

Associations among Variables

Zero-order correlations (see Table 2) showed that child's age was significantly and positively associated with EF; but its correlations with internalizing and externalizing problems were not significant. Partial correlations revealed that after controlling for age, EF was negatively correlated with internalizing and externalizing problems, level of armed conflict experienced by children and maternal psychological distress. The partial correlation between EF and income was notable but nonsignificant ($p = .09$). The level of internalizing problems was positively correlated with armed conflict experience and maternal psychological distress; its correlation with income was nonsignificant but notable ($p = .09$).

Table 2

Zero-order and Partial Correlations Between Study Variables Controlling for Age (N = 115)

	Age	1	2	3	4	5	6
1. EF	.58***	-	-.24*	-.23*	.16 ⁺	-.24*	-.29**
2. Internalizing problems (z score)	-.04	-.22*	-	.44***	-.16 ⁺	.33***	.40***
3. Externalizing problems (z score)	-.10	-.24*	.45***	-	-.19*	.21*	.39***
4. Income	.01	.13	-.16 ⁺	-.19*	-	-.17 ⁺	-.25**
5. Armed conflict experience	.02	-.18 ⁺	.33***	.20*	-.17 ⁺	-	.24**
6. Maternal psychological distress	-.02	-.25**	.40***	.39***	-.25**	.24**	-

Note. Hyphens represent the diagonal. Below the diagonal, zero-order correlations are presented; above the diagonal, partial correlations controlling for child's age (in months) are presented.

⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

The level of externalizing problems was positively correlated with armed conflict experience and maternal psychological distress, and negatively correlated with income. Maternal psychological distress was negatively correlated with income and positively correlated with armed conflict experience, while income and armed conflict experience were marginally ($p = .06$) and negatively correlated.

We further examined whether children who fell in normal, borderline or clinical range for internalizing and externalizing problems differed in their EF scores, income, armed conflict experience, and maternal psychological distress. ANOVA results showed that children who fell in normal, borderline and clinical range for internalizing problems were similar in their EF, income, and armed conflict experience (F 's = 1.29 to 2.50, p 's *ns*); and that they slightly but significantly differed in maternal psychological distress, $F = 3.14$, $p = .047$, $\eta_p^2 = .05$. Post-hoc tests, on the other hand, did not reveal significant differences across the three groups. For externalizing problems, children who fell in normal, borderline and clinical range did not differ in any of the variables examined (F 's = 0.35 to 1.87, p 's *ns*).

Analysis of the Indirect and Direct Paths

Using path analyses, we investigated the associations of the risk factors (i.e., income, armed conflict experience, maternal psychological distress) with child outcomes (i.e., EF, internalizing problems and externalizing problems) in two models. In the first model, we examined the role EF played in mediating the paths from income and armed conflict experiences to internalizing and externalizing problems. The model included direct paths from income, armed conflict experience and EF to internalizing and externalizing problems, as well as direct paths from income and armed conflict experience to EF. Correlations between internalizing and externalizing problems as well as income and armed conflict were also included in the model. By adding a direct path from age to EF, the direct effect of age on EF was further controlled. In the second model, we tested the mediational role of maternal

psychological distress in the paths from income, armed conflict experience, EF to internalizing and externalizing problems. For this, we added maternal psychological distress to Model 1 with direct paths from income and armed conflict experience, as well as with paths to EF, internalizing problems and externalizing problems.

First model showed a perfect fit to the data, $\chi^2(4, N = 115) = 0.43$, *ns*, *CFI* = 1.00, *RMSEA* = .00 (90% *CI* = .00 to .00), *SRMR* = .01, and explained 14% of the variance in internalizing problems ($R^2 = .14$), 10% of the variance in externalizing problems ($R^2 = .10$), and 39% of the variance in EF ($R^2 = .39$). Analysis of direct paths (see Figure 1) showed that the level of internalizing problems was significantly predicted by armed conflict experience. The path from EF to internalizing problems was notable but nonsignificant ($p = .09$). The level of externalizing problems was marginally ($p = .06$) predicted by armed conflict experience and significantly predicted by EF. EF was significantly predicted by age and armed conflict experience. Income did not predict EF or internalizing and externalizing problems. As for the indirect paths (see Table 3 for the unstandardized estimates, standard errors, and 95% Confidence Interval); EF significantly mediated the link from armed conflict experience to internalizing problems (standardized estimate [*Std Est*] = .03) and to externalizing problems (*Std Est* = .03). The indirect paths from income to internalizing problems and externalizing problems through EF were nonsignificant.

When maternal psychological distress was added to the model, the results showed a perfect fit to the data, $\chi^2(5, N = 115) = 0.27$, *ns*, *CFI* = 1.00, *RMSEA* = .00 (90% *CI* = .00 to .00), *SRMR* = .01, and explained 23% of the variance in internalizing problems ($R^2 = .23$), 19% of the variance in externalizing problems ($R^2 = .19$), 41% of the variance in EF ($R^2 = .41$), and 10% of the variance in maternal psychological distress ($R^2 = .10$).

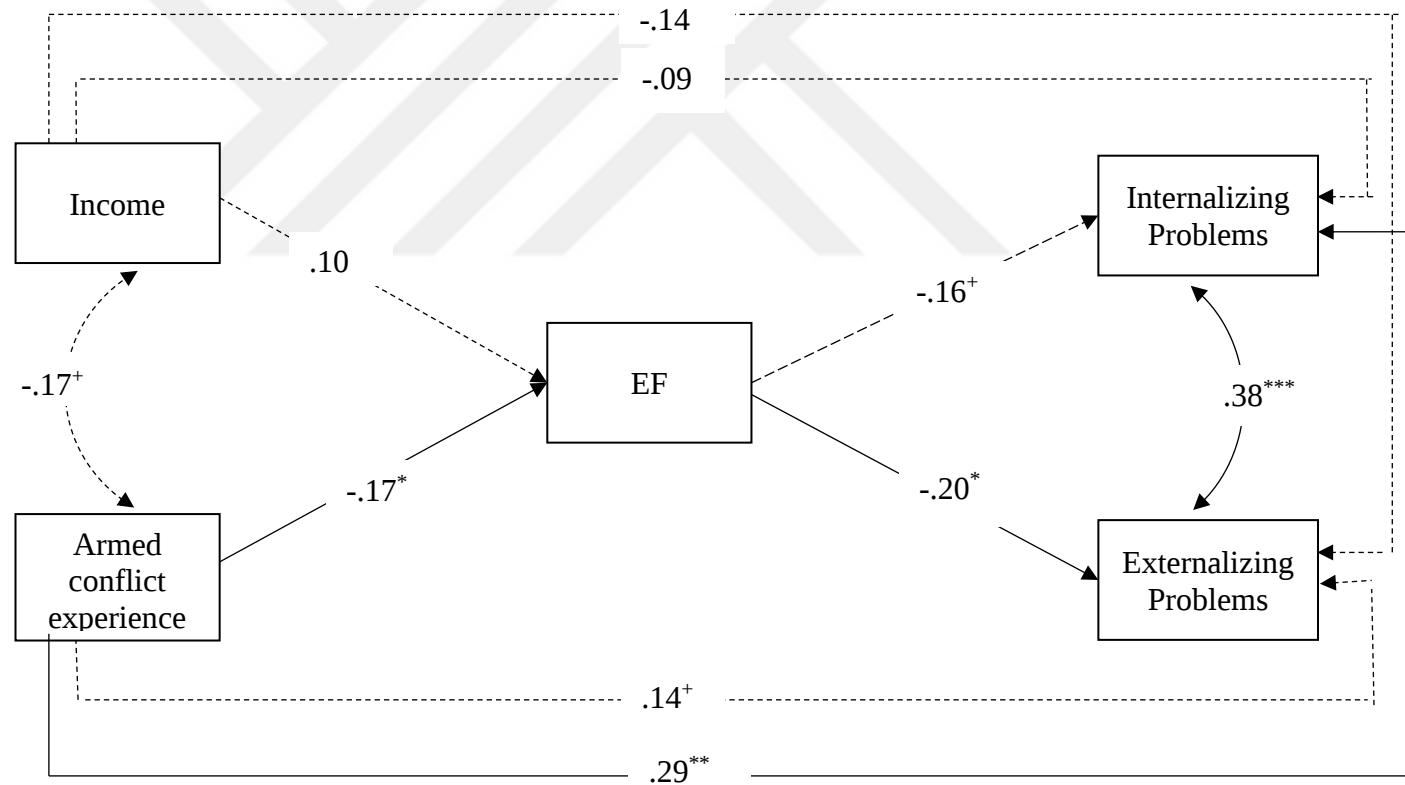


Figure 1. Standardized estimates of direct paths in Model 1, where EF operated as a single mediator, predicting internalizing and externalizing problems in children ($N = 115$). The dotted lines represent nonsignificant paths. ⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3

Unstandardized Coefficients of Indirect Paths (N = 115)

	Estimate	SE	Bias-Corrected Bootstrap 95% CI	
<i>Model 1</i>				
Income -> EF -> Internalizing problems	-.030	.030	[-.131	.009]
Income -> EF -> Externalizing problems	-.037	.033	[-.126	.009]
Armed conflict experience -> EF -> Internalizing problems	.002	.001	[.000	.005]
Armed conflict experience -> EF -> Externalizing problems	.002	.001	[.000	.005]
<i>Model 2</i>				
Income -> Maternal psychological distress -> Internalizing problems	-.131	.059	[-.283	-.041]
Income -> Maternal psychological distress -> Externalizing problems	-.134	.065	[-.329	-.039]
Armed conflict experience -> Maternal psychological distress -> Internalizing problems	.004	.002	[.001	.010]
Armed conflict experience -> Maternal psychological distress -> Externalizing problems	.004	.003	[.001	.012]
Income -> EF -> Internalizing problems	-.011	.019	[-.092	.012]
Income -> EF -> Externalizing problems	-.015	.025	[-.096	.020]
Armed conflict experience -> EF -> Internalizing problems	.001	.001	[.000	.004]
Armed conflict experience -> EF -> Externalizing problems	.001	.001	[.000	.004]
Income -> Maternal psychological distress -> EF	.168	.100	[.018	.429]
Armed conflict experience -> Maternal psychological distress -> EF	-.006	.004	[-.016	-.001]

Note. SE = Standard error. CI = Confidence interval.

Analysis of the direct paths (see Figure 2) revealed that the level of internalizing problems was significantly predicted by armed conflict experiences and maternal psychological distress, but not by income and EF. The level of externalizing problems was significantly predicted by maternal psychological distress, but not by the other variables. EF was significantly predicted by age, armed conflict experience and maternal psychological distress, but not by income. Income and armed conflict experience significantly predicted maternal psychological distress.

As presented in Table 3, the analysis of the indirect effects revealed that maternal psychological distress significantly mediated the path from income to internalizing problems (*Std Est* = -.07) and to externalizing problems (*Std Est* = -.07). The indirect paths from armed conflict experience to internalizing problems (*Std Est* = .06) and to externalizing problems (*Std Est* = .07) through maternal psychological distress were also significant. EF did not mediate the paths from income to internalizing problems and externalizing problems. The indirect paths from armed conflict experience to both internalizing problems (*Std Est* = .01) and externalizing problems (*Std Est* = .02) through EF were significant. Finally, maternal psychological distress significantly mediated the link from income to EF (*Std Est* = .04) and from armed conflict experience to EF (*Std Est* = -.04). In sum, maternal psychological distress fully mediated the links from poverty to EF, internalizing problems and externalizing problems, as well as the link from armed conflict experience to externalizing problems, and partially mediated the links from armed conflict experience to EF and internalizing problems.

Finally, post hoc power analyses (Preacher & Coffman, 2006) revealed that the statistical power was .44 and .49 for Model 1 and Model 2, respectively.

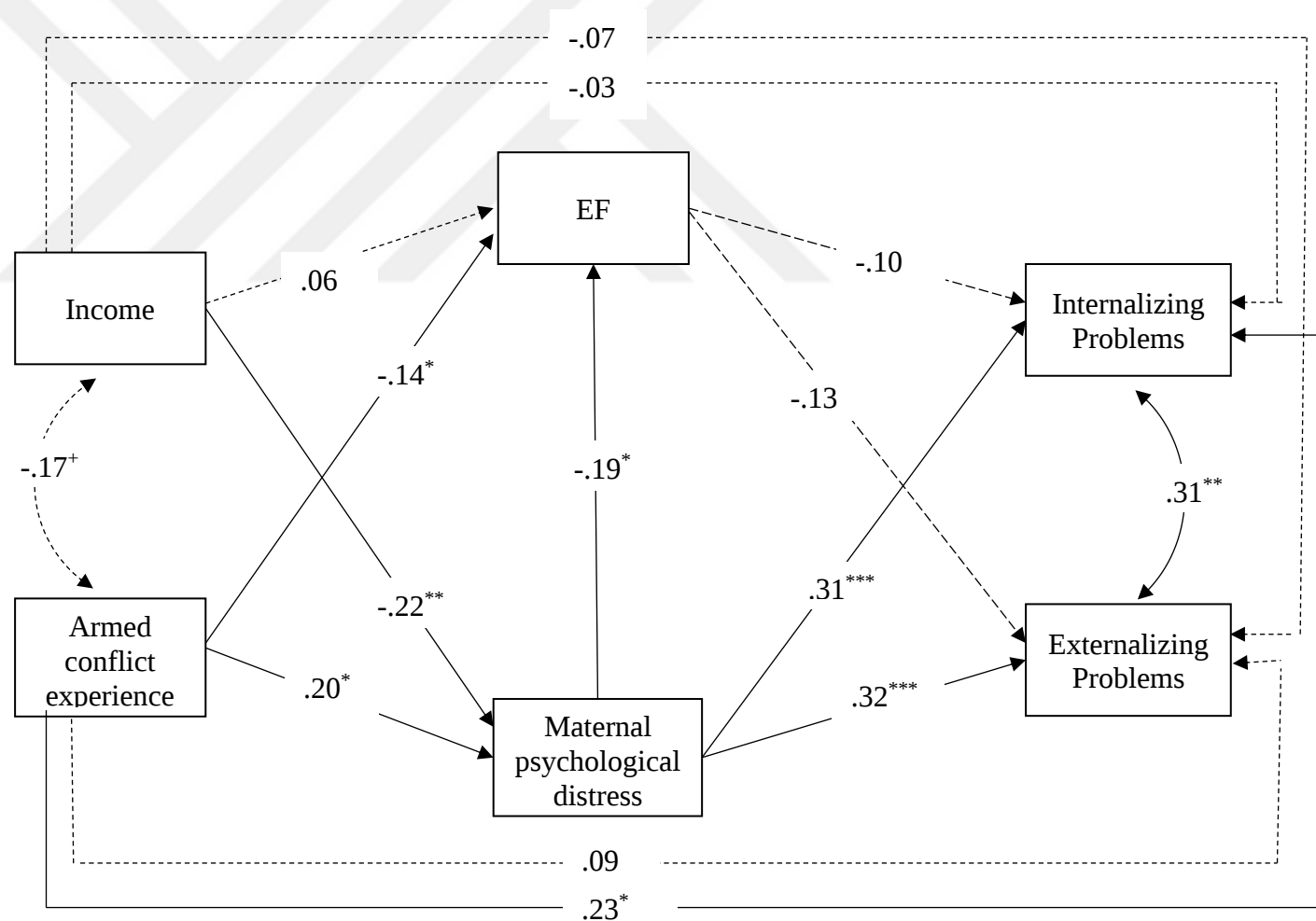


Figure 2. Standardized estimates of direct paths in Model 2, where maternal psychological distress was added, predicting internalizing and externalizing problems in children ($N = 115$). The dotted lines represent nonsignificant paths. ⁺ $p < .10$, ^{*} $p < .05$, ^{**} $p < .01$, ^{***} $p < .001$.

Discussion

The current study aimed to investigate the EF skills and problem behaviors in 3-to-8-year-old children living in the eastern cities of Turkey, where socioeconomical adversity, low-intensity armed conflict, and maternal psychological distress may pose a risk to optimal development and well-being in children. Notably, according to mother reports, children in our sample manifested low levels of internalizing and externalizing problems and had similar prevalence rates of clinical cases reported for a normative sample of 4 to 18 years old children in Turkey (11.2% for internalizing problems, 10.6% for externalizing problems; Erol, Kılıç, Ulusoy, Keçeci, & Şimşek, 1997). Our findings showed that children scored low in the EF tasks, and further, lower EF was associated with higher internalizing and externalizing problems. In line with the literature (e.g., Blair, 2010), these findings suggested that lower ability in self-regulation (indicated as lower EF scores) might be one of the factors leading to increased levels of internalizing and externalizing problems in children.

An examination of the role of potential risk factors (i.e., poverty, armed conflict and maternal psychological distress) in child outcomes showed that, consistent with the literature (e.g., Hughes et al., 2013; Kara & Selçuk, 2019; Qouta et al., 2008), EF was negatively and problem behaviors were positively associated with armed conflict experiences and maternal psychological distress. However, child outcomes were only marginally or weakly associated with poverty, indicated as very low levels of income. This was contradictory both to extant literature as well as to our expectations. Decades of research showed that poverty is a major risk factor for EF development and psychological well-being in children (e.g., Aber et al., 1997; Blair, 2010; Huston et al., 1994; Raver et al., 2012) through malnutrition (Strupp & Levitsky, 1995), low parental investment (Zill et al., 1991), increased parental stress and psychological problems (McLoyd et al., 1994), child abuse and neglect (Gillham et al., 1998), and harsh or unresponsive parenting (McLeod & Shanahan, 1993). These associates of

poverty are linked with poor EF and behavioral outcomes in children (e.g., Bradley et al., 2001; DePrince et al., 2009; Hughes et al., 2013). It is likely that, this unexpected finding in our study stemmed from very low variance in household income: The vast majority (97.8%) of families in our sample was living in extreme poverty. Such low variance does not allow investigating the role of poverty in child outcomes reliably (Tabachnick & Fidell, 2012). However, this result represents the general profile of the region. Of course there were families with higher income that we could not reach in the region, but as mentioned earlier in the introduction, eastern cities of Turkey have been shown to have the lowest rates of income (Turkish Statistical Institute, 2018a) and highest rates of child poverty reaching 55% (Gürsel et al., 2016). Even though our findings did not show the direct role of poverty in child outcomes in our sample, they still revealed the indirect role of poverty on EF and internalizing and externalizing problems through maternal psychological distress.

A major question of the current study was the role of EF skills in problem behaviors in relation to the potential risk factors (i.e., low-income and armed conflict experience). In the literature, EF is proposed as the cognitive component of self-regulation (Rueda et al., 2005), and a mechanism linking exposure to chronic stress to poor behavioral outcomes (e.g., Blair, 2010; Evans & Kim, 2012). The current study supported this argument and revealed that EF skills mediated the link from armed conflict experience to externalizing problems. However, after adding maternal psychological distress as the second mediator in the model, the link between EF and problem behaviors, and in turn, the mediating role of EF, became nonsignificant. Instead, maternal psychological distress mediated the links both from poverty and armed conflict experience to internalizing problems and externalizing problems, as well as to EF. This showed the important role played by maternal psychological distress both in EF skills and problem behaviors in children living in a low-intensity armed conflict zone under poverty. The association between maternal psychological distress and poverty is very

well established in the literature. Poverty, as increasing financial insecurity and economic pressure in parents, leads to psychological problems and distress in parents (e.g., McLoyd et al., 1994). An armed conflict context also leads to great worry in mothers due to their children's exposure to violent events (e.g., Hock et al., 2004), as well as psychological symptoms in mothers (e.g., Qouta et al., 2008). Although our study was cross-sectional, the findings suggest that maternal psychological distress, in turn, might be the mechanism that poverty and armed conflict exerted their effects on children's EF skills as well as on psychological well-being by increasing the likelihood of child maltreatment (e.g., Gillham et al., 1998), harsh or unresponsive parenting (Gündüz et al., 2015; McLeod & Shanahan, 1993), or decreasing supportive caregiving (Blair, 2010). However, it must be acknowledged that our results might be influenced by shared rater variance as mothers reported both for maternal psychological distress and child problem behaviors, while EF was measured by individual assessments. Even though there was a significant association between EF and maternal psychological distress, it is still possible that mothers' psychological distress might be associated with reporting more negative behavior in children. Assessment of the problem behaviors from other respondents such as teachers could help us to provide stronger arguments; however, considering the age range of our sample (3 to 8 years) and low attendance to preschool education in the region, using teachers as informants was not possible in our study. Indeed, 44% of children ($n = 54$) in our sample were not enrolled in a school. Nevertheless, mothers are reported to be reliable informants for the assessment of children's problem behaviors, and their responses are often correlated with the responses collected from teachers (Achenbach, Dumenci, & Rescorla, 2002).

It should be noted that, rather inconsistent with our other findings showing significant associations between problem behaviors and other study variables, we did not find significant differences across children who fell in normal, borderline or clinical range for problem

behaviors in their EF skills, income, armed conflict experience, and maternal psychological distress. However, due to the very low size in borderline and clinical groups, these comparisons were not reliable (Tabachnick & Fidell, 2012). On the other hand, by using path analysis, we were able to examine the relations among the study variables concurrently, as well as to predict child outcomes based on changes in risk factors. Another noteworthy finding was that indirect paths from armed conflict experience to internalizing problems through EF in Model 1, and from armed conflict experience to both internalizing and externalizing problems through EF in Model 2 were significant, even though the direct path from EF to internalizing problems in Model 1 was marginal, and to internalizing and externalizing problems in Model 2 were nonsignificant. Although it is possible to observe a significant indirect effect regardless of whether one of the direct paths (e.g., from an independent variable to mediator variable or from mediator variable to dependent variable) is nonsignificant because the indirect effect is a simple multiplication of the path coefficients (see Hayes, 2017), our models did not show mediational role of EF for given variables. Another limitation of the current study is that our models showed small statistical power, and future studies should recruit bigger samples.

This, to our knowledge, is the first study exploring the EF skills in children living in a zone of low-intensity armed conflict in relation to factors posing a risk to normative development. Thereby, this research fills a significant gap in the literature. Furthermore, the present study has important implications for EF skills and psychological well-being of children in Turkey. Exposure to adversity in early childhood might cause substantial individual costs such as non-optimal EF development (Raver et al., 2013), and relatedly poor social and emotional competence and self-regulation (Blair, 2010; Gündüz et al., 2015), and poor psychological adjustment (Hughes & Ensor, 2008), as well as lack of school readiness and poor academic performance, both leading to low socioeconomic status in adulthood

(Grantham-McGregor et al., 2007). Identifying risk factors and understanding the mechanisms through which these factors exert their effect on the development and well-being of youth is critical for the formulation of prevention or remediation strategies and policies. Such an endeavor would also contribute to the society by promoting healthy generations and reducing economic burden for special programs and treatments.

Strategies for achieving this include, but are not limited to, planning evidence-informed prevention and intervention programs to support young children's development and well-being at the individual as well as family level. Our findings showed that maternal psychological distress was a robust predictor of lower EF skills and higher levels of problem behaviors. Thus, interventions focused on building parental well-being and parenting competence is essential to promote EF skills and well-being in children. Beyond intervention programs, policies hold great potential for transforming the lives of people living in the east of Turkey. Social policies can be implemented to increase parental investment and care for their young children; whereas education policies can be shaped to increase the weight placed on school climates for promoting EF skills in children and on access to preschool education.

This study aimed to provide a comprehensive understanding on how risk factors exerted their effects on EF skills and psychological well-being in children living in a low-intensity armed conflict zone under poverty and highlighted the need for interventions and policies to promote EF skills and well-being in children living in the east of Turkey. However, presenting a cross-sectional data, our research is limited to provide evidence for the causal relationships among the variables. In future work, longitudinal examination of EF and psychological well-being in children can provide more conclusive observations. It is also worth noting that our model accounted for only a small part of the variance in EF skills and problem behaviors in children. There are other potential factors that can explain these child outcomes such as temperament (Raver et al., 2013), child-rearing practices (Bryant et al.,

2018; Gündüz et al., 2015), family violence (DePrince et al., 2014) and the environment for intellectual stimulation (Fay-Stammbach et al., 2014; Walker et al., 2007). Investigating such factors may provide a more comprehensive picture to tailor best intervention programs, and potentially policies, to promote EF skills and well-being in these children.



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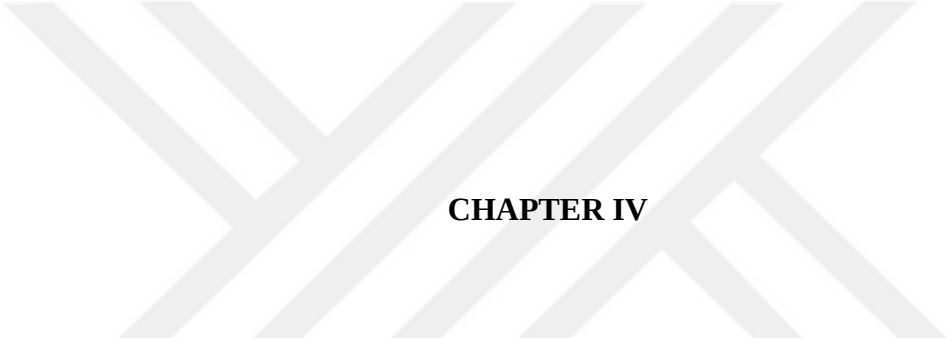
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CHAPTER IV

CUMULATIVE RISK AND PROMOTIVE FACTORS PREDICT EXTERNALIZING BEHAVIOR IN ADOLESCENTS IN A LOW-INTENSITY ARMED CONFLICT ZONE

Kara, B. & Selçuk, B. (2019). Cumulative risk and promotive factors predict externalizing behavior in adolescents in a low-intensity armed conflict zone. Manuscript submitted to *American Journal of Community Psychology*.

Abstract

Adolescent externalizing behavior, including aggressive, violent and rule-breaking behavior, is often considered as a public health problem. Resilience theory posits models to understand how risk and promotive factors are associated with externalizing behavior. The current study examines the association between the cumulative risk and promotive factors and externalizing behavior among adolescents living in eastern Turkey and tests compensatory and risk-protective models of resiliency in this sample. Data was collected from 215 adolescents (122 girls) aged 11 to 15 years ($M = 12.92$, $SD = 1.52$) and their parents. From multiple ecological domains, risk factors included armed conflict experiences, conflict-unrelated stressful experiences, emotional abuse, physical abuse, low income, and parental psychological distress; and promotive factors included positive characteristics, social competence, school competence, and support in the family. Structural equation models revealed that cumulative risks predicted more externalizing behaviors ($\beta = .43$), and cumulative promotive factors predicted less externalizing behaviors ($\beta = -.21$). Promotive factors moderated the association between risks and externalizing behavior, supporting risk-protective models. These findings can be used for developing prevention and intervention programs to build resilience in adolescents living under multiple risks.

Keywords: adolescence, externalizing behavior, risk factors, promotive factors, resilience, armed conflict

Introduction

Externalizing behavior refers to a range of aggressive and rule-breaking behavior, including physical and verbal aggression, cruelty, defiance, lying and criminal acts (Hann, 2001). Adolescent externalizing behavior, therefore, is a major risk factor for juvenile delinquency, violence, and later criminal behavior in adulthood (Farrington, 1989), and considered as a public health problem (Hann, 2001). For this, it is essential to identify and investigate factors and processes that contribute to externalizing behavior. In this regard, resilience theory provides a conceptual framework for studying how adolescents may overcome the negative outcomes after exposure to risk and for understanding the relation between risk and promotive factors in this process (Garmezy, Masten, & Tellegen, 1984; Fergus & Zimmerman, 2005). Hence, in the current study, we aimed to examine the association between the cumulative risk and promotive factors and externalizing problems and test the models of resiliency in a sample of adolescents living in the east of Turkey under substantial poverty and low-intensity armed conflict.

Resilience Theory

After exposure to adverse life experiences, adolescents may manifest distress responses and, in some cases, develop prolonged psychological problems including externalizing behavior (Masten, 2001; Masten & Narayan, 2012). Despite exposure to adverse life experiences, however, not all children develop psychological problems. Instead, many adolescents overcome the negative effects of adversity and cope successfully with traumatic experiences demonstrating a capacity for recovery and resilience (Garmezy et al., 1984). Resilience can be described as a dynamic process that leads to “good outcomes in spite of serious threats to adaptation or development” (Masten, 2001, p. 228). The great deal of variability in adolescents' responses to adversity suggests that specific individual and contextual factors may influence the relation

between adverse experiences and the associated outcomes. Hence, a wealth of research focuses on a variety of risk and promotive factors that shape the pathway to resilience (Masten & Narayan, 2012). Among them, risk factors lead to a higher likelihood of negative outcomes, whereas promotive factors are linked with the assets and resources that enhance positive and healthy development (Fergus & Zimmerman, 2005).

The resilience theory posits conceptual models to provide an understanding how promotive factors may operate after exposure to risk to reduce negative outcomes (Fergus & Zimmerman, 2005; Garmezy et al., 1984). Among them, the compensatory model implies that promotive factors directly counteract and compensate for the effects of risk exposure. Another model of resiliency is the risk-protective model, where promotive factors operate as *protective* and interact with risk factors to buffer or moderate their negative effects on adolescent behavior either by neutralizing the effects of risk (i.e., protective-stabilizing model) or by diminishing the association between risk and outcome (i.e., protective-reactive model).

Risk and Promotive Factors for Externalizing Behavior

Research on adolescent externalizing behavior identifies a number of risk and promotive factors present at the individual, family, peer, and community level that compensate for or protect against risks for externalizing behavior. At the individual level, exposure to violence in the family (e.g., physical abuse; Kaplan, Pelcovitz, & Labruna, 1999), at the neighborhood (e.g., neighborhood violence; Duncan, 1996) and in the broader community (e.g., political violence and armed conflict; Qouta, Punamaki, Miller, & El-Sarraj, 2008) or to other traumatic experiences (e.g., life-threatening accidents or disasters; Ford, Chapman, Connor, & Cruise, 2012) increase the likelihood of externalizing behavior in adolescents. On the other hand, social competence (Bornstein, Hahn, & Haynes, 2010;), self-regulation (Doan, Fuller-Rowell, &

Evans, 2012), empathy and prosocial behavior (Hahn, 2001), school achievement and religiosity (Resnick, Ireland, & Brorowsky, 2004), higher sense of purpose in life (DuRant, Cadenhead, Pendergrast, Slavens, & Linder, 1994), and hope (Stoddard, McMorris, & Sieving, 2010) predict less violent behavior in youth.

At the family level, several factors have been shown to be associated with externalizing behavior in adolescents. Parental psychological symptoms (van der Laan, Veenstra, Bogaerts, Verhulst, & Ormel, 2009) and harsh or unresponsive parenting (Bøe et al., 2013; Conger, Ge, Elder, Lorenz, & Simons, 1994) have been identified as risk factors for externalizing behavior. On the other hand, parental responsiveness (Doan et al., 2012), warmth (Scaramella, Conger, & Simons, 1999), monitoring (Deković, 1999) and support (Schofield et al., 2011) as well as good family functioning (van der Laan et al., 2009) and family connectedness and secure attachment (Deković, 1999; Resnick et al., 2004; Stoddard et al., 2010) have been deemed promotive.

Peer influences also have a role in externalizing behavior in adolescents. Research showed that peer rejection (Hahn, 2001) and relationship with delinquent peers (Deković, 1999) increased the likelihood of externalizing behavior, whereas involvement with prosocial peers led to more positive behavior (Resnick et al., 2004).

At the broader social environment, contextual and community-related factors may also have an influence on adolescent externalizing behavior. Armed conflict context, for instance, creates a culture of violence (Fernando, Miller, & Berger, 2010) and places youth at risk for increased levels of externalizing behavior (Qouta et al., 2008). Similarly, poverty as well as neighborhood violence and disorganization increase the likelihood of externalizing behavior (Brooks-Gunn & Duncan, 1997; Hahn, 2001). Furthermore, armed conflict and poverty often increase the frequency or intensity of other risk factors (e.g., traumatic experiences) and decrease

the opportunities for or availability of promotive factors (e.g., parental monitoring, hope) both at the individual and family level (e.g., Brooks-Gunn & Duncan, 1997; Conger et al., 1994; Fernando et al., 2010), which would otherwise help youth overcome the negative effects of risk.

While the studies mentioned above often investigated risk and promotive factors singularly, a few studies further examined the influence of risk and promotive factors cumulatively and tested the models of resiliency. Research consistently shows that exposure to multiple risk factors may lead to greater levels of negative outcomes, indicating a cumulative risk effect (e.g., Deković, 1999; Fergus & Zimmerman, 2005; Stoddard et al., 2012). However, there is more variation in findings regarding the relation between risk and promotive factors, and thus, in pathways to resilience. For instance, examining the cumulative risk and promotive factors for internalizing and externalizing problems in adolescents aged from 12 to 18, Deković (1999) reported support for the compensatory model for internalizing problems but not for externalizing problems, and found no evidence for the risk-protective model for either problem behaviors. In another study, van der Laan et al. (2009) reported support only for the compensatory model in delinquency in early adolescence, but not for the risk-protective model. Stoddard et al. (2013), on the other hand, reported that promotive factors both compensated for (i.e., the compensatory model) and protected against (i.e., the risk-protective model) violent behavior in a sample of adolescents aged from 14 to 18 with reported history of violent acts. In another study, Stoddard, Zimmerman and Bauermeister (2012) studied violent behavior in 14-to-18-year-old adolescents and found support for the risk-protective model of resiliency. Altogether, these findings highlighted that resilience can be context-specific and shaped by multiple risk and promotive factors, which often influence each other.

Context in the East of Turkey

Since the mid-1980s, the eastern part of Turkey has been challenged with a low-intensity armed conflict between the Turkish state and the Kurdish armed forces. In the early 2000s, the conflict had already resulted in at least 35 thousand deaths (Human Rights Inquiry Committee of the Grand National Assembly of Turkey, 2013) and displacement of more than 1 million civilians (Hacettepe University Institute of Population Studies, 2006). The following period of ceasefires and negotiation process failed to serve for lasting peace, and the conflict reignited in full force in July 2015. In the following one-year period, 1.67 million residents living in nine cities were under the influence of the battles and open-ended curfews, which sometimes lasted for consecutive months (Human Rights Foundation of Turkey -HRFT, 2016). Furthermore, 323 civilians (79 children) died (HRFT, 2016) and 2,040 civilians were wounded (Office of the United Nations High Commissioner for Human Rights -OHCHR, 2016) during this period. Extensive damage to property, including housing, business, and public buildings because of heavy weaponry use were also reported (OHCHR, 2016). Overall, education was disrupted in 1,5 thousand schools, affecting 325 thousand students and 17 thousand teachers in the region during the Fall semester in 2015 ("Because of the curfews", 2015).

Beyond political violence, people living in the east of Turkey have been challenged with substantial socioeconomical underdevelopment. The eastern cities of Turkey hold the lowest rates of urbanization, household wealth, educational attainment and literacy, and highest rates of fertility and early childhood mortality (Hacettepe University Institute of Population Studies, 2014) as well as the lowest rates of household income (Turkish Statistical Institute, 2017) and highest rates of child poverty reaching up to 55% (Gürsel, Uysal, & Kökkızıl, 2016) in Turkey.

This brief summary shows that adolescents in the east of Turkey are under the risk of developing immediate and prolonged psychological difficulties in relation to the adversities they

are exposed. Within this context, Kara and Selçuk (2019) further showed that armed conflict and poverty were associated with increased levels of violence in the family, which altogether led to higher levels of emotional and behavioral problems in youth.

Current Study

Literature summarized above shows that a wide range of risk and promotive factors are involved in externalizing behavior in adolescence. These factors can be individual characteristics or experiences, parent- or family-related factors, or conditions present in the community. However, most of these studies either focused on a single risk or promotive factor or examined multiple factors separately while regarding only specific ecologic domains (i.e., individual, family or community). On the other hand, adolescents are often exposed to multiple risks, and they have multiple assets and sources, and these factors are not necessarily independent but rather influence each other (Fergus & Zimmerman, 2005). Therefore, it is crucial to place emphasis on the cascading effect of risks and promotive factors in resilience process (Masten, 2001). Resilience research further shows that findings from a particular context or population may not always apply to another context or population (Fergus & Zimmerman, 2005). That is, resilience is often context- and content-specific, and identifying a universal set of promotive factors is difficult. Moreover, different types of risk may be responsive to different assets and resources. Therefore, identifying risk and promotive factors within various ecological domains in a particular context and examining their cumulative effects would then provide a rich understanding of resilience processes.

Adolescents living in the east of Turkey have been facing various challenges, yet limited studies investigated their psychological adjustment in relation to their adverse experiences. Furthermore, to our knowledge, their resilience has never been studied. Therefore, the current

study aimed to examine the association between the cumulative risk and promotive factors and externalizing problems and test the compensatory and risk-protective models of resiliency in this sample. We hypothesized that the cumulative risks would be positively associated with externalizing behavior in adolescents, whereas the cumulative promotive factors would be negatively associated with such behavior. We further predicted that cumulative promotive factors would compensate for and protect against risks for externalizing behavior.

Method

Participants

Data was collected from 202 households in two conflict-affected cities of Turkey. Participant selection criteria were 1) to have a child between the ages of 11 and 15 in the household, and 2) the child not having a clinically diagnosed developmental disorder (e.g., cognitive impairment, autistic spectrum disorder). In 189 households, only one child met the selection criteria, while in 13 households, we collected data for two children meeting the criteria. In total, the sample included 215 adolescents (122 girls) aged 11 to 15 years ($M = 12.92$, $SD = 1.52$) and their parents (189 mothers, one father, five close relatives). At the time of data collection, 178 adolescents (82.8%) were in grades ranging from 3rd to 11th, whereas 22 adolescents (10.2%) were not enrolled in a school temporarily due to the conflict, and 15 (7%) were school dropouts.

In terms of family composition, 93% of the participants came from intact families, 2.8% had separated or divorced parents, and 4.2% had lost their fathers. Number of siblings ranged from 0 to 13 ($M = 4.18$, $SD = 2.06$). The household size ranged from 2 to 17 ($M = 7.50$, $SD = 2.47$); in 23.6% of the households, close relatives were living with the nuclear family. In 57.6% of the families, the Kurdish language was reported as the primary language spoken in the

household, while Turkish was also spoken; and in 18.2% of families, Turkish was the primary language, while Kurdish was also spoken. For 19.7% of families, Kurdish was the only spoken language within the family, and for 4.5%, Turkish was reported as the only language spoken.

The families were from very disadvantaged socioeconomic backgrounds. Fifty-nine percent of the mothers and 16.8% of fathers were illiterate, 11.8% of mothers and 13.6% of fathers were literate but did not complete primary school, 24.6% of mothers and 45.1% of fathers completed primary school, 3.1% of mothers and 15.2% of fathers completed secondary school, 1.5% of mothers and 7.6% of fathers completed high school, and none of the mothers but 1.6% of fathers had a university degree. The vast majority of mothers (95.9%) was unemployed; only three (1.5%) had part-time or seasonal, and five (2.6%) had full-time jobs. Among fathers, 43.6% was unemployed, 23.2% had part-time/seasonal jobs, 30.4% had a full-time job, and five (2.8%) were retired. Monthly household income was very low: For 78.5% of the families, the monthly income was below the minimum wage (1,300 TRY; ~430 USD), 20% had a monthly income ranging between 1,300 and 2,800 TRY (~430 and 925 USD), two families (1%) had an income ranging between 2,801 and 4,800 TRY (~925 and 1,590 USD), and one family (0.5%) had an income ranging between 4,801 and 7,300 TRY (~1590 and 2,415 USD). At the time of data collection, the poverty line calculated for a family of four was 5,693 TRY (~1,885 USD; Turkish Statistical Institute, 2018), and incomes 50% lower than the poverty line (i.e., 2,847 TRY; ~942 USD) is considered as extreme poverty (see Aber, Bennett, Conley, & Li, 1997). Based on these definitions, the vast majority (98.5%) of families in our sample were living in extreme poverty, while the rest (1.5%) were living in poverty.

Measures

Adolescents completed questionnaires, where they provided information about

demographic variables and a range of risk and promotive factors. Parents provided information about the level of externalizing behavior of the adolescents and their own psychological distress. Table 1 presents descriptive statistics and a sample item of each variable.

Demographic form. A demographic form was used to obtain information about the adolescent (age, gender, education, and the number of siblings), parents (education, occupation, and marital status), and the household (household size). The education level of the parents was measured on an 8-point Likert-type scale ranging from 1 = *illiterate* to 8 = *has a graduate degree*.

Externalizing behavior. The Turkish version of (Erol & Şimşek, 2007) the Child Behavior Checklist/6-18 (Achenbach and Rescorla, 2001) was used to measure externalizing behavior. For a total of 35 items assessing rule-breaking and aggressive behavior, parents rated their children on a 3-point Likert-type scale ranging from 0 = *not true* to 2 = *very true/often true* as to whether the item describes the adolescent now or within the past six months. An externalizing behavior score was calculated by summing scores from 35 items, (Cronbach's $\alpha = .91$).

Risk and promotive factors. Cumulative measures of risk and promotive factors included individual characteristics and experiences, parental/familial influences, and contextual factors. Based on the previous literature, six variables were selected as risk factors and four variables as promotive factors. Risk factors included armed conflict experiences, conflict-unrelated stressful experiences, physical abuse, low income, and parental psychological distress. Promotive factors included positive characteristics, social competence, school competence, and support in the family.

Table 1

Descriptive Statistics for Risk and Promotive Factors

Factors	<i>M</i>	<i>SD</i>	Min	Max	Sample Item
Externalizing behavior (0-70)	12.45	10.17	0	56	Cruelty, bullying, or meanness to others.
<i>Risk</i>					
Armed conflict experience (0-150)	18.69	9.93	0	65	Have you ever directly (i.e., personally) or indirectly (i.e., by witnessing or hearing) experienced an attack on school? If experienced, what is the frequency of such event?
Conflict-unrelated stressful experience (0-45)	1.94	3.22	0	22	Have you ever directly (i.e., personally) or indirectly (i.e., by witnessing or hearing) experienced a traffic accident? If experienced, what is the frequency of such event?
Physical abuse (0-2)	0.11	0.16	0	1	Someone in my family beat me.
Low income (1-8)	7.78	0.47	5	8	Monthly household income [reverse-scored]
Parental psychological distress (0-4)	1.49	0.68	0.09	3.25	Nervousness or shakiness inside
<i>Promotive</i>					
Positive characteristics (0-2)	1.44	0.47	0	2	I am pretty honest.
Social competence (0-2)	1.48	0.41	0.29	2	I like to help others. How do you get along with your parents?
School competence (0-3)	1.69	0.71	0	3	Success in mathematics
Support in family (0-2)	1.54	0.54	0	2	When I am sad or crying, somebody in my family takes care of me.

Among the risk factors, armed conflict experiences were assessed with 19 items from a questionnaire developed to obtain information about children's direct and indirect exposure to armed conflict events in Turkey as well as the frequency of the exposure (Kara & Selçuk, 2019). Conflict-unrelated stressful experiences were assessed with five items from the Life Events Checklist (Gray, Litz, Hsu, & Lombardo, 2004) that adolescents indicated whether they were indirectly or directly exposed to an event (e.g., traffic accident, natural disaster), and if so, they rated the frequency of the exposure. The level of armed conflict experiences and conflict-unrelated stressful experiences were calculated based on the sum of weighted scores (i.e., exposure level [0 = *no experience*, 1 = *indirect experience*, 2 = *direct experience*] x frequency of exposure [0 = not applicable, 1 = *one time*, 2 = *a few times*, 3 = *very often*]) obtained for indirect and direct experiences (for similar procedures, see Kara & Selçuk, 2019), with higher scores indicating higher levels of experience. Cronbach's alphas for armed conflict and conflict-unrelated stressful experiences were .79 and .63, respectively. Physical abuse was assessed with 12 items (Cronbach's $\alpha = .75$) from the Child Abuse Screening Questionnaire (Atamer, 2005) which were rated on a 3-point scale ranging from 0 = *never* to 2 = *always*. The final score was calculated by taking the average of corresponding items, where higher scores indicated higher levels of abuse. Income was rated on an 8-point scale ranging from 1 = *below 1,300 TRY* (~430 USD) to 8 = *above 18,001 TRY* (~5,960 USD). The scale was then reverse-scored, with higher scores indicating lower levels of income. Parental psychological distress was measured with 90 items (Cronbach's $\alpha = .97$) from the Brief Symptom Inventory developed by Derogatis and Melisaratos (1983; adapted to Turkish by Dag, 1991) rated on a 5-point scale ranging from 0 = *never* to 4 = *always*. The final score was calculated by taking the average of all items, where higher scores indicated higher levels of distress.

Among the promotive factors, positive characteristics, social competence and school competence was measured by using the Turkish version (Erol & Şimşek, 2007) of Youth Self-Report (YSR; Achenbach and Rescorla, 2001). From the *positive qualities* subscale of the YSR, we used five items (Cronbach's $\alpha = .73$) as to assess various positive characteristics in adolescents such as honesty, openness to experience, and ability to protect own's rights, which were rated on a 3-point scale ranging from 0 = *not true* to 2 = *very true/often true*. A positive characteristics score was calculated by averaging scores of these items, with higher scores indicating higher levels of positive characteristics. We used other five items of the *positive qualities* subscale in the assessment of social competence, such as prosocial behavior and being a good friend, rated on a 3-point (ranging from 0 = *not true* to 2 = *very true/often true*) scale, as well as two items from the *social competence* subscale of the YSR, rated on a 3-point (ranging from 0 = *bad* to 2 = *very good*) scale. For a total of seven items, the internal consistency for social competence was .72. The final score was calculated by averaging the scores from the corresponding items, where higher scores indicated higher social competence. School competence was assessed the school competence subscale of the YSR to assess competence in four academic studies (Cronbach's $\alpha = .97$) such as mathematics and social sciences, which was rated on a 4-point scale ranging from 0 = *bad* to 3 = *very successful*. The final score was calculated by taking the average of the items, with higher scores indicating higher school competence. Finally, the last promotive factor, support in the family was assessed with five items (Cronbach's $\alpha = .91$) from the Child Abuse Screening Questionnaire (Atamer, 2005) rated on a 3-pt Likert scale ranging from 0 = *never* to 2 = *always*. The final score was calculated by averaging the items, where higher scores indicated higher levels of support in the family.

To use in further analysis, we calculated the standardized scores (z-scores) of the risk and

promotive factors. After the standardization, internal consistency was .64 among the risk factors and .60 among the promotive factors, which were acceptable considering the item sizes (see Cortina, 1993).

Procedure

After the approval of the University Institutional Review Board (Protocol No: 2016.080.IRB3.051), data was collected at a single time point in 2016, following an intense one-year period of combat and curfews. Random house visits, as well as exponential non-discriminative snowball sampling, were used to reach the participants. The first author and research assistants collected data via face-to-face interviews. The research assistants were native Kurdish-Turkish bilingual speakers who had previous experience in social/field studies for data collection. While the study material was in Turkish, the assistants administered them in the language that the participant preferred. For two parents, the measures were orally translated to the Kurdish language, whereas the other participants completed the measures in Turkish. Before the field study, the assistants were trained on data collection by the first author, and they were provided with a guideline and common terminology for simultaneous Kurdish translations.

After obtaining parents' oral consent and adolescents' assent, forms and scales were administered to the adolescents and parents in a silent and secluded environment. Participants were provided with the right to stop the interview anytime, reject answering any questions, and to subsequently withdraw any data that they gave. In compensation, the parents were given 20 TRY (~6.5 USD) worth of shopping cards for each child we collected data.

Data Analysis Plan

We first examined the descriptive statistics on externalizing behavior and calculated the prevalence rate of externalizing behavior among adolescents. For this, based on *T* scores in our

sample and the cut-off scores provided for a representative Turkish sample (Erol & Simsek, 2007), we calculated the percentages of adolescents whose score fell within the normal, borderline or clinical range.

Then, to address our research questions, we used structural equation modelling (SEM) using Mplus 6.12 (Muthén & Muthén, 2010) to simultaneously examine the associations among the cumulative risk and promotive factors and externalizing behavior and test the compensatory and risk-protective model of resiliency. We utilized maximum likelihood estimation for parameters. As we had several siblings in our sample, we controlled the cluster effect in the analysis by identifying family as the cluster unit (number of clusters = 202). The model consisted of two latent constructs and 10 observed variables. The indicators of cumulative risk were armed conflict experiences, conflict-unrelated stressful experiences, physical abuse, low income, and parental psychological distress. The cumulative promotive factors were indicated by positive characteristics, social competence, school competence, and support in the family. First, a measurement model was tested to see how well the indicators account for the latent constructs. Then, we specified structural models to test the models of resiliency. Several criteria were used to evaluate the model fit. A model with the values for the df: χ^2 ratio of 2,3 or even 5; values lower than .08 for RMSEA; values greater than .90 for CFI; and values lower than .08 for SRMR represent good fit. (Hu & Bentler, 1999). Mplus does not provide regular fit indices when an interaction term is added to the model by using the integration algorithm. In such case, Akaike's information criterion (AIC), Bayesian information criterion (BIC), and sample size adjusted BIC are used to evaluate model improvement. Accordingly, from Model 1 to Model 2, 0 to 2 points difference in these values is considered as no improvement between the models, while 2 to 6 points decrease in these values is considered as positive, 6 to 10 points decrease is considered as

strong, and a decrease higher than 10 points is considered as very strong improvement in Model 2 (Wang & Wang, 2012).

To test the statistical power of SEM model, post hoc power analysis was conducted based upon RMSEA fit indices (Preacher & Coffman, 2006), where alpha level (i.e., $p < .05$), degrees of freedom of the model, number of clusters, null RMSEA (i.e., H_0 RMSEA = .0), and alternative RMSEA (i.e., H_1 RMSEA = .08) were used.

Results

Externalizing Behavior

Overall, parents reported moderate levels of externalizing behavior in adolescents ($M = 12.45$, $SD = 10.17$, range = 0-56). Based on the cut-off scores provided for a Turkish sample (Erol & Şimşek, 2007), 11.2% of adolescents in our sample were in the clinical range ($T > 63$) and 1.9% were in the subclinical range ($T = 60$ to 63) for externalizing behavior. Zero-order correlations showed that adolescent's age was not associated with externalizing behavior, $r = .02$, *ns*. The analysis of variance (ANOVA) revealed no significant gender differences in externalizing behavior, $F(1,206) = 0.60$, *ns*. Appendix II on p. 129 presents the zero-order correlations between externalizing behavior and risk and promotive factors.

Measurement Model

A measurement model consisting of two latent constructs (i.e., cumulative risk and promotive factors) with nine observed indicators yielded a good fit to the data, $\chi^2(35) = 68.71$, $p < .001$, $CFI = .90$, $RMSEA = .07$ (90% $CI = .04$ to $.09$), $SRMR = .08$. Structural correlation between the latent constructs was significant, $r = .22$, $p = .01$.

Structural Equation Models

Compensatory model. As depicted in Figure 1, we tested the compensatory

model of resiliency by examining the direct paths from cumulative risk and promotive factors to externalizing behavior. Overall, the model showed a good fit to the data, $\chi^2(33) = 54.12$, $p = .01$, $CFI = .93$, $RMSEA = .06$ (90% $CI = .03$ to $.08$), $SRMR = .06$, and explained 11% of the variance in externalizing behavior ($R^2 = .11$). The cumulative risk factors significantly predicted higher levels of externalizing behavior; while the cumulative promotive factors significantly predicted lower levels of externalizing behavior. The model explained 11% of variance in externalizing behavior. Post hoc power analyses (Preacher & Coffman, 2006) revealed that the statistical power was .97 for the model.

Risk-protective model. We tested the risk-protective model of resiliency by adding the cumulative risk by cumulative promotive interaction term to the model using the integration algorithm in Mplus 6.12. From the first model to this model, AIC decreased from 5719.22 to 55711.10, BIC decreased from 5827.08 to 5822.334, and adjusted BIC decreased from 5725.68 to 5717.76, overall indicating a strong improvement. After controlling for cumulative risk ($Estimate = 0.54$, $SE = 0.16$, $p = .001$) and cumulative promotive factors ($Estimate = -0.25$, $SE = 0.11$, $p = .03$), the interaction term was significant in predicting externalizing behavior, $Estimate = -0.43$, $SE = 0.16$, $p = .01$. Figure 2 depicts the relationship between the cumulative risk and externalizing behavior for the mean, and one standard deviation above and below the mean for the cumulative promotive factors. Promotive factors did not differentiate externalizing behavior scores of adolescents at low risk; however, at higher levels of risks, promotive factors were associated with lower levels of externalizing behavior.

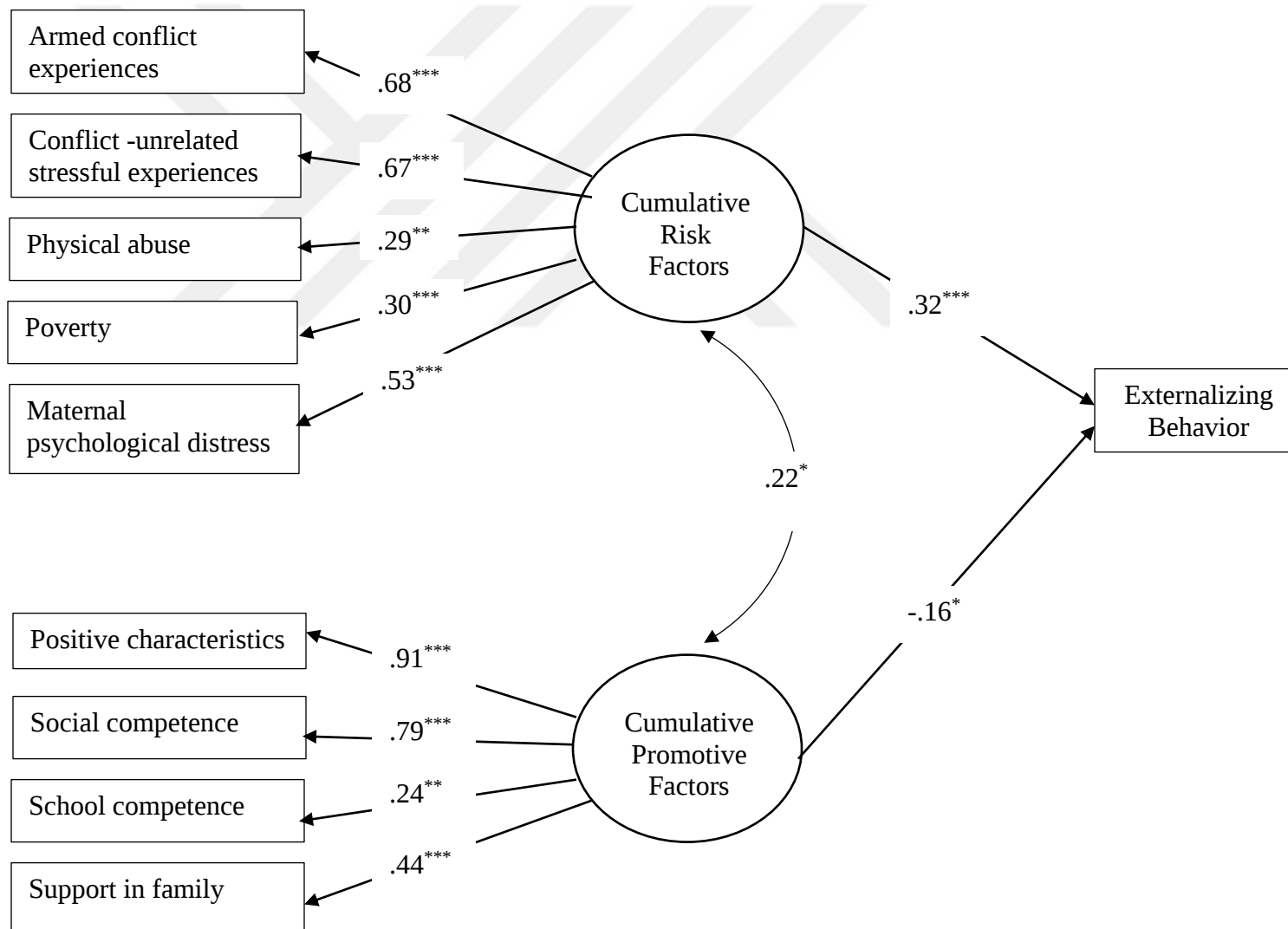


Figure 1. Standardized estimates predicting externalizing behavior. The dotted lines represent nonsignificant paths.

⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

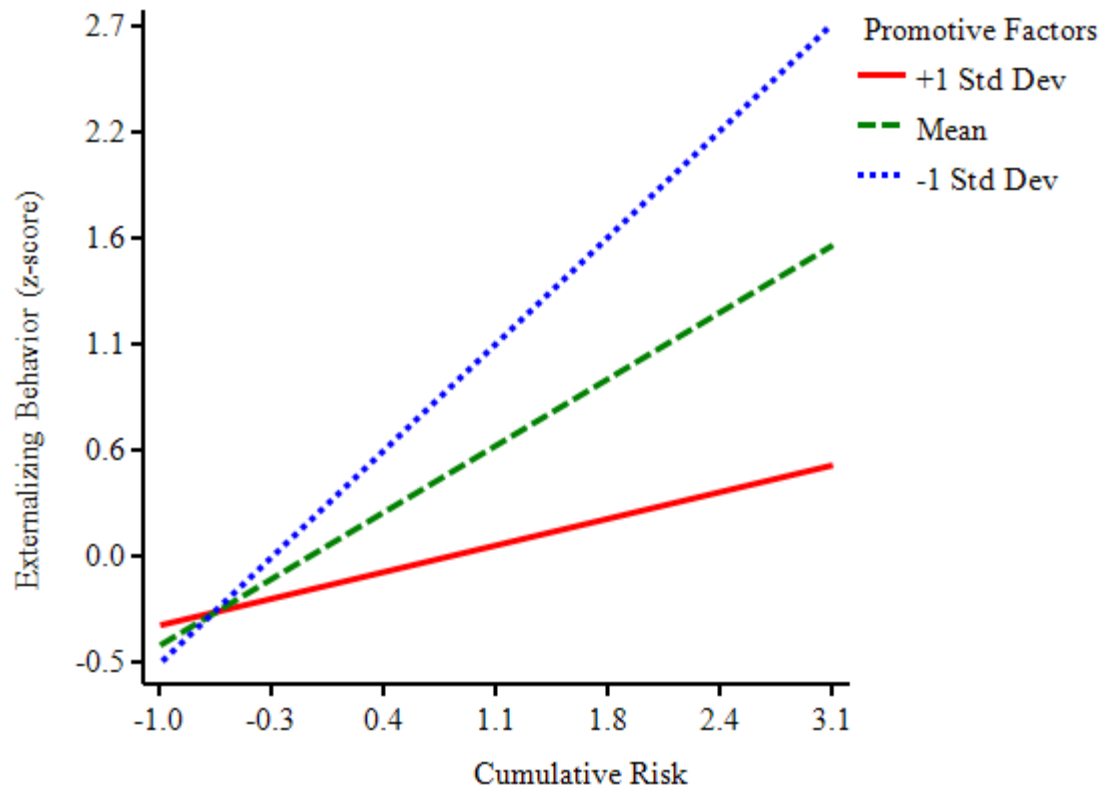


Figure 2. The interaction of cumulative risk and promotive factors for externalizing behavior in adolescents.

Discussion

The current study addressed the relation of cumulative risk and promotive factors in externalizing behavior and tested the compensatory and risk-protective models of resiliency in a sample of adolescents living in the east of Turkey under substantial poverty and low-intensity armed conflict. In line with the literature, our findings supported the cumulative risk hypothesis as exposure to multiple risks increased the level of externalizing behavior in our sample (Decović, 1999; Garnezy et al., 1984; Stoddard et al., 2012; 2013; van der Laan et al., 2009). Also in line with our expectations, our findings supported the compensatory model of resiliency where cumulative promotive factors counteracted and directly reduced the negative effect of cumulative risk on externalizing behavior. Furthermore, our results showed that promotive factors operated as *protective* and differentiated adolescents who have been exposed to higher or lower levels of risk in their externalizing behavior. In the literature, several other studies examining violent behavior in adolescents also reported support for risk-protective model (Stoddard et al., 2012; 2013). In our sample, in the presence of lower levels of cumulative risk, the level of cumulative promotive factors was not related to externalizing behavior. In high levels of risks, however, higher level of cumulative promotive factors was related to lower externalizing behavior in adolescents. These results suggested that involvement with promotive factors is particularly important for adolescents with more risk factors to help them overcome negative consequences of risk (Fergus & Zimmerman, 2005; Garnezy et al., 1984; Stoddard et al., 2012; 2013).

Overall, our results suggest that adolescents living in the east of Turkey, at least in our sample, could learn how to cope with exposure to risk, as long as they had high levels of promotive factors. Particularly when the risk is high, targeting multiple assets and resources from

various ecological domains could protect adolescents from the burden of exposure to risk on healthy development. On the other hand, it is worth noting that our model accounted for only a small part of the variance in externalizing behavior, leaving a considerable amount of variance unexplained. This unexplained variance might be due to other factors that are found to be associated with externalizing behavior such as self-regulation skills (Doan et al., 2012), parenting (Bøe et al., 2013; Doan et al., 2012; Scaramella et al., 2016) and peer influences (Hahn, 2001), which can be further verified in future studies in a sample of adolescents living in armed conflict zones. Another interesting direction for research, particularly in the east of Turkey, might involve an investigation of sociopolitical factors that potentially contribute to resilience among adolescents as well as in their communities. Earlier research conducted in armed conflict zones suggested that strong ethnic identification and ideological commitment may be protective for psychological well-being in adolescents (Barber, 2008) which may, in turn, increase the level other protective factors such as self-esteem and social competence (Barber, 2008; Shamai & Kimhi, 2006) and counteract with demoralization (Farwell & Cole, 2001). However, other researchers suggested that, at least in a Palestinian sample, active political involvement was associated with an increase in aggressive behavior and violent acts (Qouta et al., 2008). Thus, future research is needed to examine the associations between sociopolitical factors, political involvement and externalizing behavior in a sample of adolescents, who are exposed to ethnic violence, from the lens of resilience theory.

Limitations of our study should also be noted. First, this study is cross-sectional and thus limited to offer causality or provide knowledge on the trajectories of externalizing behavior in relation to risk and promotive factors over time. Another limitation might be that our outcome data was based on a single-informant setting, where parents provided information about their

children's externalizing behavior. Assessment of externalizing behavior from other sources, such as from teachers in school setting, could avail us to provide a more comprehensive picture for externalizing behavior in these adolescents and to make stronger arguments. However, at the time of data collection in the post-conflict setting, some of the adolescents were not attending to school. Therefore, collecting data for adolescents who were attending school might have been biased. Our sample included adolescents who were attending to school and who were not, increasing the generalizability of the results. Future studies, nevertheless, should aim to implement a longitudinal approach to study risk and promotive factors across multiple domains, and from multiple informants, in externalizing behavior. On the other side, as a strength of the current study, adolescents reported the risk and promotive factors (with an exception for parents' psychological distress), and parents reported for the outcome variable. This reduced the shared rater variance between the latent variables and the outcome measure in the model, reflected self-reported and more accurate experiences of adolescents, as well as provided more objective (or less subjective) rating of externalizing behavior in adolescents.

This study contributes to resilience research and practice in unique and significant ways. To our knowledge, the current study is a first to test resilience models in a sample living in a low-intensity armed conflict zone. Further, it adopted a comprehensive and ecological approach to overcome the shortcomings of early resilience research such as including risk and promotive factors across multiple ecological domains and examining the cascading effects of these factors in resilience (Fergus & Zimmerman, 2005; Masten, 2001). The risk and cumulative factors assessed in this study included multiple ecological domains such as individual characteristics and experiences, parental/familial influences, and contextual factors. Another critical aspect of this study is to derive implications for intervention. Externalizing behavior is a predictor of juvenile

delinquency as well as criminal behavior in adulthood (Farrington, 1989) and considered as a public health problem (Hahn, 2001). Findings of this study can be used to formulate effective prevention and intervention programs to enhance promotive factors identified in the current study, particularly positive characteristics such as honesty, ability to protect own's rights, openness to experience, as well as social competence, which would help to build resilience among adolescents.



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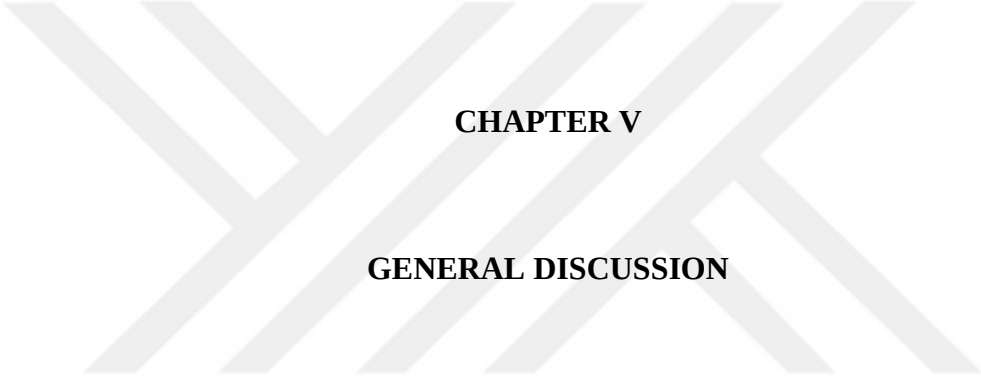


APPENDIX II

Zero-order Correlations Between Study Variables and Externalizing Behavior (N = 215)

Variable	EB	1	2	3	4	5	6	7	8
<i>Risk Factors</i>									
1. Armed conflict experience	.18**	-							
2. Conflict-unrelated stressful experience	.14*	.51***	-						
3. Physical abuse	.23**	.14*	.20**	-					
4. Low income	.09	.12 ⁺	.21**	.17*	-				
5. Parental psychological distress	.21**	.36***	.29***	.19**	.28***	-			
<i>Promotive factors</i>									
6. Positive qualities	-.08	.15*	.17*	-.09	.05	.16**	-		
7. Social competence	-.05	.09	.12 ⁺	-.06	.09	.10	.71***	-	
8. School competence	-.04	.02	.03	-.10	-.02	.12	.17*	.24**	-
9. Support in family	-.12 ⁺	-.01	.07	-.23**	.02	-.04	.40***	.32***	.18*

Note. EB = Externalizing behavior. ⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.



CHAPTER V

GENERAL DISCUSSION

General Discussion

Developmental psychopathology field highlights the importance of examining the pathways for both typical and atypical development and using such knowledge to prevent and remedy maladaptive and pathological outcomes (Cicchetti & Toth, 2009). In line with this approach, the current thesis aimed to investigate the psychological well-being of youth living in the east of Turkey in relation to their adverse experiences, which may serve to inform research, practice and policy to improve their well-being. Study I investigated the emotional and behavioral problems in 6-to-18-year-old youths in relation to their exposure to the potential risk factors in the region - poverty, armed conflict, and family violence. In Study II, executive functioning (EF) and problem behaviors in 3-to-8-year-old children were under examination with respect to their exposure to poverty, armed conflict experiences, and maternal psychological distress. Study III examined the cumulative risk and promotive factors for externalizing behavior in 11-to-15-year-old adolescents and tested the compensatory and risk-protective models of resiliency in this sample.

Summary of Findings

Study I. Results showed that children manifested moderate levels of internalizing problems, externalizing problems, total problems and post-traumatic stress symptoms, and the level of such problems was higher compared to the level of problems previously reported for children sampled from other disadvantaged contexts in Turkey (e.g., child-rearing institutions and low-income families; Saçan, Artan, Erol, & Şimşek, 2014). According to caregiver reports, this study also documented that children were frequently exposed to various forms of armed conflict events. For instance, almost 90% of children were directly exposed to at least one combat. In line with the literature, the level of armed conflict that children were exposed to was

associated with their emotional and behavioral problems. Further, family violence was an important predictor of emotional and behavioral problems in children, and for externalizing and total problems, its predictive value was above and beyond poverty and armed conflict.

Additionally, poverty was marginally related to internalizing and externalizing problems and significantly related to total problems in children, when exposure to armed conflict and family violence were accounted for.

Study II. The findings revealed that children's scores in EF tasks were low, and EF was negatively associated with problem behaviors (i.e., internalizing and externalizing problems), armed conflict experiences, and maternal psychological distress. When tested as the only mediator, EF mediated the links between armed conflict and internalizing and externalizing problems in children. However, when maternal psychological distress was also included in the model as another mediator, EF was no longer a significant mediator. Rather, maternal psychological distress mediated the links from poverty and armed conflict experience to EF, as well as to internalizing and externalizing problems. The direct effects of armed conflict experience on EF and externalizing problems were still significant in the final model.

Study III. Exposure to multiple risks increased the level of externalizing behavior in adolescents, and the cumulative promotive factors directly reduced the level of externalizing behavior, counteracting the negative effect of cumulative risk. Furthermore, supporting the risk-protective and challenge models of resiliency, our findings indicated that promotive factors operated as *protective* and moderated the association between risk exposure and externalizing behavior, and the moderate level of risk exposure was related to less externalizing behavior in adolescents.

Overall, these findings indicated that armed conflict exposure, poverty and familial risk factors (i.e., family violence and maternal psychological distress) posed a significant risk to various domains of development and well-being in youth in the east of Turkey. The findings also suggested that cumulative promotive factors held the potential to compensate for and protect against the negative effects of risk exposure.

Armed Conflict

It is very well established in the literature that exposure to political violence, including war, armed conflict and isolated terrorist attacks, may lead to post-traumatic stress disorder (PTSD), internalizing problems and externalizing problems in children which may linger for a long period (Attanayake et al., 2009; Dimitry, 2012). And in line with the extant literature, the current thesis showed that exposure to armed conflict was associated with psychological problems in children living in the east of Turkey. However, the prevalence rates found in the current thesis are generally low compared to rates reported in other studies. For instance, meta-analyses showed that the prevalence rate of PTSD was 11% (7 to 17%) among refugee children (Fazel, Wheeler, & Danesh, 2005) and 47% (31 to 55%) among war exposed children overall the world (Attanayake et al., 2009), while in his systematic review, Dimitry (2012) reported prevalence rates of 5 to 8% in Israel, 23 to 70% in Palestine, and 10 to 30% in Iraq. Compared to PTSD, assessment of other psychological symptoms is relatively rare, but through limited studies, Attanayake and colleagues (2009) reported prevalence rate of 43% (31 to 55%) for depression and 27% (21 to 33%) for anxiety among war exposed children. The discrepancy between these levels across studies can be explained by the characteristics of the armed conflict (i.e., severity, duration), as well as its impact (e.g., in Israel, the physical damage of the conflict is limited, public services such as health-care and education system are intact), and other

individual, family and community level factors (Dimitry, 2012; ; Qouta, Punamäki, & Sarraj, 2008). Additionally, measurement tools used in the assessment of symptoms play a critical role in the reported prevalence rate (Attanayake et al., 2009). Relatedly, low prevalence rates observed in our sample can be explained by the low level of intensity of Turkish-Kurdish Conflict, relatively intact public services, high level of solidarity/support among community members, as well as our distinct measurement method.

Beyond psychological problems, the present study also investigated the relation between armed conflict exposure and cognitive development in children, which has been underexamined in the literature. To the best of our knowledge, only a limited number of studies investigated the association of political violence and aspects of cognitive development (e.g., attention, memory, language; Qouta et al., 2008; Scrimin, Moscardino, Capello, & Axia, 2009; Simons, 2011). Contributing to the literature, Study II of the current thesis further indicated that armed conflict exposure was linked to lower EF scores, which in turn played a significant role in internalizing and externalizing problems that children manifested.

It should be noted that literature shows that war trauma can be transmitted to next generations through epigenetic mechanisms (Bowers & Yehuda, 2015) as well as stories (Fargas-Malet & Dillenburg, 2016). The east of Turkey has been in an intractable conflict for more than 40 years; hence, the sample of current thesis was the offspring of a generation who also grew up in an armed conflict zone. Children living in the region might be exposed to indirect forms of armed conflict even before 2015-2016 battles both epigenetically as well as through stories. The current thesis focused on the quantitative analysis of direct and indirect exposure to armed conflict, however, the examination of intergenerational effects both to child outcomes and

to the magnitude of concurrent risk factors (e.g., family violence, parental psychological symptoms) would be important.

Socioeconomic Adversity

Research shows that poverty is a major risk to child well-being in multiple domains (e.g., Aber, Morris, & Raver, 2012; Bradley, & Corwyn, 2002; Brooks-Gunn, & Duncan, 1997).

Poverty may lead to malnutrition (Strupp & Levitsky, 1995), chronic stress and allostatic load (Blair, 2010), as well as disruptions in the family functioning, child abuse and neglect (Gillham et al., 1998), harsh or unresponsive parenting (McLeod & Shanahan, 1993), and increased levels of parental stress and psychological problems (McLoyd et al., 1994), all which in turn linked with poor child outcomes.

Almost all families sampled in the current thesis resided in extreme poverty. Moreover, the literacy rate, particularly among mothers, was very low. This was consistent with the earlier reports indicating that the eastern cities had the lowest rates of annual income (Turkish Statistical Institute, 2018a), lowest socioeconomic development (Turkish Statistical Institute, 2018b) and highest rates of child poverty reaching 55% (Gürsel et al., 2016) in Turkey. In such a context, the current thesis investigated the relations between poverty and child outcomes. However, contradictory to the existent literature and our expectations, our findings showed only weak, if any, associations between income and child outcomes. It is highly likely that this unexpected result is related to the very low level of variance in income levels of families as the low variance might prevent a reliable statistical examination between the study variables (Tabachnick & Fidell, 2012). Indeed, across the three studies, the vast majority of the sample reported the lowest income. Therefore, the current thesis did not find the hypothesized relations among poverty and child outcomes. However, drawing upon the extant literature, a more sophisticated investigation

of poverty in relation to child well-being is needed in the east of Turkey. In the current thesis, poverty was reported as monthly household income measured on categorical level. Other methods, such as non-monetary assessment of deprivation indicators (Nolan & Whelan, 2010) as well as material well-being (Popova & Pishniak, 2016) may provide a deeper understanding of poverty and social exclusion.

Familial Factors

Findings of the current thesis highlighted the importance of familial factors in child outcomes above and beyond other risk factors that the current thesis has investigated. In Study I, family violence was identified as a potent risk factor for emotional and behavioral problems in children. Study II showed that poverty and armed conflict exerted their effects on EF, internalizing problems and externalizing problems through the mediation of maternal psychological distress. In Study III, parental/familial factors were included both as risk (e.g., caregiver's psychological distress) or promotive (e.g., support in the family), which were significantly related to externalizing behavior in adolescents.

The role of familial factors in child outcomes is not something new in the literature. A wealth of research already showed that family violence and parental psychological problems may cause a wide range of negative outcomes in children (e.g., Bryant et al., 2018; Feldman & Vengrober, 2011; Herrenkohl, Sousa, Tajima, Herrenkohl, & Moylan, 2008), while support in family may operate as protective for children when they face adversity (Blair, 2010; Walker et al., 2007). Findings of the current thesis supported this literature, and further contributed to it as showing that violence in family might be as detrimental for children as political violence in Study I, that maternal psychological distress mediated the links from poverty and armed conflict to EF and psychological problems in children in Study II, and that parental/familial factors

played an important role in resilience in Study III. Altogether, the current thesis went beyond a simple examination of children's experiences of armed conflict and associated psychological outcomes and indicated the crucial role of parental/familial factors in children's responses to armed conflict and other forms of adversity. Thus, findings of the current thesis suggest that any intervention program that would be tailored to improve the psychological well-being of these children should address familial risk factors as well. Furthermore, these risk factors should include the intergenerational transmission of war trauma and its relation to current family dynamics.

Resilience

Through three studies, the current thesis showed that children and adolescents were exposed to a wide range of adversities, including armed conflict events and socioeconomic challenges. Armed conflict exposure, in turn, was associated with emotional and behavioral problems in youth in all these studies. Further, in Study I, we showed that the symptom severity of children living in the east of Turkey was even higher than of children who lived in other disadvantageous contexts such as child-rearing institutions and low-income families (Saçan et al., 2014). Yet, according to caregiver reports, children manifested low to moderate levels of emotional and behavioral problems, and the prevalence of borderline/clinical scores ranged from 7% to 16% across three studies. This suggests that a significant proportion of children living in the east of Turkey might be showing a capacity for recovery or resilience despite their exposure to multiple risks.

In this regard, Study III examined the role of risk and promotive factors in externalizing behavior and tested models of resiliency in a sample of adolescents. Supporting the risk-protective model of resiliency, the results showed that promotive factors could operate as

protective and buffer for the burden of multiple risk exposure on healthy development. Findings of this study provide knowledge critical for tailoring prevention and intervention programs as well as policies in the region. After the failure of negotiation processes in 2015, the intractable armed conflict present in the east of Turkey seems not to be solved anytime soon.

Socioeconomic hardship poses further challenges to people living in the area. Within this context, and from a developmental science perspective, the best strategy would be to build resilience in children and adolescents to overcome the negative effects of the adversities. For this, prevention and intervention programs should be designed to develop or improve multiple assets and resources that youth possess within multiple ecological domains (i.e., individual, parental/familial, community).

Limitations

The limitations of the current thesis should be noted, and the findings of the thesis should be interpreted with caution. First, in Study I and Study II, caregiver reports were used to assess children's exposure to armed conflict and other stressful experiences (e.g., family violence). Even though the caregivers might be objective to report experiences like armed conflict experiences, they might not be able to know or be aware of every experience that children had. Furthermore, when reporting family-related risk factors (e.g., family violence), the caregivers might be less willing to admit such experiences or might belittle the experiences of their children. Related to this issue, another limitation of the thesis was that the participants mostly provided information via face-to-face interviews, decreasing the anonymity of the results. Interview format was chosen considering the very low literacy rates reported in the region. However, this format might also lead to response bias, where participants might respond to sensitive questions with socially desirable, rather than honest answers (e.g., family violence), or

with extreme answers (e.g., armed conflict experiences). Additionally, in this violent and chaotic context, the participants might normalize experiences and behaviors which could be considered as traumatic, stressful, abnormal or deviant in another context.

Another critical limitation of the current thesis was that all three studies were cross-sectional. Therefore, the findings are far from offering causality or provide knowledge on the trajectories of risk exposure and associated child outcomes. For instance, Study I showed that family violence experience was a stronger predictor of externalizing and total problems in youth than their armed conflict experiences; but longitudinal examination is needed to examine which risk factor was more prominent. Also, the post hoc power analysis showed that Study II and Study III had low statistical power for structural equation modeling. Therefore, findings from these studies should be regarded as preliminary, and future studies should be conducted with greater sample sizes and longitudinally.

This research was conducted under difficult circumstances; therefore, our sample included participants from two to three cities in the region. Initially, it was planned to collect data from seven affected cities. In some of those cities, the battles were more frequent and intense, and the day-long curfews lasted for consecutive weeks or months; whereas in other cities, the battles were rare, and the curfews were announced occasionally or only during the night. However, because of logistic concerns and allocation of resources (e.g., volunteering research assistants, or support from local authorities), we could collect data only in three cities: Diyarbakir, Hakkari, and Van. Among them, Diyarbakir and Hakkari, which constituted the majority of our sample, were among the cities that were affected by the battles and curfews to great extent.

Future Directions

The current thesis offers important strategies for tailoring intervention programs as well as policies in the east of Turkey. The findings suggest that a clinical mental health focus might be too narrow and individualistic for an intervention strategy to be effective in the east of Turkey. Rather, an intervention program should include multiple layers targeting individual and family domains embedded within the community level. Such a program should include individual-focused elements, which would depend on the development stage of children, (e.g., to increase EF skills in 3-to-8-year-old children, or social competence and school competence in 11-to-15-year-old adolescents), as well as family-focused elements (e.g., to decrease parental distress and family violence). The “Child Friendly Space” program (Boothby, 2008) can be appropriate to administer session that are designed to increase well-being in youth and families in the east of Turkey. The program offers children a safe environment that they can engage in structured sessions in a routine while restoring a sense of normality and continuity; but also a place wherein multifaceted intervention sessions with parents can be applied. Such program can be implemented by trained teachers, health professionals (e.g. gynecologists and pediatrics), municipality officials, and community members. This would help to overcome language barriers, strengthen local participation and self-help networks of the community, and ensure sustainability. Collaboration with the community leaders and the municipalities would also increase the resources, as well as the effectiveness of the program by motivating families to participate. Involving fathers in the program is particularly important to increase the functionality in the family, yet they are usually the least interested parties. Therefore, the community leaders and the municipalities play a key role to convince them to participate in the sessions. Finally, attendants (both children and their parents) manifesting severe dysfunctionality and distress should be referred to a mental health professional for a focused care.

This thesis can be considered as the first step of research conducted in the east of Turkey. One of the areas that needs further research in the east of Turkey is intergenerational transmission of war trauma. The impact of such transmission should be addressed in future studies to provide a deeper understanding of risk exposure and associated outcomes in youth. Beyond the armed conflict incidences, the influence of political tension during the ceasefire periods and deep structural inequality in the region, as well as social exclusion in the west of Turkey for immigrated families, should also be tackled. Additionally, using a mixed method approach by including qualitative methodology, along with quantitative, would help to capture the narratives of youth, how they tell their stories, and how they understand and remember their experiences.

Furthermore, examining other domains of development and skills (e.g., emotional regulation, executive control, ethnic identity, altruism), as well as risk and promotive factors (e.g., self-esteem, parental sensitivity, parental monitoring, peer relations) over time both with qualitative and quantitative methodology would provide a better understanding of pathways for maladaptive and normative functioning, as well as strategies to prevent or intervene with maladaptive outcomes.

Conclusion

The current thesis contributes to the existent literature on child development in war zones by providing additional comparative information from a low-intensity armed conflict zone, which has distinct characteristics than a full-blown war such as the duration and format of the conflict-related incidences. This study also adds to the literature by going beyond a simple examination of post-traumatic stress symptoms in children in relation to their conflict-related experiences, which is the case in many traditional studies, but investigating new aspects of child

outcomes such as EF as well as exploring mechanisms underlying the child outcomes, while regarding various factors beyond conflict exposure from multiple ecological domains.

Furthermore, to our knowledge, this is the first study examining EF skills in children (i.e., Study II) and testing the models of resiliency in a sample of youth (i.e., Study III) living in a low-intensity armed conflict zone. Finally, this study contributes to the progress of developmental science and practice in Turkey. Despite the long history of the armed conflict in Turkey, this study is the first to address the psychological well-being of youth living in the conflict zone, thereby filling a significant gap in the literature. And beyond, findings of the current thesis may provide critical knowledge for the formulation of the remediation strategies, prevention and intervention programs, and social policies for the exposed children and families.

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