Intergenerational Transmission of Psychological and Behavioral Difficulties Among United States Air Force Parents and Their Offspring

A Dissertation Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

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May 2022

DEDICATION

I dedicate this work to my dad and my two magnificent children.

Daddy, you have shown me nothing but pure love and support my entire life. You have believed in me in a way that no one else ever could; you made me believe in myself. Whether I completed a minor achievement or conquered a difficult milestone, your pride in my accomplishments never wavered. I love you, daddy, and I hope to be for my children what you have been for me.

Olivia and George, without knowing, you provided me with the motivation required to pursue and complete my doctorate work. You are my inspiration as well as my comedic relief. You keep me moving forward even when I feel like lying down. You are my reason to be determined. My sunshine forever and always; Mommy loves you beyond words!

ACKNOWLEDGEMENTS

I would like to acknowledge the faculty, staff, and fellow students at The University of Tennessee, College of Social Work, for the support they have provided during the past four years. I would specifically like to thank my dissertation chair, Dr. David Patterson, for his sincere support and encouragement during the dissertation process and his ability to make managing all aspects of life while completing my doctorate seem possible. I would also like to thank Dr. Bill Nugent, who was more than willing to share with me his statistical genius. Additionally, I thank Lt. Col. Erika King and Dr. Mary Held, who provided invaluable insight throughout my research process. I want to give final thanks to the United States Air Force for allowing me to step outside of my military duties to pursue my doctorate and to the RAND Corporation for allowing me to access and utilize their dataset for my dissertation research.

"The views expressed in this article are those of the author and do not reflect the official policy or position of the United States Air Force, Department of Defense, or the U.S. Government."

ABSTRACT

The intergenerational transmission of psychological and behavioral difficulties (ITPBD) has been of research interest in the social sciences. Compared to non-military population research, ITPBD within military families has been studied to a far lesser degree. A systematic review of the relevant literature limited to veteran and military populations revealed that ITPBD does occur. However, most of the literature focused on non-active veteran samples and post-traumatic stress disorder. To better understand ITPBD among currently serving military families, this researcher utilized secondary data of United States Air Force (USAF) members and their offspring. A structural equation model (SEM) analysis resulted in a path coefficient estimate for the relationship between female parent difficulties and offspring difficulties of .232 with a standard error of .009, a critical ratio of 25.106, and a $p < .001$. The resultant standardized path coefficient estimate for the relationship was .472. The path coefficient estimate for the relationship between male parent difficulties and offspring difficulties was .226 with a standard error of .005, a critical ratio of 49.656, and a $p < .001$. The standardized path coefficient estimate for the relationship was .542. These results indicated a direct and positive path from the latent construct of parent difficulties to the latent construct of offspring difficulties. To better understand whether parental gender impacted this relationship, a second SEM analysis was conducted using the same secondary data. The analysis resulted in a path coefficient estimate for the relationship between parent difficulties and offspring difficulties of .227 with a standard error of .004, a critical ratio of 55.631, and a $p < .001$. A Chi-square difference test suggested this path coefficient was the same for male and female respondents, indicating that parental gender did not impact the relationship between parent difficulties and offspring difficulties. Future research

should identify whether particular USAF sup-groups experience a greater degree of ITPBD to aid in targeted outreach and intervention services, as well as potential policy change

TABLE OF CONTENTS

INTRODUCTION 1
Purpose and Objectives 1
Theoretical and Conceptual Framework 2
CHAPTER I- SYSTEMATIC REVIEW 5
Abstract 6
Introduction 7
Methods 9
Results 13
Discussion 21
CHAPTER II- STUDY I 29
Abstract 30
Introduction 31
Methods 33
Results 38
Discussion 40
CHAPTER III- STUDY II 44
Abstract 45
Introduction 46
Methods 48
Results 52
Discussion 59
CONCLUSION 62
BIBLIOGRAPHY 65
VITA 74

LIST OF TABLES

Table 1. Database Search Details..... 11
Table 2. Articles Included for Review…….....15
Table 3. Demographic Characteristics for Final Sample (Female, n = 6,060). 35
Table 4. Demographic Characteristics for Final Sample (Male, n = 23,512)..... 35
Table 5. Squared Multiple Correlations (R^2 Values) ...…….57
Table 6. Standardized Regression Weights for Female Parent Group..…….57
Table 7. Standardized Regression Weights for Male Parent Group……..58

LIST OF FIGURES

Figure 1. Boss's Contextual Model of Family Stress……...4
Figure 2. PRISMA Flow Chart of the Review Process. 14
Figure 3. Structural Model for Relationship Between Parent and Offspring Difficulties..39
Figure 4. Statistical Model for Relationship Between Parent and Offspring Difficulties..41
Figure 5. Structural Model to Test for Parent Gender Interaction in ITPBD. 54
Figure 6. Statistical Model to Test for Parent Gender Interaction in ITPBD. 56

INTRODUCTION

Purpose and Objectives

The intergenerational transmission of psychological and behavioral difficulties (ITPBD) involves the transmission of psychological and behavioral symptomology from parent to offspring via exposure to genetic and non-genetic factors. Following a systematic review of the literature, this author discovered that few prior studies had examined ITPBD among active-duty military populations within the past decade (DeVoe et al., 2018; Hisle-Gorman et al., 2019; Waliski et al., 2013; Zalta et al., 2018). Among the applicable studies that had been conducted, none of them explicitly utilized samples from the United States Air Force (USAF) population. Given the potential for additional stressors related to active military service, it was necessary to address this gap by identifying the existence of ITPBD between USAF military parents and their offspring.

Additionally, the current body of research is limited in comparing the occurrence of ITPBD between female parents and offspring versus male parents and offspring. This researcher found zero published studies examining a relationship between parental gender and ITPBD among military families. Given the potential for females and males to experience different biological and social stressors, experience these stressors in different ways and to different degrees, it stands to reason that parent gender may play a role in ITPBD. As such, a further examination into this specific area was indicated.

This work aimed to increase the understanding of ITPBD among military families, specifically current USAF families, to inform change in clinical intervention practices and Department of Defense (DoD) and military policy. Currently, the military places the most

significant emphasis on providing mental health and behavioral services to individual service members. As such, the needs of military offspring may be overlooked and unaddressed. These unmet needs are a child mental health concern and can also be a mission readiness concern for the military member. The proliferation of difficulties among offspring can negatively impact the service members' ability to dedicate their full attention to meet mission requirements.

Additionally, current DoD and military branch-specific policies may inadvertently increase risk factors for ITPBD. According to Clever and Segal (2013), military policies in the areas of relocations, changes in educational settings, family separations (e.g., deployment cycle, training), and mental health access impact military members and their families. Better understanding these policies through the lens of ITPBD can aid in identifying areas of potential policy change in a way that prioritizes the psychological and behavioral health of the entire military family.

Theoretical and Contextual Frameworks

The Contextual Model of Family Stress (Boss, 2002) informs this work's approach to understanding ITPBD among active USAF populations. This model comes from the original Family Stress Theory (Hill, 1949; Hill, 1958) that arose from research with World War II veterans and their families. From this theory came the corresponding ABC-X model (Hill, 1949; Hill, 1958): a precipitating event or challenge (A) interacting with the family's support and resources (B) and the meaning the family assigns to the event or challenge (C) produces a crisis (X).

Boss (2002) added to the ABC-X model by incorporating the belief that families are influenced by things external to the family unit and that these external factors impact the A, B,

and C concepts. Thus, factors such as culture, genetics, place in the developmental life cycle, familial structure, values, and beliefs all play a role in determining whether a challenge will lead to a crisis. Figure 1 depicts Boss's Contextual Model of Family Stress (2002). Support for the ABC-X family stress model comes from previous research to include studies focused on non-military populations (Blom et al., 2019) and military populations (Lucier-Greer et al., 2020).

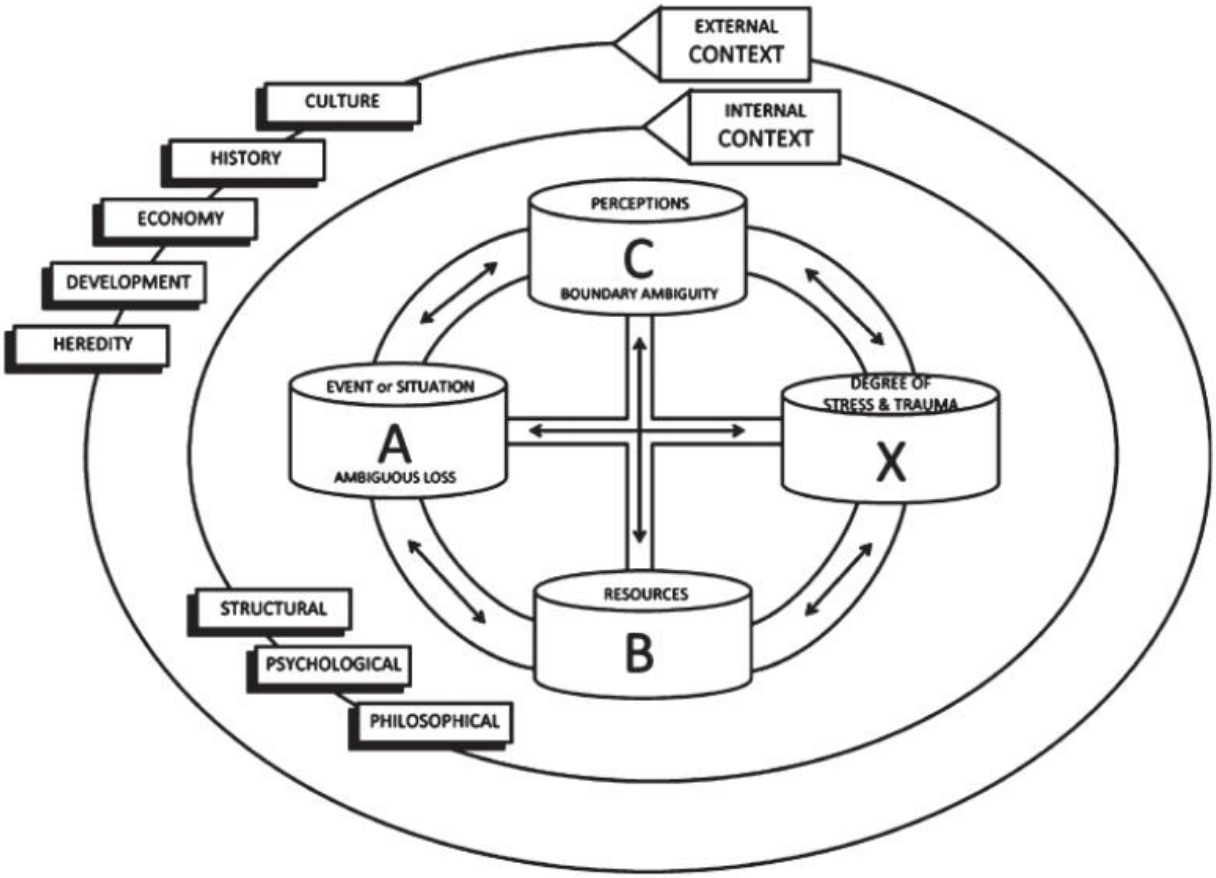


Figure 1. Boss's Contextual Model of Family Stress

CHAPTER I

INTERGENERATIONAL TRANSMISSION OF PSYCHOLOGICAL AND BEHAVIORAL DIFFICULTIES AMONG MILITARY-CONNECTED PARENTS AND THEIR OFFSPRING: A SYSTEMATIC REVIEW

Abstract

This study aimed to identify previous research focused on the intergenerational transmission of psychological and behavioral difficulties (ITPBD) among active military and veteran populations as a means of identifying directions for future research. ITPBD involves the transmission of mental health and behavioral symptomology from parent to offspring via exposure to genetic and non-genetic factors. ITPBD has been understudied in the United States military population over the past decade. This researcher completed a systematic literature review following an online database search (PsycINFO, Web of Science, and PubMed), along with a manual search that yielded an initial total of 1,307 results after the removal of duplications. Parameters for the database search included the search terms: parent* mental health AND child* OR offspring AND military; English language, peer-reviewed, and a published date between 2010 through 2020. The article titles, abstracts, and full texts (when necessary) of the 1,307 search results were reviewed for inclusion criteria. The systematic review ultimately yielded a total sample of 13 studies. Though many of the studies differed in their conceptualization of offspring psychological and behavioral difficulties, they still successfully demonstrated the existence of the ITPBD among military and veteran populations. Findings suggest a need for increased research focused on the current generation of United States military members and recent Veterans. Future studies of the ITPBD need to move beyond a sole focus of post-traumatic stress to provide a more comprehensive picture of the psychological and behavioral transmission between military-connected parents and their offspring.

Introduction

For decades, the idea that characteristics and behaviors are transferred or transmitted from parent to offspring has been of interest in the natural and social sciences. In the body of research, the extent to which a particular trait of one generation is recurring in offspring via complex processes involving non-genetic and genetic factors is commonly referred to as intergenerational transmission. The non-genetic factors involved in intergenerational transmission are environmental or cultural stimuli (Cavalli-Sforza and Feldman, 1973). The purpose of this systematic review is to examine the recent literature regarding the intergenerational transmission of psychological and behavioral difficulties (ITPBD) via non-genetic factors within military and veteran populations.

In the past, literature focused almost exclusively on parental Post-Traumatic Stress Disorder (PTSD) and offspring secondary trauma. Secondary trauma remains the most commonly cited form of ITPBD; however, offspring can exhibit various psychological and behavioral difficulties that may not fit the traditional frame of secondary trauma. Offspring typically exhibit symptoms that are classified as internalizing or externalizing. According to Achenbach (1966), internalizing symptoms are internally focused and manifest as anxiety, sadness or depression, social withdrawal, somatic complaints, and fear. Externalizing symptoms are externally focused and include hyperactivity, poor impulse control, conduct problems, attention problems, and aggression (Achenbach and Edelbrock, 1981; Werry and Quay, 1971).

The occurrence of the ITPBD in the general population has been well investigated (Coyne, 1976; Connell & Goodman, 2002; Goodman et al., 2011). Relative to the broader body of research, little exists when narrowing the focus to the military and veteran populations.

According to the Department of Defense, approximately 24% of military service members and veterans in the United States are parents to minor children. This number equates to roughly two million children in the United States having at least one parent in the military (Department of Defense, 2012). Due to deployments, geographic separations due to temporary duties, relocations, and demanding military work schedules, military families have additional wellness risk factors compared to those outside of the military population (Clever & Segal, 2013).

Given that military families face exposure to normative daily stressors and these military-specific stressors, it stands to reason that these families are at a greater risk for the ITPBD (Chandra, Lara-Cinisomo, Jaycox, 2010). Yet, these populations remain underrepresented in intergenerational transmission research. As such, it is essential to review the occurrence and causes of intergenerational transmission within military and veteran populations to identify gaps for future research and inform treatment considerations.

To further understand the current literature regarding the ITPBD among military and veteran-affiliated families, this author conducted a systematic review addressing the following questions:

1. What is the current state of knowledge regarding the presence of ITPBD among military and veteran families?
2. What parental symptoms contribute to intergenerational transmission?
3. What are the psychological and behavioral outcomes experienced by offspring within military and veteran families?

Theoretical Frame

When presenting the findings, we look to Family Stress and Coping (Boss, 2002) to offer a thematic lens. This theory comes from the original Family Stress Theory (Hill, 1949; Hill, 1958) that arose from research with World War II veterans and their families. The basic premise of the original theory is that the ability of a family to cope following a stressful event or challenge is determined by two moderating variables- 1) the support the family received following the challenge and 2) the meaning the family assigned to the challenge. From this theory came the corresponding ABC-X model (Hill, 1949; Hill, 1958): a precipitating event or challenge (A) interacting with the family's support and resources (B) and the meaning the family assigns to the event or challenge (C) produces a crisis (X).

Boss (2002) added to the ABC-X model by including the belief that things external to the family unit influence families and that these factors impact the A, B, and C concepts. Thus, factors such as place in the developmental life cycle, familial structure, culture, genetics, values, and beliefs all play a role in determining whether a challenge will lead to a crisis. Support for the ABC-X family stress model comes from previous studies that include non-military populations (Blom et al., 2019) and military populations (Lucier-Greer et al., 2020). Based on the ABC-X model, it stands to reason that children of current military members face different risks for the ITPBD than veteran parents, as they face ongoing military-specific occupational demands and maintain access to military-specific resources. Based on this reasoning, parent military status informed the categorization of the studies included in this literature review- "active military parent," "military veteran parent," and "active military and veteran military parent."

Methods

Study Review and Selection

This independent reviewer searched PsycINFO, Web of Science, and PubMed databases using the following search terms and Boolean operators were used: “parent* mental health” AND child* OR offspring AND military. The following parameters limited the search results: written in the English language, peer-reviewed, published date between 2010 through 2020. No other search limitations were applied. The database search took place on December 15, 2020. Table 1 indicates the total number of results from each of the three online databases, the total duplication of database results, and the resulting total database results reviewed for inclusion and exclusion criteria.

Inclusion criteria required studies to meet the following to be eligible: 1) content focused on the intergenerational transmission of psychological and/or behavioral difficulties; 2) research studies excluding medication trials, intervention studies, literature reviews, meta-analysis, program evaluations, commentary; 3) parent or child subjects with data collected on both parent and child difficulties; 4) military and/or veteran populations. Excluded articles included: studies not focused on the ITPBD, medication trials, intervention studies, literature reviews, meta-analysis, program evaluations, commentary, studies with non-parent/child subjects, and non-military/non-veteran study samples. Study eligibility was not limited by country of origin but did need to be available for review in the English language. No studies were excluded based on the quality of the research. Additionally, participant demographics such as gender, military branch or component, rank or pay grade, job code, or other military-specific factors did not influence study eligibility.

Table 1. Database Search Details

Database	**Date Searched**	**Search Terms**	**Number of Articles**
PsycINFO	12/15/20	Parent* mental health AND child* OR offspring AND military	+627
Web of Science	12/15/20	Same as above	+240
PubMed	12/15/20	Same as above	+308
Duplicates			-298
Total			**877**

Articles identified through the database search were exported into EndNote X8 for file management. Before evaluating for inclusion criteria, duplicate entries were removed. In the initial assessment phase, EndNote groups were created to represent the four exclusion criteria: non-ITPBD focused; medication trials, intervention studies, literature reviews, meta-analysis, program evaluations, commentary; non-parent/child subjects; non-military or veteran populations. One individual independently reviewed the article titles, abstracts, and full texts (when necessary) to determine whether the studies met the inclusion criteria and moved the excluded studies to the appropriate EndNote group. After this reviewer completed the initial assignment to exclusion groups, a second screening phase was performed, wherein the reviewer reevaluated the excluded articles to ensure accuracy.

Following the second screening phase, the same reviewer manually searched the citations within the articles that previously met inclusion criteria (n = 10). There was a combined total of 544 references among the ten studies selected for inclusion during phase two. One hundred fourteen duplications were detected and removed. After this researcher assessed all remaining 430 citations using the original inclusion and exclusion criteria, three additional studies were selected for inclusion.

The database and manual search strategy identified 1,719 articles with 412 duplications, resulting in a final total of 1,307 studies to be reviewed. One thousand two hundred ninety-one records did not meet the aforementioned inclusion criteria. Three were excluded following a full-text review of the remaining 16 articles because the independent variable was limited only to parental deployment history. This reviewer excluded three additional studies due to using the same but less robust data and analysis compared to other articles meeting inclusion criteria.

Figure 2 depicts a PRISMA flow chart detailing the application of the inclusion/exclusion criteria from the initial database and manual search results (n = 1,307) to the final sample (n = 13). See Figure 2.

Data Extraction

Data extraction of the 13 remaining studies was completed by one reviewer using an Excel spreadsheet. The following details were collected from each of the included articles: author(s), year published, article title, journal title, study purpose, theoretical basis, data source/sample size/demographics, dependent variable(s), independent variable(s), analytic methods, main findings, conclusions, and implications, and study limitations.

Results

Thirteen studies met all inclusion criteria and are included in this review. Collectively, the 13 articles identify the occurrence of ITPBD among military and veteran populations, with a focus on specific parental and offspring symptoms. In addition, potential mediators and moderators are identified and discussed. Included in the review are studies published between 2010 and 2020. See Table 2 for a brief overview of the 13 studies.

Parent Military Status

The thirteen articles are discussed according to the identified parental military status of the participants. The three study groupings by military parent statuses include active military parent (n = 3), military veteran parent (n = 9), and active military and military veteran parent (n = 1).

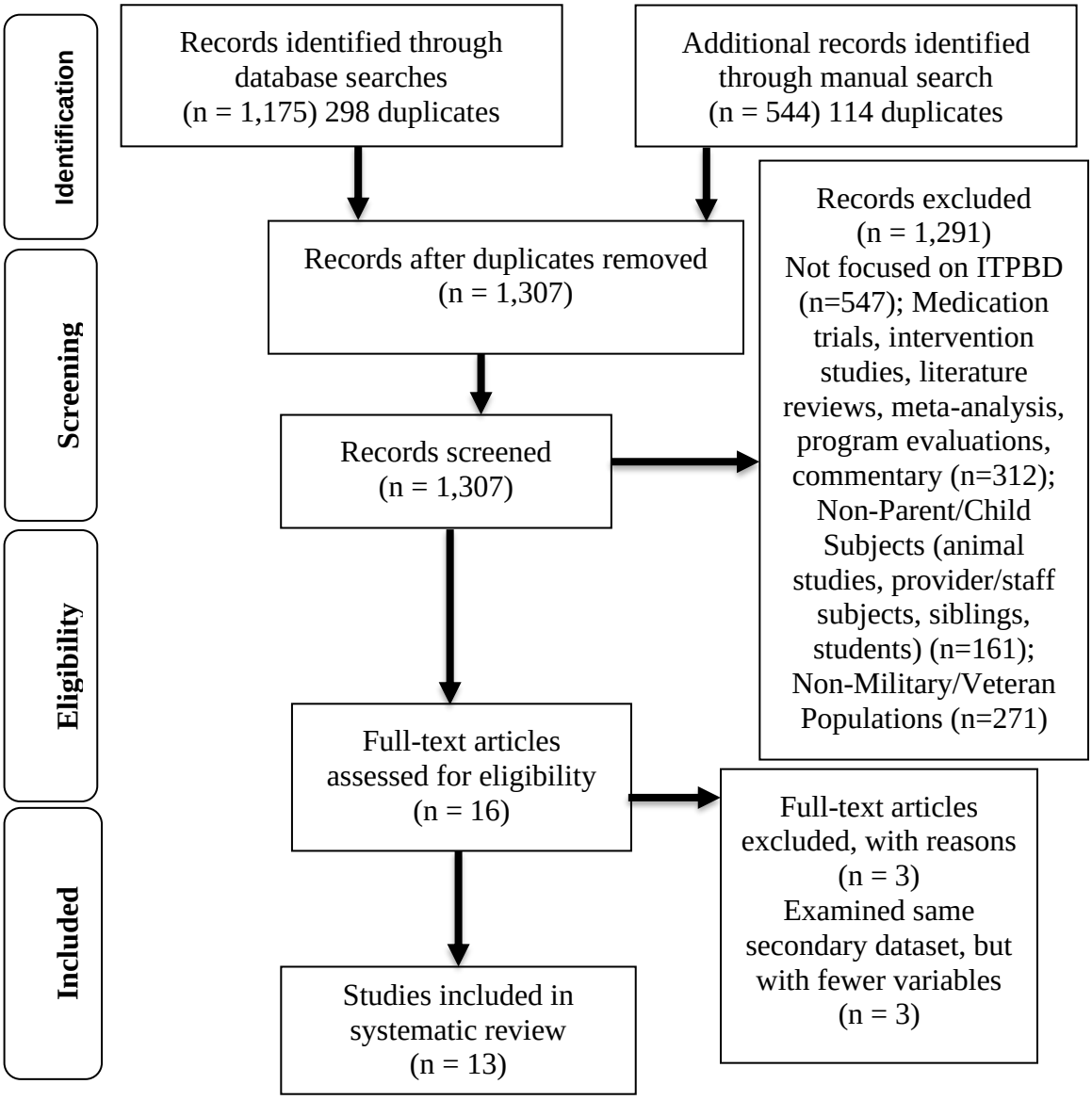


Figure 2. PRISMA Flow Chart of the Review Process.

Table 2. Articles Included for Review

Author/Year	Sample	Dependent Variables	Independent Variables
Bachem et al., (2018)	123 triads of Israel veterans and ex-POWs, spouses, & adult offspring (served in 1973 Yom Kippur War)	Offspring PTSS (self-report measure)	Father's PTSS & mother's PTSS (self-report measure)
Creech et al., (2017)	111 U.S. military veterans (recruited 2013- 2014); cross-sectional	Veteran parenting satisfaction & offspring psychosocial functioning (veteran report via web-based survey)	Veteran PTSD symptoms & positive and negative parenting behaviors (veteran report via web-based survey)
DeVoe et al., (2018)	169 U.S. OEF/OIF military members & 136 spouses; cross-sectional	Parent report of parent-offspring interactions & offspring behavioral problems (interview & survey)	Parental mental health status & quality of couple functioning (interview & survey)
Duranceau et al., (2015)	1,238 Canadian Forces veterans surveyed in 1999; cross-sectional	Veteran report of offspring affective and behavioral functioning	PTSD diagnosis & specific PTSD clusters (self-report measures)
Hisle-Gorman et al., (2019)	485,002 U.S. military offspring tracked for four years during 2004-2014.	Offspring visit rates for preventive care, mental health, injuries, & maltreatment; rates of psychiatric medication days (identified via medical records)	Parental injury-PTSD alone, TBI alone, PTSD and TBI together, physical injuries (identified via medical records)

Table 2 Continued

Author/Year	Sample	Dependent Variables	Independent Variables
O'Toole et al., (2017)	197 Australian Vietnam veteran families- 197 veterans, 137 spouses, 125 sons, & 168 daughters	Offspring trauma exposure, offspring PTSD, & offspring psychiatric diagnosis (structured clinical interview & clinician administered measures)	Veteran PTSD, alcohol use disorder, & depression (structured clinical interview & clinician administered measures)
Stein et al., (2018)	123 Israeli veteran fathers and adult offspring dyads (served in 1973 Yom Kippur War); cross-sectional	Offspring self-reported secondary traumatization symptoms & offspring global distress levels	Veteran self-reported PTSD, veteran global distress levels, & offspring personality traits
Vukovic et al., (2015)	324 adolescent offspring of Croatian male veterans who served in the 1991-1995 Homeland War (108 for each group: partial PTSD; full PTSD; no PTSD); cross-sectional	Offspring self-reported internalizing symptoms, offspring externalizing symptoms, social problems, attention problems, family functioning, & parent-child bonding	Veteran father PTSD status- Full, Partial, None (verified by documentation of prior clinical diagnosis)
Waliski et al., (2013)	172 U.S. OEF/OIF National Guard veterans	Veteran report of offspring emotional, behavioral, & adjustment problems	Veteran anxiety, depression, PTSD, family/social satisfaction, interpersonal violence, anger, & substance abuse (self-report measures)

Table 2 Continued

Author/Year	Sample	Dependent Variables	Independent Variables
Yager et al., (2016)	115 U.S. male Vietnam Veteran, spouse, & offspring triads	Offspring self-reported secondary traumatization & internalizing/ externalizing behavior problems; spouse demoralization (interview & self-report measures)	Veteran PTSD (clinical diagnostic interview) & self-reported alcohol problems
Zalta et al., (2018)	215 U.S. veterans & service members; cross-sectional	Parental report of offspring mental health symptoms	Veteran depression, anxiety, stress, PTSD, & parenting sense of confidence (clinical intake evaluation)
Zerach, Kanat-Maymon et al., (2015)	124 Israeli male veteran & offspring dyads- 80 ex-POWs & 44 non-POWs (served in 1973 Yom Kippur War); cross-sectional	Offspring self-reported secondary traumatization symptoms, intrusion, avoidance, & hyper-arousal	Veteran PTSD, PTSD trajectory (chronic vs. delayed), & depressive symptoms (self-report measures)
Zerach, Levin et al., (2017)	123 Israeli male veteran, spouse, & adult offspring triads- 79 ex-POW triads & 44 non-POW triads (served in 1973 Yom Kippur War); cross-sectional	Offspring self-reported PTSS	Father's PTSS & mother's PTSS (self-report measures)

Active Military Parent

Three of the thirteen articles under review involved at least one parent who had an active military status. One of the three studies provided evidence that higher indicators of PTSD among military parents were associated with an increased parental report of offspring behavioral problems (DeVoe et al., 2018). However, contrary to the authors' hypothesis, military parents without PTSD symptoms did not report significantly more concern for offspring behavior problems than spouses. A second study found that the number of days a child was prescribed a psychiatric medication increased 62% in offspring whose parents were diagnosed with TBI only and 94% in offspring whose parents were diagnosed with PTSD only. The number of days a child was prescribed a psychiatric medication increased 115% in offspring whose parents were diagnosed with PTSD and TBI (Hisle-Gorman et al., 2019). Waliski et al. (2013), the last of the three studies on military parents, indicated that parents who had more significant depression and anxiety reported problems with offspring (emotional, behavioral, or adjustment).

Military Veteran Parent

Nine of the thirteen articles discussed in this review involved at least one parent who was a military veteran. Four of the nine studies found that veteran psychological and behavioral difficulties contributed to offspring psychological and behavioral difficulties via mediators and moderators (Bachem et al., 2018; Stein et al., 2018; Yager et al., 2016; Zerach, Levin, et al., 2015). One found that PTSS transmission followed two mediational paths. The first path: veteran PTSS affects offspring secondary trauma symptoms via marital adjustment. The second path: veteran PTSS affects offspring secondary trauma symptoms via veteran dyadic self-disclosure (sharing non-specific thoughts and feelings with their spouse) and marital adjustment (Bachem et

al., 2018). Yager et al. (2016) found that PTSD in male veterans was associated with demoralization (characterized by Dohrenwend et al. (1980) as feelings of low self-esteem, burden, helplessness, hopelessness, anxiety, depressed mood, dread, and psychophysiological disturbances) in their partners. This partner demoralization was associated with their daughters' internalizing and externalizing behavior problems. This association did not exist for their sons. A third veteran study found that veterans' PTSS and global distress helped explain the variance in their offspring's levels of neuroticism, which in turn contributed to offspring PTSS and global distress (Stein et al., 2018). Lastly, Zerach, Levin, et al. (2015) examined parental dyads and reported that at different measurement points during the study, the mothers' and the fathers' PTSS mediated the link between the other parents' PTSS and their offsprings' PTSS.

Three of the veteran studies described unexpected results. Creech et al. (2017) found that PTSD symptoms were positively associated with and explained, to a greater degree, the variance in child psychosocial functioning than did positive parenting. Duranceau et al. (2015) found that, although parental numbing and hyperarousal symptoms were related to concerns about children's affective and behavioral functioning, avoidance symptoms were not. Another interesting result is that Yager et al. (2016) concluded that there was no significant difference in the degree of offspring trauma symptoms when comparing offspring of veterans to offspring in the general population.

Four of the thirteen studies reported less surprising results, given similar findings in non-military and veteran populations studies. One noted that veteran PTSD increased the risk of PTSD (and no other disorder) in offspring and that veteran depression was a risk factor for PTSD among sons (O'Toole et al., 2017). A second study on veterans with no PTSD, partial PTSD, and

full PTSD found that the full PTSD group reported higher total offspring behavior problems than the partial PTSD group. In turn, the partial PTSD group reported greater offspring behavior problems than the without PTSD group (Vuković et al., 2015). A third study (Zerach, Levin, et al., 2015) examined parental dyads and found that veteran fathers' and non-veteran mothers' PTSS over the years were both positively related to offspring PTSS. Lastly, Zerach, Kanat-Maymon, et al. (2018) found that the secondary trauma symptoms reported by adult offspring of ex-POWs were positively associated with their father's PTSD and comorbid depressive symptoms. Additionally, they found that offspring of ex-POWs with PTSD reported more secondary trauma symptoms than offspring of ex-POWs without PTSD.

Active Military and Military Veteran Parent

One of the thirteen articles reviewed involved current military and veteran parent statuses (Zalta et al., 2018). This study found that parents with higher depression and anxious arousal rates were more likely to have offspring with elevated internalizing symptoms. Additionally, parents with higher rates of chronic tension were more likely to have offspring with significant attentional problems. Results also showed that higher depression rates among parents are correlated with a poorer parenting sense of competence. In turn, a poorer parenting sense of competence is associated with higher child internalizing, externalizing, and attentional symptoms. Additional findings in the same study suggested that parent and offspring psychological and behavioral difficulties were not linked. First, offspring externalizing symptoms were not directly associated with any type of veteran psychological or behavioral difficulties. Second, and inconsistent with other research in this review, veteran PTSD symptoms

were not associated with offspring psychological difficulties, behavioral difficulties, or parenting sense of competence (Zalta et al., 2018).

Discussion

This review sought to identify and understand previous research on the ITPBD among active military and veteran populations. The literature is notably limited and primarily focused on military and veteran families who have faced deployments and PTSD. There is also a significant lack of research focused on military members who have served during the past decade. Even with the limited available research, this author concluded that there is evidence that the ITPBD does occur among military and veteran populations.

Five of the 13 studies identified mediating and moderating pathways to explain the ITPBD (Bachem et al., 2018; Stein et al., 2018; Yager et al., 2016; Zalta et al., 2018; & Zerach, Levin, et al., 2015). These pathways included marital adjustment, veteran dyadic self-disclosure, partner demoralization, offspring neuroticism, and poor parenting sense of competence. The remainder indicated a correlational relationship between parent and offspring psychological and behavioral difficulties. Five of the 13 studies identified unexpected results. DeVoe et al. (2018) found that military parents without PTSD symptoms did not indicate more concern about offspring behavior problems than their spouses. Yager et al. (2016) found that the association between parental and offspring psychological and behavioral difficulties was not more significant among their military sample when compared to the general population. Creech et al. (2017) found that parenting behaviors explained the variance in child psychosocial problems more than the contributions of PTSD symptoms. Duranceau et al. (2015) found that parental

avoidance symptoms were unrelated to concerns about offspring affective and behavioral functioning.

Zalta et al. (2018) found that offspring externalizing symptoms were not directly associated with veteran psychological or behavioral difficulties. Additionally, and inconsistent with other research in this review, veteran PTSD symptoms did not have an apparent, direct association with offspring psychological or behavioral difficulties. However, Zalta et al. (2018) did find that veteran depression and anxious arousal were associated with offspring internalizing symptoms, and chronic parental tension was associated with offspring attention problems. Despite these limitations, after reviewing the results of the 13 articles that met inclusion criteria, this author was able to identify a clear indication of the existence of the ITPBD within military and veteran populations.

Outcomes of the research under examination offered answers to the three questions this review set out to explore.

1. What is the current state of knowledge regarding the presence of ITPBD among military and veteran families? Studies exist indicating the presence of ITPBD among military and veteran families, but much of the data is dated, with the most recent data collected in 2014. Additionally, fewer studies focused on current active military families than veteran families. Nevertheless, it is clear from this review that whether the pathway is direct, moderated, or mediated, the military parents' psychological distress is transmitted to their offspring to some degree. Other research not included in this review has demonstrated the existence of ITPBD within non-military families (Leis & Mendelson, 2010; Low et al., 2019; Oattes, Kosmerly, et al., 2018; & Schulz et al., 2021). One difference to highlight

is the addition of military-specific stressors faced by military parents, which could indicate a potential for increased prevalence within these populations compared to non-military populations. However, military families may have access to support not available to non-military families.

2. What parental symptoms contribute to the intergenerational transmission of psychological and behavioral difficulties? PTSD/PTSS, TBI, depression, anxiety, global distress, numbing, hyperarousal, and anxious arousal are all parental symptoms identified as contributors to ITPBD.
3. What are the psychological and behavioral outcomes experienced by offspring within military and veteran families? Offspring outcomes among military and veteran families include: internalizing and externalizing behavior problems, PTSD/secondary trauma symptoms, psychiatric medication days, emotional problems, adjustment problems, neuroticism, and attentional problems.

Limitations of Studies Under Review

There are several limitations amongst the thirteen studies under review. Many of the studies relied on parental or offspring self-report regarding symptomology and behaviors, which could allow for reporting bias, wherein subjective reports may be less accurate than objective measures such as clinical interviews (Bachem et al., 2018; Creech et al., 2017; Duranceau et al., 2015; Stein et al., 2018; Vukovic et al., 2015; Waliski et al., 2013; Zalta et al., 2018; Zerach, Kanat-Maymon et al., 2015; Zerach, Levin et al., 2017). Additionally, Duranceau et al. (2015) utilized instruments not previously validated, and diagnostic methods designed for epidemiological studies (which may not be comparable to diagnostic tools created for screening

within the mental health field) were used by O'Toole et al. (2017). Another limitation shared by many is a cross-sectional study design, which enables researchers to examine variable relationships, but is insufficient for making causal inferences (Creech et al., 2017; DeVoe et al., 2018; Duranceau et al., 2015; Stein et al., 2018; Vukovic et al., 2015; Zalta et al., 2018; Zerach, Kanat-Maymon et al., 2015; Zerach, Levin et al., 2017). A fourth limitation is that five studies had no control or comparison group. (Bachem et al., 2018; Creech et al., 2017; DeVoe et al., 2018; O'Toole et al., 2017; Zalta et al., 2018).

Small sample size was another limitation common among many of the reviewed studies. Nine of the studies were conducted using small samples ($n \leq 215$), with sometimes-conflicting findings, which limits generalizability (Bachem et al., 2018; Creech et al., 2017; DeVoe et al., 2018; O'Toole et al., 2017; Stein et al. 2018; Yager et al., 2016; Zalta et al., 2018; Zerach, Kanat-Maymon et al., 2015; Zerach, Levin et al., 2017). Many of the studies were narrow in their approach to the independent variable. Four looked at PTSD exclusively and did not evaluate any other psychological or behavioral symptomology as independent variables (Bachem et al., 2018; Duranceau et al., 2015; Vukovic et al., 2015; Zerach, Levin, et al., 2017). A seventh limitation is that none of the studies included active military members or veterans who are currently serving or have served during the last seven years. The oldest samples served during the Yom Kippur War era and the most recent samples served in 2014. It is possible that the stressors faced, support services offered, and overall climate of the military has changed within the past ten years, which could impact the prevalence of psychological and behavioral difficulties of military members. Finally, for those most interested in United States military members and veterans, only six of the thirteen studies involved samples from U.S. populations (Creech et al., 2017; DeVoe et

al., 2018; Hisle-Gorman et al., 2019; Waliski et al., 2013; Yager et al., 2016; Zalta et al., 2018). This limitation could have implications regarding the generalization of results due to the potential roles that culture and military/government systems and supports could play in the expression, understanding, and transmission of psychological and behavioral difficulties.

Literature Review Limitations

One must consider this study's limitations. The author set out to understand the intergenerational transmission of psychological and behavioral difficulties among active military and veteran populations. Due to this review limiting its focus to military and veteran populations, several studies were excluded due to their focus on the general population. These exclusions potentially restricted all relevant information. Additionally, while this reviewer's approach was systematic, there is the potential that relevant articles were excluded due to the chosen search terms and criteria. Another constraint of this review is the limited range of independent variables. PTSD and related symptoms were the primary variables of interest in most studies. Given that this review intended to look at psychological and behavioral difficulties in general, the outcome of this review may be less encompassing than intended.

A fourth limitation identified for this review is its generalizability to the United States military population. This review relied heavily on studies conducted outside the U.S., using subjects of different countries of origin and cultural norms. Their experiences related to the ITPBD may differ compared to U.S. military members and their offspring. Another limitation impacting the generalizability of this review is the small sample size (n = 13). Though this work must be considered within its limitations, it adds to the current literature on ITPBD among military and veteran populations.

Implications

It is also imperative that military leaders have increased awareness of the ITPBD to ensure that military policies focus on the entire family unit rather than the military member as an individual. It stands to reason that when the offspring of military members experience improved psychological and behavioral health, the military member will have increased capability to focus on their own health and well-being, increasing their ability to meet military mission requirements. Additionally, military-dependent offspring join the military at higher rates than non-military-connected offspring (Philipps, D., 2020). Thus, the wellness of military offspring is vital to the military's long-term objectives of recruitment and retention of a health force.

As a means of understanding and addressing the ITPBD, social work educators, clinicians, and other healthcare professionals must be knowledgeable of the military culture, military-specific stressors, and the mental health concerns experienced by parents to assess and care for the offspring of military members adequately. Whether the particular study under review indicates a direct, moderated, or mediated pathway, it is clear that the transmission of psychological distress from the military parent to their offspring exists to some degree. Additional training related to identifying and navigating specific military challenges may benefit military healthcare providers, military members, and military families.

Finally, expanding family and community support is crucial in promoting healthy coping and resilience for military parents and offspring. The outcomes of this review highlight the importance of increasing the promotion of parent and family-centered prevention and intervention services, which may include psychoeducation, informal support groups, and couples and family therapy. The findings from this review can help inform clinical training and available

clinical interventions. Clinician training and treatment modalities should focus on incorporating the entire family unit in therapeutic services instead of the lone military member. It may also be beneficial to offer symptom screening to partners and offspring of military members who seek treatment to address psychological or behavioral difficulties.

Conclusion

The intergenerational transmission of psychological and behavioral difficulties exists within military and veteran families. Military families likely face normative stressors and additional military-specific stressors that put them at an increased risk for ITPBD. Increased academic research focused on military members and their offspring is essential to garner an increased understanding of the prevalence, triggers, and outcomes related to the ITPBD. Future research should include larger sample sizes drawn from more recent years to increase generalizability, strengthen outcomes, and capture current trends that may exist. In addition, standardized instruments and increased longitudinal research to adequately and consistently examine the occurrence and effects related to the ITPBD are needed.

Increased research is vital to fill knowledge gaps related to ITPBD prevention and treatment. Specifically, research focused on U.S. military members currently serving or those who have served over the past decade is needed. Further research on subgroups that may be at unique ITPBD risk could uncover risk and resiliency factors. Such subgroups could include single parents serving in the military, which encompasses 5% of all military parents (Department of Defense, 2013). Single military parents may be geographically separated from familial supports and, as a result, shoulder the stress of parenting, normative life stressors, and military-specific stressors without having significant help from others. Female parents may also be a

subgroup of interest given the different ways in which males and females experience and cope with biological, social, and military-specific stressors. In terms of ITPBD within military populations, a third subgroup that has been largely ignored is dual-military families. Dual-military indicates those families in which both parents are serving in a branch of the armed forces, meaning that both parents face normative and military-specific stressors.

CHAPTER II

INTERGENERATIONAL TRANSMISSION OF PSYCHOLOGICAL AND BEHAVIORAL DIFFICULTIES AMONG UNITED STATES AIR FORCE PARENTS AND THEIR OFFSPRING

Abstract

The purpose of the current study was to address the hypothesis that United States Air Force (USAF) parents who report experiencing a greater degree of their own psychological and behavioral difficulties also report that their offspring experience higher levels of psychological and behavioral difficulties. Participants included 29,572 USAF members who identified as a parent to at least one offspring under 18 years of age. The sample included male and female parents of any pay grade, service component, and marital status. Data were analyzed using structural equation modeling. Model variables included four control variables (component, two marital status variables, pay grade), two latent constructs (parent difficulties, offspring difficulties), and two indicator variables representing observed independent and dependent variables. The analysis resulted in a path coefficient estimate for the relationship between female parent difficulties and offspring difficulties of .232 with a standard error of .009, a critical ratio of 25.106, and a $p < .001$. The resultant standardized path coefficient estimate for the relationship was .472. The path coefficient estimate for the relationship between male parent difficulties and offspring difficulties was .226 with a standard error of .005, a critical ratio of 49.656, and a $p < .001$. The standardized path coefficient estimate for the relationship was .542. These results supported the hypothesis and indicated a direct and positive path from the latent construct of parent difficulties to the latent construct of offspring difficulties. Future studies of intergenerational transmission of psychological and behavioral difficulties (ITPBD) among USAF samples need to examine whether parental gender plays a role in ITPBD between USAF parent and their offspring.

Introduction

Intergenerational transmission is a process wherein characteristics, or traits, are transmitted from parent to offspring or from generation to generation (Cavalli-Sforza and Feldman, 1973). Previous research on the intergenerational transmission of psychological and behavioral difficulties (ITPBD) among the general population is comprehensive (Coyne, 1976; Connell & Goodman, 2002; Goodman et al., 2011). There is less research when narrowing the focus to military veteran populations (Bachem et al., 2018; Creech et al., 2017; Duranceau et al., 2015; O'Toole et al., 2017; Stein et al., 2018; Vuković et al., 2015; Yager et al., 2016; Zalta et al., 2018; Zerach, Kanat-Maymon, et al., 2018; Zerach, Levin, et al., 2015). Even fewer studies exist that focus on participants currently serving in the military at the time of the study (DeVoe et al., 2018; Hisle-Gorman et al., 2019; Waliski et al., 2013; Zalta et al., 2018).

More than 42% of U.S. military members have dependent offspring (Department of Defense, 2015). Due to deployments, geographic separations, relocations, and demanding work schedules, military parents and offspring have additional risk factors for psychological and behavioral difficulties as compared to those outside of the military population (Alfana et al., 2014; Clever & Segal, 2013). Given that military families face exposure to normative and military-specific stressors, it stands to reason that these parents and offspring are at an even greater risk for the ITPBD compared to non-military families (Chandra, Lara-Cinisomo, Jaycox, 2010). Yet, currently serving military populations remain underrepresented in intergenerational transmission research.

Additionally, ITPBD research with veteran and military populations primarily focuses on investigating parental Post-Traumatic Stress Disorder (PTSD) and offspring secondary trauma.

Limiting the scope of the independent and dependent variables to only those closely related to trauma may limit research results. This unintended outcome can be especially true when considering a military population in which the parents' concern of being placed on limited duty may hinder the reporting of trauma symptoms (Sharp et al., 2015). Focusing on offspring secondary trauma symptoms runs the risk of excluding offspring of parents who exhibit psychological and behavioral difficulties but have not experienced a primary traumatic event. Furthermore, when left up to parental opinion, the classification of symptoms as offspring secondary trauma may not be accurate.

Given that we can identify a lack of ITPBD research among current military samples and that much of the previous research has a primary focus on trauma symptoms, it is essential to increase understanding of ITPBD within current military populations while moving beyond the strict trauma variables. There are no recent studies known to this researcher that attempt to assess the occurrence of ITPBD among currently serving United States Air Force (USAF) members and their offspring. As such, this research study aimed to examine the following hypothesis:

> USAF parents who report experiencing a greater degree of their own psychological and behavioral difficulties also report that their offspring experience higher levels of psychological and behavioral difficulties.

Theoretical Frame

The original Family Stress Theory (Hill, 1949; Hill, 1958) arose from research with World War II veterans and families. The theory stated that two moderating variables determine a family's ability to cope following a stressful event- 1) the family's support following the event and 2) the meaning the family assigns to the event. The corresponding ABC-X model (Hill,

1949; Hill, 1958) involves a precipitating event (A) interacting with the family's support and resources (B), and the meaning the family assigns to the event (C) produces a crisis (X).

Boss (2002) reimagined the original ABC-X model by incorporating the belief that external factors influence families and that these external factors impact the A, B, and C concepts. Thus, factors such as culture, genetics, place in the developmental life cycle, familial structure, values, and beliefs all play a role in determining whether an event will lead to a crisis. Previous research supports the ABC-X family stress model, including studies of non-military populations (Blom et al., 2019) and military populations (Lucier-Greer et al., 2020).

Methods

Subjects

This researcher drew data from the 2017 U.S. Air Force Community Feedback Tool (Sims, C. et al., 2019). The Air Force Medical Operations Agency commissioned the original research conducted by the RAND Corporation (Sims, C. et al., 2019). The feedback tool was an online self-reported comprehensive needs assessment available to USAF members, spouses, and civilian employees. Eighty-Eight thousand five hundred ninety-two individuals completed the survey during the completion window from August to October 2017.

The current study includes participants who identified as military members belonging to any of the three USAF components: active, guard, and reserve. Excluded responses included those from spouses and civilian employees. Additionally, given that the current study examined a relationship between parent and offspring, any participant who indicated not having a child under 18 years of age was excluded. Study inclusion was not limited by identified gender, pay grade (enlisted and officer), or Air Force Specialty Codes (AFSC). The inclusion criteria for the current

study provided a sample size of 29,572. Reference Table 3 to see demographic characteristics (also control variables) for female participants and Table 4 for male participants.

Design

This study was a non-experimental, correlational, and cross-sectional design. It was a secondary analysis of existing data gathered via the 2017 U.S. Air Force Community Feedback Tool. Data were analyzed with structural equation modeling (SEM) using Analysis of moment structures 27 (Arbuckle, 2019). The proposed model contained two observed variables (indicator variables for the independent variable and the dependent variable), two latent variables, and four control variables.

Constructs/Variables

The observed independent variable was the total score over eleven of the seventeen items from the original study's construct, "problems with your own wellbeing." This independent researcher reviewed the seventeen original items on three separate occasions for inclusion and ultimately excluded six of the original items. Multiple reviews ensured that the items chosen were consistent with the psychological and behavioral difficulties construct. This reviewer did not identify the excluded items (e.g., physical injury, managing weight, unchallenging by work) as potential psychological or behavioral difficulties symptoms. The eleven items that remained for inclusion were: feeling stressed or overwhelmed; sleeping problems; hard to focus, concentrate, or remember things; doing poorly in school or work; grieving the loss of a friend or loved one; loneliness or boredom; difficulty finding meaning or purpose in life; mood (depression, impatience, anger, aggression, anxiety); substance misuse or abuse; too much time playing video games or social media; and difficulty controlling your spending. The original study

Table 3. Demographic Characteristics for Final Sample (Female, *n* = 6,060)

Air Force Component		*n*	%
	Active Duty	4,137	68.3
	Guard & Reserve	1,923	31.7
Air Force Pay Grade[1]			
	E1-E4	624	10.3
	E-5-E6	2,478	40.9
	E7-E9	1,607	26.5
	O1-O3	450	7.4
	O4 & Above	901	14.9
Marital Status			
	Married	4,559	75.2
	Unmarried	664	11.0
	Partnered	837	13.8

[1]Air Force Pay Grade levels have five division categories. The first three include enlisted member ranks, wherein E1 is the lowest and E9 the highest. The second two are inclusive only of officer member ranks, with O1 being the lowest and O4 and above being the highest.

Table 4. Demographic Characteristics for Final Sample (Male, *n* = 23,512)

Air Force Component		*n*	%
	Active Duty	17,419	74.1
	Guard & Reserve	6,093	25.9
Air Force Pay Grade[1]			
	E1-E4	1,256	5.3
	E-5-E6	8,951	38.1
	E7-E9	6,976	29.7
	O1-O3	1,688	7.2
	O4 & Above	4,641	19.7
Marital Status			
	Married	22,108	94.0
	Unmarried	853	3.6
	Partnered	551	2.3

[1]Air Force Pay Grade levels have five division categories. The first three include enlisted member ranks, wherein E1 is the lowest and E9 the highest. The second two are inclusive only of officer member ranks, with O1 being the lowest and O4 and above being the highest.

utilized dichotomous variables and, therefore, this study's observed independent variable (eleven original items combined) had a range of possible scores from zero through eleven. The total score on this ad hoc engineered measure could range from 0 to 11. The coefficient alpha reliability coefficient for the scores on this independent variable was .756.

The observed dependent variable was the total score over four of the sixteen items from the original study's construct, "child-specific problems." To help ensure content validity, this independent researcher reviewed the sixteen original items on three separate occasions for inclusion and ultimately excluded twelve of the original items. Excluded items were those that did not relate to the psychological or behavioral health of the child, but rather logistical problems a parent might experience related to caring for a child. Examples of those excluded are the cost of quality childcare, the distance from quality youth and teen programs, and child's physical health problems. The four items that remained for inclusion were: poor or dropping grades; emotional or behavioral problems; adjusting after a moving or relocation; adjusting to separation from parent deployed, or working far from home. Again, given that the original study utilized dichotomous variables, this study's observed dependent variable (four original items combined) had a range of possible scores from zero through four. The reliability coefficient for the dependent variables was .505. The modest reliability coefficient is likely due to the small number of dependent items chosen to represent the latent construct. However, this researcher selected the dependent items to represent the latent construct most accurately to help ensure that validity was not sacrificed to maximize reliability.

The four control variables included parental pay grade or pay group category (E1-E4, E-5-E6, E7-E9, O1-O3, O4 and above); marstat 1 (married as compared with unmarried) and

marstat 2 (married as compared with partnered); and USAF component or afcomponent (active duty as compared with guard/reserve). This reviewer carefully considered utilizing dual military status (both parents are USAF members) as a control variable, but the total number of respondents who indicated this status (n = 649) was too low to provide statistically significant results. As such, the model did not include dual military status as a control variable.

Data Analysis Strategies

The Statistical Package for the Social Sciences (SPSS) was used to organize the data as two separate datasets (females, males) and generate descriptive and frequency statistics. SEM with IBM SPSS Analysis of Moment Structures 27 (Arbuckle, 2019) was used to test the research hypothesis. Multiple imputation addressed missing data to decrease bias in data inferences. Compared to conventional methods such as arithmetic mean, listwise deletion, and pairwise deletion, multiple imputation is recommended as an optimal method for computing smaller amounts of missing data (Schafer & Graham, 2002). The estimated random measurement errors, based on the estimated reliability coefficients, in the independent variable of focus and the dependent variable was built into the SEM to control for random measurement error and low reliability.

Before the analysis of results, the assessment of model fit was conducted. According to Wang & Wang (2020), the benchmark indicators for a close-fitting model are: a chi-square (X^2) p-value >.05, a standardized root mean residual (SRMR) <.05, a comparative fit index (CFI), and Tucker-Lewis index (TLI) >.95, and a root mean square error of approximation (RMSEA) <.05. The RMSEA should also have upper and lower ends of the confidence interval (CI) <.05 and a close-fit p-value >.05. At a minimum, a model must meet the following fit indices for an

adequate model fit to the observed data: CFI and TLI >.90 and RMSEA <.10 (Wang & Wang, 2020). Still, fit indices must be looked at together and not separately when considering model fit. For instance, the chi-square is highly sensitive to the actual and predicted variance and covariance matrix difference, especially with substantial sample sizes. At the same time, the other fit indices are not as sensitive to large sample sizes.

The bootstrapped confidence interval was employed using acceptable procedures to estimate the significance of the model and the direct effect of parent difficulties on offspring difficulties (Preacher & Hayes, 2008). In this analysis, 2,000 bootstrapped samples estimated the parameters in the model. To determine statistical significance, bias-corrected and accelerated 95% CIs were computed. This was done to control for possible violations of the assumptions upon which the statistical analyses were based Wang & Wang (2020).

Results

Structural Model

Five fit indices evaluated the structural equation model. Testing procedures indicated an acceptable fit between the theoretical and observed covariance matrices. X^2 (2) = 39.86, p < .001; SRMR = .0032, CFI = .99, TLI = .90, RMSEA = .025, lower end of 90% CI for RMSEA = .019, upper end of 90% CI for RMSEA = .032, p = 1.00. The model yielded acceptable fit indices for all indices except the overall chi-square (p < .05). However, the considerable sample size can explain the significant chi-square, and the other fit indices attained the recommended target values. Figure 3 depicts the hypothesized structural model for the current hypothesis. The model controlled for the measurement error in the measures of the independent and dependent variables. In this model, the paths from parent difficulties to offspring difficulties were estimated

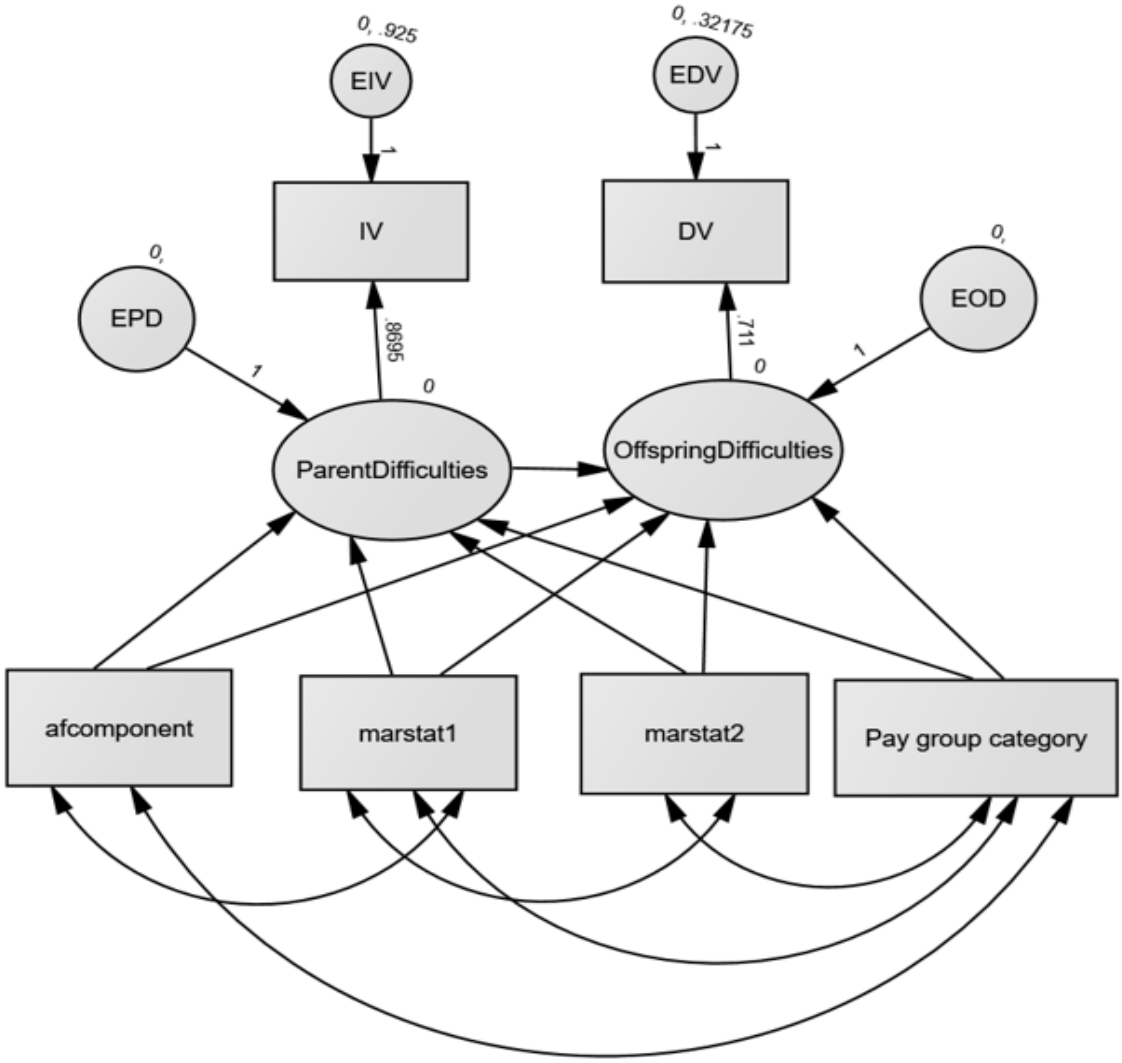


Figure 3. Structural Model for Relationship Between Parent and Offspring Difficulties. EIV represents the random measurement error for the IV and EDV represents the random measurement error for the DV. EPD represents the variance in the latent variable ParentDifficulties and EOD represents the variance in OffspringDifficulties.

for male and female participants. The hypothesis implied these paths would be positive and statistically significant, though possibly different in magnitude.

Statistical Model

The analysis resulted in a path coefficient estimate for the relationship between female parent difficulties and offspring difficulties of .232, with a standard error of .009, a critical ratio of 25.106, and a $p < .001$. The resultant standardized path coefficient estimate was .472. The path coefficient estimate for the relationship between male parent difficulties and offspring difficulties was .226 with a standard error of .005, a critical ratio of 49.656, and a $p < .001$. The standardized path coefficient estimate for this relationship was .542. These results indicated a direct and positive relationship between the latent construct, ParentDifficulties, and the latent construct, OffspringDifficulties, and supported the research hypothesis. Figure 4 depicts this statistical model.

Discussion

The current study is the first study known to this researcher to identify the presence of ITPBD among USAF members and their offspring. Additionally, it is one of only a handful that investigated ITPBD within any branch of the U.S. military using data collected during the last decade. The current study also draws strength from having a substantially large sample size. The result of this study shows a clear indication of the presence of ITPBD within USAF families. As USAF parents reported an increase in their own psychological and behavioral difficulties, they also reported an increase in their offspring's psychological and behavioral difficulties. This result was an anticipated outcome compared to previous ITPBD research results involving general, veteran, and military populations.

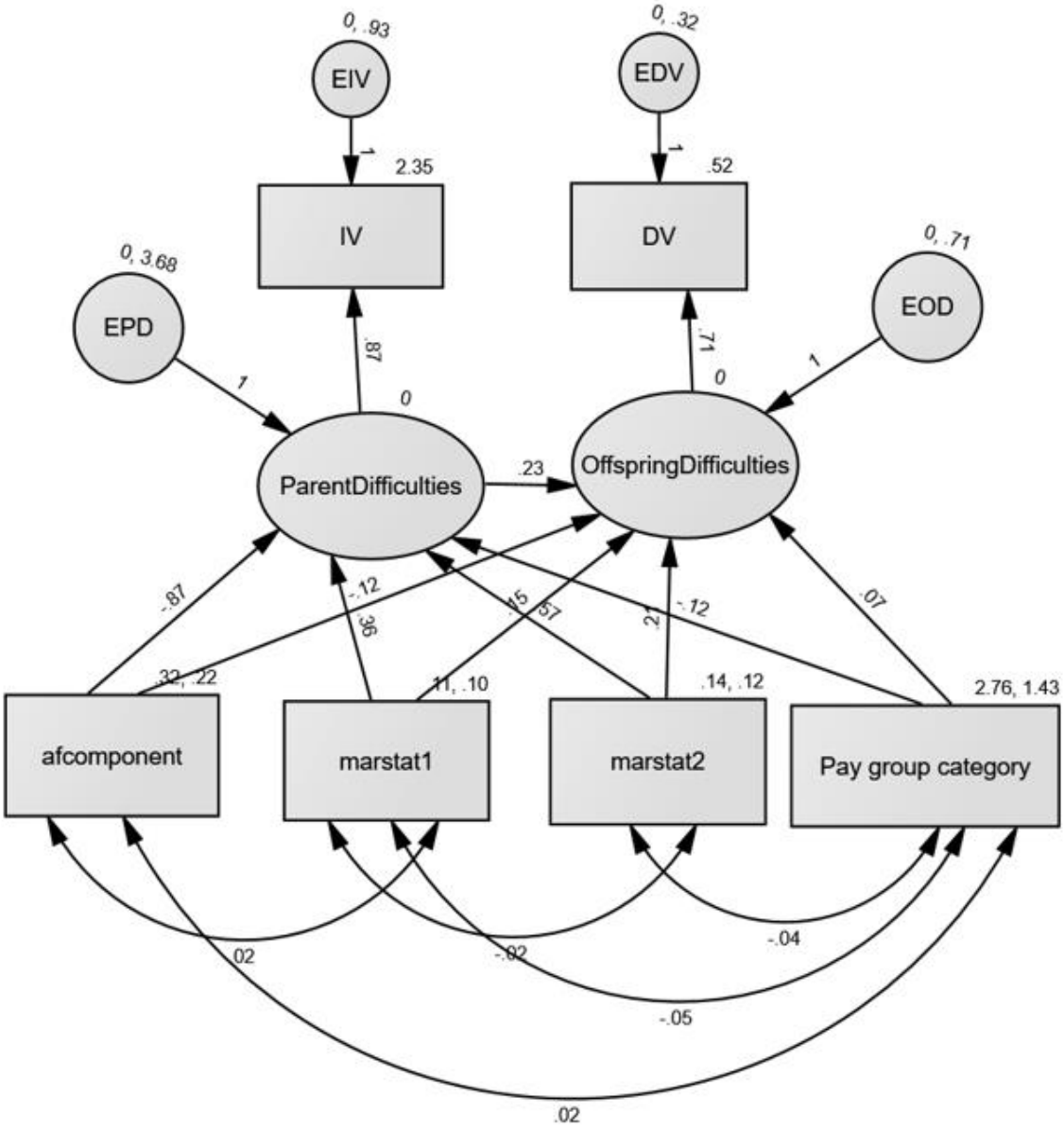


Figure 4. Statistical Model for Relationship Between Parent and Offspring Difficulties. EIV represents the random measurement error for the IV and EDV represents the random measurement error for the DV. EPD represents the variance in the latent variable ParentDifficulties and EOD represents the variance in OffspringDifficulties.

Limitations

Though this study indicates the presence of ITPBD within the USAF population, limitations exist. The current study was a secondary analysis and, therefore, relied on the self-report measure utilized in the original research. According to Bound, Brown, & Mathiowetz (2001), there always exists the potential of reporting bias when depending solely on the use of self-report measures. A second limitation of the study is the use of a cross-sectional design. Since cross-sectional studies involve only one measurement in time, causal relationships cannot be derived (Maxwell & Cole, 2007).

Additionally, the "left out variable problem" creates a limitation. The omission of other possible control variables in this study possibly impacted the estimated relationship between parent and offspring difficulties (e.g., military parents' deployment history to include frequency, length, recency). Similarly, the ad hoc contrived measures of parent and child psychological and behavioral problems used this study, in particular the child problems measure, may suffer from construct underrepresentation. Construct underrepresentation is especially apparent when considering the dependent items used to make up the offspring difficulties construct. A more comprehensive measure in terms of items needs to be used in future studies. Given that this study was a secondary analysis, this researcher could not add variables that may have been a better fit to the latent constructs.

Investigators should utilize primary research in future studies to help address the limitations of the "left out variable problem" and construct underrepresentation. Primary research would enable the investigator to utilize variables that fit the parent and offspring's difficulty constructs more precisely. Second, longitudinal studies would allow for the possible

identification of causal relationships. Lastly, if using self-report measures, the inclusion of social desirability measures would address the concern of reporting bias (Bound, Brown, & Mathiowetz, 2001).

Potential Contributions

The results of this study could have military policy implications. Given that the findings indicate the presence of ITPBD within military families, policy changes may emphasize the importance of the family's mental health as opposed to the individual Airman by increasing access to on-base mental health services and increasing family involvement in resiliency activities. The findings could also help inform clinical practices by incorporating more family-focused therapy techniques and protocols rather than standard individual therapy practices. Offering voluntary symptom screeners to offspring of Air Force members who seek mental health services may also be supported by the results of this study. These results support the carrying out of future research studies to evaluate whether particular Air Force sub-groups (such as female service members, dual military members, specific Air Force Specialty Codes (job codes)) experience greater ITPBD. In turn, these findings could lead to more targeted intervention research and outreach services.

CHAPTER III

The Role of Parental Gender in Intergenerational Transmission of Psychological and Behavioral Difficulties Among United States Air Force Parents and Their Offspring

Abstract

The purpose of the current study was to address the hypothesis that there is a stronger relationship between reported psychological and behavioral difficulties of female parents and those of their offspring compared to the psychological and behavioral difficulties of male parents and those of their offspring when controlling for marital status. This study utilized a sample of 29,572 United States Air Force (USAF) members who self-identified as being a parent to at least one offspring under the age of 18. Participants included male and female parents from all pay grades, service components, and marital statuses. The data were analyzed using structural equation modeling, including four control variables (component, two marital status variables, pay grade), two latent constructs (parent difficulties, offspring difficulties), and indicators representing observed independent and dependent variables. The analysis resulted in a path coefficient estimate for the relationship between parent difficulties and offspring difficulties of .227 with a standard error of .004, a critical ratio of 55.631, and a $p < .001$. A Chi-square difference test suggested this path coefficient was the same for male and female respondents. These results did not support the hypothesis of a greater magnitude relationship between parent difficulties and offspring difficulties for female parents. The direct effect of parent difficulties on offspring difficulties was the same regardless of parental gender. Future studies should reexamine the impact that gender may have on the intergenerational transmission of psychological and behavioral difficulties (ITPBD) among USAF samples while including variables to control for time-in-service to yield more accurate results. Future studies of ITPBD among USAF samples also need to examine whether dual military status (both parents are

military members) impacts the relationship between USAF parent difficulties and offspring difficulties.

Introduction

Intergenerational transmission is a process wherein characteristics or traits are transmitted from generation to generation or from parent to offspring (Cavalli-Sforza and Feldman, 1973). A thorough investigation of intergenerational transmission of psychological and behavioral difficulties (ITPBD) among the general population has been conducted (Coyne, 1976; Connell & Goodman, 2002; Goodman et al., 2011). There are significantly fewer studies when only considering ITPBD research that limits their participants to those currently serving in the military at the time of the study (DeVoe et al., 2018; Hisle-Gorman et al., 2019; Waliski et al., 2013; Zalta et al., 2018). Of those studies focused on current military populations, to this researcher's knowledge, none have focused on identifying whether parental gender impacts the interaction between parental difficulties and offspring difficulties.

Examining the role that gender might play in the relationship between parental and offspring difficulties within military populations is supported by previous research conducted using non-military participants. Some studies have found that children of depressed mothers were at higher risk of depression and emotional issues when compared with children of depressed fathers (Fang et al., 2019; Nomura et al., 2001). According to Weissman et al. (2006), the lifetime probability of depression is up to 30% in females and 15% in males, and children of depressed parents are more likely to suffer from depression than those of non-depressed controls. Considering this, one could conclude that ITPBD is more common among female parents when compared to male parents. Other studies have reported that maternal depression, not paternal

depression, affected the incidence of depression amongst their sons and daughters (Eberhart et al., 2006; Klein et al., 2005).

Numerous studies have also examined the influence of post-natal maternal depression on offspring mental, emotional, development, and behavioral wellbeing. Some studies have reported that maternal post-natal depression affected insecure infant attachment (Murray, 1992; Teti et al., 1995). Another study found that the risk of emotional or behavioral disorders at age 11 was four times higher for offspring of mothers who had suffered from post-natal depression than non-depressed mothers (Pawlby et al., 2008). An observational study found that depressed mothers display less warmth than non-depressed mothers at three months post-partum (Lovejoy et al., 2000). A lack of maternal warmth is associated with externalizing behaviors among boys (Blatt-Eisengart et al., 2009). There is an association between maternal post-natal depression and increased harsh reactions such as yelling at a child during infancy (Gelfand & Teti, 1990; Cornish et al., 2006). These harsh reactions are a known risk factor for externalizing behavior difficulties and poor academic achievement among children and adolescents (Patterson et al., 1989; Low & Stocker, 2005).

Females in the military may face the same biological, social, and emotional stressors as non-military females. However, they also experience deployments, geographic separations, relocations, and demanding military work schedules. These additional stressors are military-specific wellness risk factors (Clever & Segal, 2013). Given the high rate of exposure to stress within the military, studying this relationship between parental gender and ITPBD is particularly crucial among military parents and children. This study intends to help address this knowledge

gap and increase our understanding of ITPBD among current military populations. As such, this research study aims to address the following hypothesis:

> There is a stronger relationship between the psychological and behavioral difficulties of female parents and those of their offspring when compared to the psychological and behavioral difficulties of male parents and those of their offspring when controlling for marital status.

Theoretical Frame

Hill's (1949; 1958) Family Stress Theory and corresponding ABC-X model (a precipitating event (A) interacting with the family's support and resources (B) and the meaning the family assigns to the event (C) produces a crisis (X)) arose from research with World War II veterans and their families. Boss (2002) built upon the ABC-X model by incorporating the belief that things influence families outside the family unit and that these external factors impact the original model's A, B, and C concepts. Culture, genetics, place in the developmental life cycle, familial structure, values, and beliefs are all factors that can play a role in determining whether an event will lead to a crisis. Support for the ABC-X family stress model comes from previous research to include studies of non-military populations (Blom et al., 2019) and military populations (Lucier-Greer et al., 2020).

Methods

Subjects

This researcher drew this study's data from the 2017 U.S. Air Force Community Feedback Tool (Sims, C. et al., 2019). The Air Force Medical Operations Agency commissioned the original research conducted by the RAND Corporation (Sims, C. et al., 2019). USAF

members, spouses, and civilian employees could complete the online self-reported comprehensive needs assessment. The completion window for the survey was August to October 2017. In total, 88,592 individuals completed the survey.

The current study's responses were limited to participants who identified as military members belonging to any of the three USAF components: active, guard, and reserve. Excluded responses included those from spouses and civilian employees. Participants who indicated not having a child under 18 years of age were also excluded, given that the current study examined a relationship between parent and offspring. Identified gender, pay grade (enlisted and officer), and Air Force Specialty Codes (AFSC) were not inclusion or exclusion variables. This study's sample ultimately included 29,572 individuals.

Design

The current study was a secondary analysis of existing data gathered via the 2017 U.S. Air Force Community Feedback Tool. The study design was non-experimental, correlational, and cross-sectional. Analysis of moment structures 27 (Arbuckle, 2019) was used to analyze data with structural equation modeling (SEM). The proposed model contained two observed variables (indicator variables for the independent and dependent variable), two latent variables (parent difficulties and offspring difficulties), and four control variables. The proposed model employed a constrained path between the two latent variables to determine if gender impacts the relationship between parent difficulties and offspring difficulties.

Constructs/Variables

The observed independent variable was the total score over eleven of the seventeen items from the original study's construct, "problems with your own wellbeing." This independent

researcher reviewed the seventeen original items on three separate occasions for inclusion and ultimately excluded six of the original items. Multiple reviews ensured that the items chosen were consistent with the psychological and behavioral difficulties construct. This reviewer did not identify the excluded items as a potential symptom of psychological or behavioral difficulties (e.g., physical injury, managing weight, unchallenging by work). The eleven items that remained for inclusion were: feeling stressed or overwhelmed; sleeping problems; hard to focus, concentrate, or remember things; doing poorly in school or work; grieving the loss of a friend or loved one; loneliness or boredom; difficulty finding meaning or purpose in life; mood (depression, impatience, anger, aggression, anxiety); substance misuse or abuse; too much time playing video games or on social media; and difficulty controlling your spending. The original study used dichotomous variables and, therefore, this study's independent observed variable (eleven original items combined) had a range of possible scores from zero through eleven. The reliability coefficient for the independent variables was alpha = .756.

The observed dependent variable was the total score over four of the sixteen items from the original study's construct, "child-specific problems." To help ensure content validity, this independent researcher reviewed the sixteen original items on three separate occasions for inclusion and ultimately excluded twelve of the original items. Excluded items were those that did not relate to the psychological or behavioral health of the child, but rather logistical problems a parent might experience related to caring for a child. Examples of those excluded are: cost of quality childcare, distance from quality youth and teen programs, and child's physical health problems. The four items that remained for inclusion were: poor or dropping grades; emotional or behavioral problems; adjusting after a moving or relocation; and adjusting to separation from

parent deployed or working far from home. Again, given that the original study used dichotomous variables, this study's dependent observed variable (four original items combined) had a range of possible scores from zero through four. The reliability coefficient for the dependent variables was alpha = .505. The modest reliability coefficient is likely due to the small number of dependent items chosen to represent the latent construct. However, to help ensure that validity was not sacrificed to maximize reliability, the selected dependent items most accurately represented the latent construct.

The four control variables included parental pay grade or pay group category (E1-E4, E-5-E6, E7-E9, O1-O3, O4 and above); marstat 1 (married as compared with unmarried) and marstat 2 (married as compared with partnered); and USAF component or afcomponent (active duty as compared with guard/reserve). This researcher gave careful consideration to including dual military status (both parents are USAF members) as a control variable, but the percentage of respondents who indicated this status (2.2%) was too low to provide statistically significant results. Resultantly, this study did not include dual military status as a control variable in the model.

Data Analysis Strategies

Data were organized into two separate datasets (females, males) using The Statistical Package for the Social Sciences (SPSS). SEM using IBM SPSS AMOS 27 (Arbuckle, 2019) was used to test the research hypothesis. Multiple imputation addressed missing data to decrease bias in data inferences. Compared to conventional methods such as arithmetic mean, listwise deletion, and pairwise deletion, multiple imputation is recommended as an optimal method for computing

smaller amounts of missing data (Schafer & Graham, 2002). The SEM had the estimated random measurement error built-in to control for random measurement error and low reliability.

The model fit was assessed before the analysis of the results. The benchmark indicators for a close-fitting model are: a chi-square (X^2) p-value >.05, a standardized root mean residual (SRMR) <.05, a comparative fit index (CFI) and Tucker-Lewis index (TLI) >.95, and a root mean square error of approximation (RMSEA) <.05. The RMSEA should also have upper and lower ends of the confidence interval (CI) <.05, and a close-fit p-value >.05 (Wang & Wang, 2020). At a minimum, a model must meet the following fit indices for an adequate model fit to the observed data: CFI and TLI >.90 and RMSEA <.10. All of that said, fit indices must be looked at together and not separately when considering model fit. For instance, while most fit indices are not overly sensitive to large sample sizes, the chi-square is very sensitive to differences in the actual and predicted variance and covariance matrix, especially with substantial sample sizes.

To estimate the significance of the direct effect of ParentDifficulties on OffspringDifficulties, bootstrapped confidence intervals were employed using accepted procedures (Preacher & Hayes, 2008). Two thousand bootstrapped samples estimated the model's parameters. To determine statistical significance, bias-corrected and accelerated 95% CIs were computed.

Results

Structural Model

The model fit analysis revealed that the hypothesized model fit the observed data adequately. X^2 (2) = 39.86, p < .001; SRMR = .0034, CFI = .99, TLI = .93, RMSEA = .021,

lower end of 90% CI for RMSEA = .015, upper end of 90% CI for RMSEA = .026, p = 1.00. The considerable sample size can help to explain the overall chi-square p-value of <.05. As previously mentioned, the overall Chi-square fit index is very sensitive to minor differences between the hypothesized and observed covariance matrix models in large samples. The other fit indices were adequate or well-fitting. Figure 5 depicts the hypothesized model for the current hypothesis. This model estimated the path from parent difficulties to offspring difficulties for male and female participants while controlling for the measurement error in the measures of the independent and dependent variables. The hypothesis implied these paths would be positive and statistically significant, but different in magnitude according to parent gender.

Statistical Model

The analysis resulted in a path coefficient estimate for the relationship between female parent difficulties and offspring difficulties of .227 with a standard error of .004, a critical ratio of 55.631, and a $p < .001$. The resultant standardized path coefficient was .462. The path coefficient estimate for the relationship between male parent difficulties and offspring difficulties was the same as that for female parents, .227 with a standard error of .004, a critical ratio of 55.631, and a $p < .001$. The standardized path coefficient estimate for this relationship was .545.

These results indicated that the path between ParentDifficulties and OffspringDifficulties is the same regardless of parental gender. Parental gender does not appear to impact or interact in the relationship between these two latent constructs. Thus, there was no support for the research hypothesis that there is a stronger relationship between reported psychological and behavioral difficulties of female parents and those of their offspring compared to the psychological and

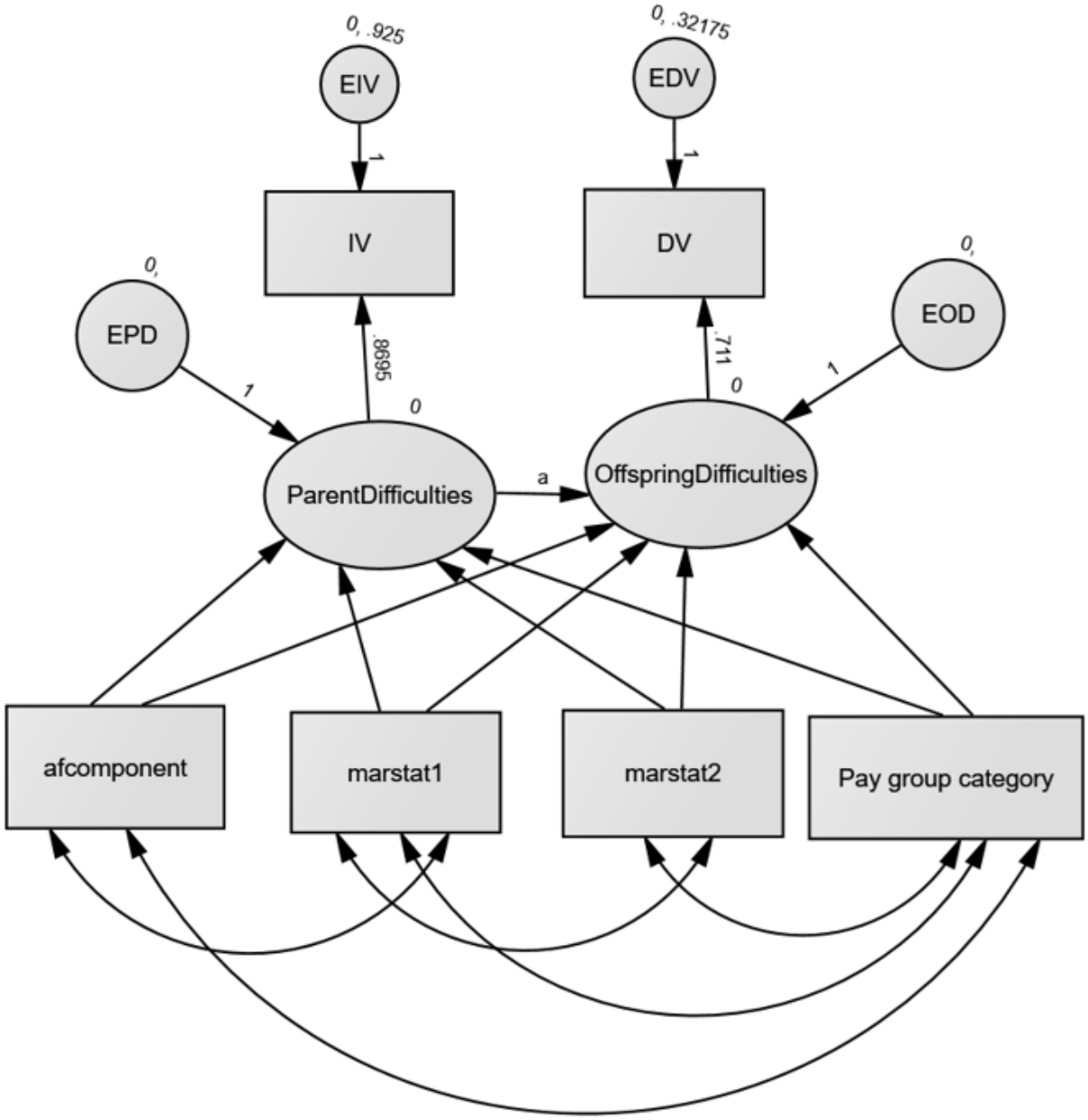


Figure 5. Structural Model to Test for Parent Gender Interaction in ITPBD. EIV represents the random measurement error for the IV and EDV represents the random measurement error for the DV. EPD represents the variance in the latent variable ParentDifficulties and EOD represents the variance in OffspringDifficulties.

behavioral difficulties of male parents and those of their offspring when controlling for marital status. Figure 6 depicts this statistical model.

Squared multiple correlations for female and male parent groups were also completed. The output for the female parent group indicated that the control variables in the model explained 5.9% of the variation in ParentDifficulties, and the whole model explained 24% of the variance in OffspringDifficulties. The output for the male parent group indicated that the control variables explained 3.8% of the variance in ParentDifficulties. At the same time, the whole model explained 33.2% of the variation in OffspringDifficlties. Table 5 reflects the R^2 values for both parent groups.

Though the hypothesis for this study focused on identifying whether parental gender impacted the relationship between ParentDifficulties and OffspringDifficulties, there were other thought-provoking results regarding the control variables. Parent and offspring difficulties go down as the USAF component goes up (active duty as the reference group). This result indicates that parent and offspring psychological and behavioral difficulties are reported less frequently by guard and reserve parents than active-duty parents. Pay grade and offspring difficulties were positively related. Meaning, offspring of higher-ranking USAF members experience greater psychological and behavioral difficulty than offspring of lower-ranking members. Lastly, as marital status goes up (married as the reference group), parent and offspring difficulties go up as well. This outcome indicates that parents who are unmarried or partnered (but not married) report that they and their children experience higher psychological and behavioral difficulties when compared to married parents. Table 6 (female parent group) and Table 7 (male parent group) show the standardized regression weights for these relationships.

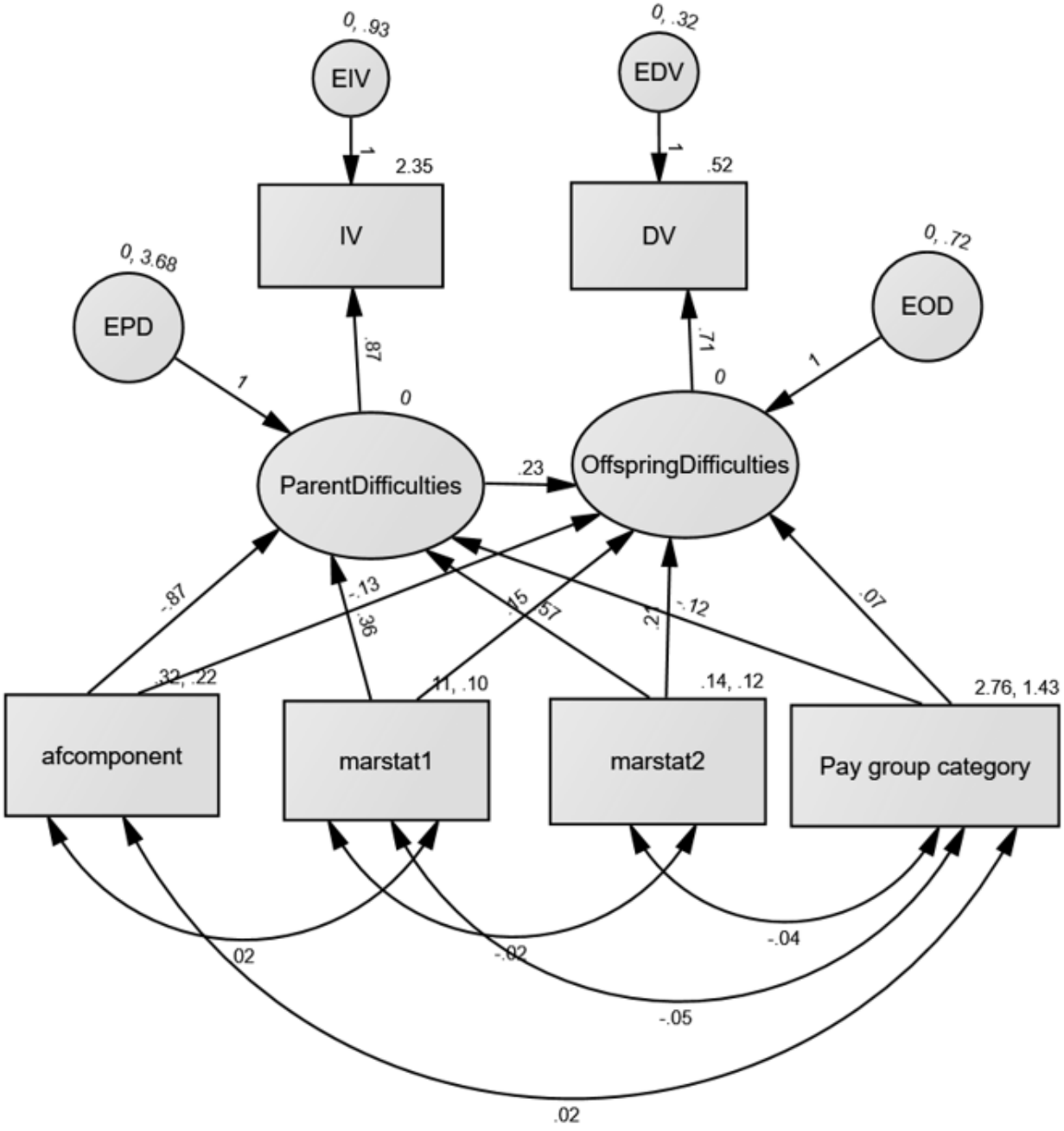


Figure 6. Statistical Model to Test for Parent Gender Interaction in ITPBD. EIV represents the random measurement error for the IV and EDV represents the random measurement error for the DV. EPD represents the variance in the latent variable ParentDifficulties and EOD represents the variance in OffspringDifficulties.

Table 5. Squared Multiple Correlations (R^2 Values)

Female		Estimate	%
	ParentDifficulties	.059	5.9
	OffspringDifficulties	.240	24
Male			
	ParentDifficulties	.038	3.8
	OffspringDifficulties	.332	33.2

Table 6. Standardized Regression Weights for Female Parent Group

			Estimate	P-Value
ParentDifficuties	< ---	AFComponent	-.204	< .001
ParentDifficuties	< ---	Marstat1	.056	< .001
ParentDifficuties	< ---	Marstat2	.100	< .001
ParentDifficuties	< ---	Pay Group Category	-.071	< .001
OffspringDifficulties	< ---	AFComponent	-.061	< .001
OffspringDifficulties	< ---	Marstat1	.050	< .001
OffspringDifficulties	< ---	Marstat2	.074	.002
OffspringDifficulties	< ---	Pay Group Category	.083	< .001

Table 7. Standardized Regression Weights for Male Parent Group

			Estimate	P-Value
ParentDifficuties	< ---	AFComponent	-.155	< .001
ParentDifficuties	< ---	Marstat1	.039	< .001
ParentDifficuties	< ---	Marstat2	.069	< .001
ParentDifficuties	< ---	Pay Group Category	-.088	< .001
OffspringDifficulties	< ---	AFComponent	-.091	< .001
OffspringDifficulties	< ---	Marstat1	.026	.004
OffspringDifficulties	< ---	Marstat2	.006	.480
OffspringDifficulties	< ---	Pay Group Category	.173	< .001

Discussion

The current study is the first work known to this researcher to examine whether parental gender impacts the relationship between parental difficulties and offspring difficulties among USAF members and their offspring. Additionally, it is one of very few that investigates ITPBD in any manner within the USAF population using data collected during the last decade. The substantially large sample size is also a strength of the current study. There are some critical points to consider when contemplating this study's results.

First, many other possible items could have more accurately represented the offspring difficulties construct (construct underrepresentation). Construct underrepresentation is a potential threat to content validity and could cause the study's results to be misrepresentative of reality. This study's results might have been different if more dependent offspring items had been on the measure of child problems and therefore more accurately represented the offspring problems construct. Second, females with less time in service may not have had the opportunity to go through stressors experienced by those who have a longer length of service (e.g., multiple moves, deployment, childbirth). Relatedly, females who have experienced greater psychological and behavioral difficulties may not remain in the USAF long enough to be captured by cross-sectional research due to voluntary military separation or medical separation related to such problems. As a result, the potential absence of these female parents from research may have impacted this study’s results.

Limitations

Though this study offers insight into the role that parental gender plays in ITPBD within the USAF population, attention must be paid to its limitations. First, given that this study was a

secondary analysis, it relied on the self-report measure utilized in the primary research. The use of self-report measures allows for reporting bias (Bound, Brown, & Mathiowetz, 2001). Second, the "left out variable problem" is a limitation. Other control variables not included in this study may have impacted the study outcome (e.g., military parents' deployment history to include frequency, length, recency). As mentioned earlier, this study also suffers from construct underrepresentation. Construct underrepresentation is especially apparent when considering the dependent items used to make up the offspring difficulties construct. Fourth, this study used a cross-sectional research design. Since cross-sectional studies involve only one measurement in time, causal relationships cannot be derived (Maxwell & Cole, 2007).

Future studies should address these limitations by utilizing primary research. Using primary research would allow an investigator to address the concerns of the "left out variable problem" and construct underrepresentation. Second, the inclusion of social desirability measures would address the concerns of reporting bias if using self-report measures (Bound, Brown, & Mathiowetz, 2001). Third, longitudinal studies would allow for the possible identification of causal relationships.

Potential Contributions

The results of this study did not support the research hypothesis. However, it does lay the groundwork for future studies to reexamine the impact that gender may have on ITPBD among USAF samples by identifying the limitations in need of addressing. Additionally, the results indicate the overall presence of ITPBD among USAF families, which supports the need for policy and clinical practice protocol changes.

Due to the intimacy of the parent-child relationship, the wellbeing of military children plays a critical role in the military parents' ability to focus on and successfully perform their military duties (Gewirtz et al., 2011; Park, 2011). Given this understanding, policy and clinical protocol changes should emphasize the importance of the family's mental health instead of the individual service members' by increasing access to on-base mental health services and incorporating more family-focused therapy techniques rather than standard individual therapy practices. In addition, USAF policy change should address the frequency of required military moves. Less frequent moves would allow military families to establish greater community and informal support networks, increasing how successfully those families manage stress and crises (Boss, 2002). Less frequent moves could prove incredibly impactful in the lives of single parents and military families who are living far from extended family members.

CONCLUSION

The studies conducted in this research examined the intergenerational transmission of psychological and behavioral difficulties (ITPBD) as it related to a sample of participants from the United States Air Force (USAF) population. Both studies provided findings that increase the understanding of ITPBD among USAF members and their offspring. Though each study had limitations, both offered valuable contributions to the field of ITPBD research.

The first study aimed to address the hypothesis that USAF parents who report experiencing a greater degree of their own psychological and behavioral difficulties also report that their offspring experience higher levels of psychological and behavioral difficulties. The results indicated that, as USAF parents reported an increase in their own psychological and behavioral difficulties, they also reported an increase in their offspring's psychological and behavioral difficulties. This outcome was a clear indication for the precense of ITPBD within USAF families.

The second study aimed to address the hypothesis that there is a stronger relationship between reported psychological and behavioral difficulties of female parents and those of their offspring compared to the psychological and behavioral difficulties of male parents and those of their offspring when controlling for marital status. The results indicated that parent gender did not impact the relationship between parent difficulties and offspring difficulties. Thus, the hypothesis was not supported. However, the results revealed a few interesting findings that were unrelated to the research hypothesis. First, parent and offspring psychological and behavioral difficulties were reported less frequently by guard and reserve parents as compared to active-duty parents. Second, pay grade and offspring difficulties were positively related. Third, USAF

parents who were unmarried or partnered reported that they and their children experienced higher psychological and behavioral difficulties when compared to married parents.

Both studies provided increased understanding of ITPBD within the USAF population, but they were not without their limitations. Both studies conducted secondary analyses of the same dataset. The use of secondary data meant that the control, independent, and dependent variables were restricted to those items utilized in the primary research. This inability to tailor items to specific research questions and constructs allows for the potential limitations of the "left out variable problem" and construct underrepresentation. Additionally, the primary research relied on a self-report measure, which allowed for potential reporting bias (Bound, Brown, & Mathiowetz, 2001). Lastly, both studies used cross-sectional research designs, which prevented the identification of causal relationships (Maxwell & Cole, 2007).

Though these studies are not without their limitations, they still hold value in terms of Department of Defense (DoD) and USAF policies regarding access to on-base mental health care services for family members as well as policies pertaining to the frequency of relocations and separations. Practitioners who work with USAF members should also work to implement a family focused approach when possible to address the interplay between the difficulties experienced by the parent as well as the offspring.

These studies can help inform future ITPBD research of among the USAF population. It is recommended that future researchers undertake similar studies using a primary research strategy rather than secondary analyses. Conducting primary research would allow for the use of survey instruments that were created specifically for the identification of psychological and behavioral difficulties. This change would address any concerns of the instrument's validity and

potentially yield more precise results. If using self-report instruments, the inclusion of social desirability measures would address the concerns of reporting bias (Bound, Brown, & Mathiowetz, 2001). Additionally, longitudinal studies rather than cross-sectional, would allow for the possible identification of causal relationships.

Lastly, there were also interesting data points found within the results of the second study that were not fully explored due to the unrelatedness to the specific research question. Findings related to the impact that USAF component, pay grade, and marital status have on parent and offspring psychological and behavioral difficulties stood out as interesting data points. It is recommended that these findings be earmarked for further exploration in future research.

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VITA

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