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Attribution theory and increasing social support for women with postpartum depression:

An exploration of perceived stability, onset controllability, and effort

by

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Claremont Graduate University

2019

APPROVAL OF THE DISSERTATION COMMITTEE

This dissertation has been duly read, reviewed, and critiqued by the Committee listed below, which hereby approves the manuscript of Andrea L. Ruybal as fulfilling the scope and quality requirements for meriting the degree of A Dissertation to be submitted to the Faculty of Claremont Graduate University in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Psychology.

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Abstract

Attribution theory and increasing social support for women with postpartum depression:

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Women with postpartum depression (PPD) deal with the negative impact of depression, as well as the burden of stigma (i.e., negative stereotypes). Guided by the attribution-emotion-action model (Weiner, 1980a), the current studies seek to assess whether emphasizing the temporary nature of PPD (i.e., stability), the uncontrollable development of the ailment (i.e., onset controllability), and whether it appears someone is making an effort to overcome PPD will indirectly result in greater social support, through anger, sympathy, and social support outcome expectations. This approach, utilizing combinations of three different attributions, along with social support outcome expectations as a mediator has not been explored in previous literature; however, data from a Pilot Study suggests it is a viable approach. In Study 1, participants were randomly assigned to read one of eight written vignettes describing a hypothetical situation in which a loved one's PPD is temporary or permanent, onset uncontrollable or onset controllable, and where a loved one is described as exerting effort or not exerting effort to overcome her PPD. Results indicate that main effects and interactions of these three attributions are useful in reducing stigma by increasing willingness to help a loved one with PPD. Study 2 examined the

effectiveness of anti-stigma video PSAs by using a more stringent test of attribution theory (i.e., examining only positive attributions rather than comparing them to negative attributions). Eight different PSA videos were used which emphasized that PPD can be temporary, that women cannot control developing PPD, and that effort is being put forth to overcome PPD. Results indicate that emphasizing the temporary nature of PPD and that effort is being expended to overcome this ailment can be a successful approach. This set of studies demonstrates the applicability of attribution theory to the PPD domain and provides insight into the stigmatization of women with PPD and offers a possible path for reducing PPD stigmatization while also expanding our understanding of attribution theory through a novel approach.

Keywords: attribution, emotion, postpartum depression, help-giving, stigma

Dedicación

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CHAPTER 1

INTRODUCTION

Postpartum depression (PPD) is a specific form of depression defined as depression occurring within the first year after childbirth. This form of depression affects 10%-15% of all childbearing women (Boland-Prom & MacMullen, 2012; Patel et al., 2012). Postpartum depression negatively impacts the economy (Greenberg et al., 2003; Stone, 2012), child development (Dawson et al., 1999), families (Letourneau et al., 2012; Riecher-Rössler & Fallahpour, 2003), and costs some women their lives (Healey et al., 2013). Australia estimated 433 million dollars were spent as a result of postpartum depression within 2012 alone, equivalent to the United States spending more than one billion dollars per year due to the ailment (Stone, 2012). Compared to women without depression, those with PPD experience a six-fold increase in the use of mental health counseling and are four times more likely to have emergency room visits (Dagher, McGovern, Dowd, Gjerdingen, & Dwenda, 2012).

Postpartum depression is not only costly to the nation, it is costly to the family unit (e.g., Letourneau et al., 2012). Children may have a multitude of developmental problems if mothers have depression, including lower levels of frontal lobe activity (Dawson et al., 1999), lower responsiveness, problems maintaining attention, and low levels of endurance and energy (Righetti-Veltema, Bousquet, & Manzano, 2003). Issues in both motor and mental development in infants may occur (Murray & Cooper, 1997), as well as poor health (Casey et al., 2004), lower self-esteem, lower emotional well-being (Aunola & Nurmi, 2005), and inconsistent attachment responses (Weinberg & Tronick, 1998) when mothers have PPD. More troubling still is that 24%-50% of partners experience depression if maternal PPD is present (Goodman, 2004). Further, Letourneau and colleagues (2012) found that up to 50% of men whose partners have

maternal PPD also display depressive symptoms, leaving newborn children with two parents dealing with depression in heterosexual couples.

Significance

Postpartum depression interventions that address a number of different concerns for help-seeking are needed. Organizations looking to reduce levels of PPD have recently launched campaigns to reduce stigma and promote help seeking, as this form of depression is gaining more public attention. Some examples are the 2020 Mom Project (2017), the Silence Sucks campaign (2017), and the #SpeakTheSecret campaign (The Postpartum Stress Center, 2017).

Demonstrating the need for theory and evidence-based approaches, the Silence Sucks campaign received harsh backlash from many women, scholars, and other organizations (Bologna, 2017).

Further, lawmakers in California have recently started to debate the need for mandatory PPD screening (Dembosky, 2018). This comes after a late 2016 act passed by Congress and signed into law called the 21st Century Cures Act (114th Congress, 2015-2016), which among other health concerns provides more funding for PPD screening.

Although screening is becoming more consistent and aid is available for women with PPD, the stronger depressive symptoms become, the weaker intentions to seek help become (Sawyer et al., 2012). This is because individuals with depression process information with a more negative bias than people without depression (Dozois & Dobson, 2001). Further, the negative bias worsens as depression becomes more severe (Haaga, Dyck, & Ernst, 1991). This same negative bias that influences the cognition of people with depression also influences a mother's perception of the utility of seeking help. For this reason, direct approaches for encouraging help seeking in individuals with depression are not always successful. Boomerang effects, defined as a reduced likelihood of seeking help, can occur, whereby individuals with

depression are less likely to seek help for their condition (Klimes-Dougan & Lee, 2010; Lienemann, Siegel, & Crano, 2012).

Further, a public stigma around motherhood also exists, with women being told how to feel post childbirth (e.g., feelings of enjoyment, happiness, overwhelmed by positive emotions; see O'Mahony, Donnelly, Raffin Bouchal, & Este, 2013; Riecher-Rössler & Fallahpour, 2003), and are faced with ideas of idealized motherhood (e.g., motherhood as fundamental to being a woman; McCarthy & McMahon, 2008; O'Mahony et al., 2013). Thus, women face the negative symptoms of depression, as well as stigma associated with depression, and stigma associated with motherhood. Stigma and judgment from others are the most common reasons women report not seeking help (Jesse, Dolbier, & Blanchard, 2008). Researchers have attempted to change the public stigma surrounding mental illness by increasing help provision via indirect approaches, such as persuading loved ones of people with depression in an attempt to increase help for people with depression and reduce stigma (see Ruybal & Siegel, 2017, 2019a for examples).

The approach taken herein is to focus not directly on persuading women with PPD, but instead on persuading their close friends and family to reach out and offer support. This is a viable approach as these individuals can offer help to a loved one with depression and are less likely to have depression themselves. This approach also helps to reduce the existing stigma surrounding PPD (Goodman, 2009). With the use of Weiner's attribution-emotion-action model, the current research proposes changing attributions about PPD to increase positive emotions toward women with the ailment, thus reducing negative emotions, as well as increasing social support outcome expectations (see Ruybal & Siegel, 2017 for a similar approach). The current research is designed to do this by building on prior studies that have applied attribution theory to reduce the stigma of PPD. This has been done by exploring how controllability (Ruybal &

Siegel, 2017) and stability (Ruybal & Siegel, 2019a) can be successful at increasing willingness to provide social support, and beliefs that support will make a positive difference for women with PPD. Understanding how controllability and stability together may influence social support is an important next step to utilize this approach in an applied setting. Further, the role that effort may play in the attribution-emotion-action model is an additional fruitful area to explore before recommendations can be made for the application of a campaign. Drawing from past studies, the current research effort will utilize a previously unexplored combination of attributions (i.e., stability, onset controllability, and effort) in an attempt to influence emotion and willingness to provide assistance to a loved one with PPD.

CHAPTER 2

REVIEW OF THE LITERATURE

Attribution Theory

Heider (1958) created attribution theory to explain how we understand the world around us. He did this by examining social interactions and how perceptions may differ based on beliefs that internal or external causes were shaping interactions. Heider classified internal factors as characteristics of an individual such as traits, abilities, or feelings. External factors refer to characteristics of the individual's environment or culture. This theoretical framework inspired fellow researchers who honed and expanded Heider's ideas (see Jones & Davis, 1965; Jones & Harris, 1967; Kelley, 1967). Weiner's (1980a) work on attribution theory extended the theory beyond internal and external attributions. He added to the work of previous researchers by creating an attribution-emotion-action model to explain how emotion and motivation relate to attributions (1980a 1985). This model is a mediation approach which posits that attributions lead not only to judgments, but also elicit emotion, with emotion being the primary force to influence judgments. Thus, attributions have an indirect effect on actions via emotion. Weiner (1979) outlined three dimensions of attributions: locus of causality, stability, and controllability.

Attributions. Weiner applied the label locus of causality to the classification of internal or external causes. Locus of causality focuses primarily on whether the cause of an event or occurrence was internal (personality trait; e.g., someone is lazy) or external (something in the surrounding environment; e.g., someone is under a lot of stress; Weiner, 1979). It is also possible that internal and external causality exist regarding the same focus. Someone can fail an exam because they were lazy (internal), but that same person can fail an exam because of the flu (external). As such, locus of causality can be interpreted differently depending on the existing

information.

Stability is typically measured on a continuum from stable to unstable or permanent to temporary. Weiner has focused on the stability of situations or ailments (Weiner, Perry, & Magnusson, 1988). He refers to stability as whether a condition changes or remains stagnant over time (e.g., some mental illnesses can be maintained but not cured; some mental illnesses can be cured). Stability is used in research to observe how people judge the likelihood that a condition changes or remains stagnant over time.

Controllability is concerned with whether the cause of something can be classified as controllable or uncontrollable (e.g., someone has mental health issues because they do not take care of themselves, or because of a genetic predisposition). Controllability is also associated with blame, intentionality, and responsibility (Weiner, 2018). This dimension of the attribution-emotion-action model is the most commonly explored. Although the controllable-uncontrollable dichotomy is commonly used, a distinction between onset and offset controllability is also made (Brickman et al., 1982). Brickman and colleagues defined onset as responsibility for a past problem and offset as responsibility for a future solution to the problem. In the context of mental health, onset controllable refers to the ability to have prevented or influenced a situation or problem (e.g., responsibility for an ailment developing), while offset controllable refers to the ability to end or overcome a situation (e.g., control over the recovery from an ailment). Brickman and colleagues further outline four possible models to explain the decision-making process for providing help to someone in need. Each model looks at each responsibility or absence of responsibility at the onset and offset phase. These include, a moral model (i.e., responsible for the onset and offset), compensatory model (i.e., not responsible for the onset but responsible for the offset), medical model (i.e., no responsibility for onset nor offset), and enlightenment model

(i.e., responsible for onset but unable or unwilling to provide a solution for the offset). Brickman and colleagues hypothesize that using the correct model for a specific situation can maximize helping behaviors.

Some studies exploring the stigma that surrounds health issues have adopted the distinction between onset and offset controllability (Corrigan, Tsang, Shi, Lam, & Larson, 2010; Karasawa, 1991; Schomerus, Matschinger, & Angermeyer, 2013; Siegel et al., 2012). In other situations, however, onset controllability is explored alone (DePalma, Madey, Tillman, & Wheeler, 1999; Dijker & Kooman, 2003; Dooley, 1995; Seacat, Hirschman, & Mickelson, 2007). This is likely due to certain ailments not having the option for offset controllability, such as with AIDS or schizophrenia. Although the onset and offset distinction is important, few studies have explored this distinction compared to general controllability.

Emotion. Although there are numerous discrete emotions, anger and sympathy are used most often with this attribution framework (Weiner, 2018). In the help-giving literature, anger and sympathy are most often associated with controllability rather than locus of causality and stability (Rudolph, Roesch, Greitemeyer, & Weiner, 2004). Controllable situations tend to cause anger, while uncontrollable situations arouse sympathy. Although limited in the help-giving literature, research utilizing stability does appear to be successful in arousing anger and sympathy as well in situations where ongoing care or relationships are involved (see Bailey, Hare, Hatton, & Limb, 2006) for stability and anger; Muschetto & Siegel, 2018 for stability, anger, and sympathy; Dagnan & Cairns, 2005 and Willner & Smith, 2008 for stability and sympathy). Locus of causality is least often used regarding help-giving; however, it is used more often in education research, or in older attribution studies in combination with controllability or stability (Weiner, 2018; Weiner et al., 1988). Weiner has proposed other emotions that may be

beneficial in understanding judgments, such as gratitude, guilt, regret, shame, and scorn; however, anger and sympathy remain the most common (Weiner, 2018).

Action. Attribution literature focused on help-giving commonly explores intentions to help, judgments someone is worthy of help, or a desire for social distance from someone to measure action, especially in stigma related research. Weiner posits that emotion is predictive of action with specific emotions leading to certain actions. Willingness to help an individual in need has been examined as an outcome of emotion when examining stability and controllability (Muschetto & Siegel, 2018). Weiner posited that sympathy would lead to individuals being more likely to help someone who was blind, a permanent condition, rather than someone with a temporary vision issue (Weiner, 1985; also see Bailey et al., 2006; Dagnan & Cairns, 2005; Muschetto & Siegel, 2018; Willner & Smith, 2008 for examples). Examining controllability, higher levels of anger are more likely to result in an unwillingness to provide help to someone in need (Bailey et al., 2006; Bos, Kok, & Dijker, 2001; Graham, Weiner, Giuliano, & Williams, 1993; Weiner et al., 1988), whereas high levels of sympathy are more likely to result in a willingness to provide help (Dooley, 1995; Graham et al., 1993; Karasawa, 2003; Mackay & Barrowclough, 2005; Siegel et al., 2012).

The attribution-emotion-action model. Altogether, this mediation model can be used to understand and predict helping behaviors (see Weiner et al., 1988). This occurs when an individual observes someone in need of help and makes a judgment about the situation (e.g., the situation is out of the control of the person afflicted). This judgment would then elicit emotion (e.g., anger or sympathy). Uncontrollable situations usually will result in lower levels of anger and higher levels of sympathy. If this is the case, low anger and/or high sympathy would result in a willingness to help the individual in need.

As was mentioned, controllability is the most frequently studied dimension of attribution theory in studies concerning help-giving. As such, there is more empirical support for controllability compared to locus of causality and stability. Early research examined all three dimensions of attributions; however, researchers concluded that controllability was most predictive of helping judgments and behaviors even when all three dimensions were statistically influential (Meyer & Mulherin, 1980; Weiner, 1980b). Over the years, most research concerning help-giving has only focused only on controllability (Higgins & Shaw, 1999; Juvonen & Weiner, 1993; Law, Rostill-Brookes, & Goodman, 2009; Reisenzein, 1986). Thus, a large meta-analysis was made possible, focused specifically on controllability, anger, sympathy, and helping behavior (Rudolph et al., 2004). This project examined 64 different uses of the attribution-emotion-action model in hypothetical and applied situations in the United States, Canada, Japan, Nigeria, the Netherlands, Germany, Portugal, Australia, and Austria. A variety of different groups and subpopulations were used as well, including children. This established support for the attribution-emotion-action model as a robust and universal theory. Weiner (2018) recently discussed these results as a help-giving model of attribution theory and likewise only focused on the controllability dimension.

Although there is undoubtedly more support and greater effect sizes for research on controllability, stability also has been utilized in recent years with mixed results. Two patterns of results have emerged regarding stability. The first pattern finds that perceiving a situation or condition to be permanent or stable results in lower levels of anger, higher levels of sympathy, and a greater willingness to offer help to someone in need. Barnes, Ickes, and Kidd (1979) found that stable causes resulted in more help-giving, but emotion was not measured. Weiner and colleagues (1988) found that stable stigmas increased sympathy and help-giving. A second

pattern of results finds the opposite result. For example, Meyer and Mulherin (1980) explored combinations of attributions and found that stable and controllable situations increased anger and by extension reduced help-giving. Muschetto and Siegel (2018, 2019) posit that this is due to the nature of ongoing relationships in some help-giving research compared to research on helping strangers or acquaintances. Similar research examining stability alone has found that stable situations lower sympathy as well as help-giving (Dagnan & Cairns, 2005; Ruybal & Siegel, 2019a; Willner & Smith, 2008). The same pattern of results is found in research on anger. Stable situations increase anger and result in fewer help-giving intentions (Bailey et al., 2006), especially when the individual is a close other or loved one (Muschetto & Siegel, 2019; Ruybal & Siegel, 2019a; Yao & Siegel, 2019).

Untangling Inconsistencies in the Literature

Early research on the attribution-emotion-action model explored all three dimensions of attribution theory, locus of causality, stability, and controllability together, which resulted in interactions of these attributions (see Meyer & Mulherin, 1980 for an example). These studies however were limited in number and contemporary attribution research rarely reports on interactions of attributions or even explores multiple attributions in the same work. The few studies that have examined both stability and controllability have not found this interaction. However, Weiner, Graham, and Chandler (1982) have found that “Stable causes influence the magnitude, rather than the direction of emotions.” (p. 226). Uncontrollable and stable causes were associated with pity in one study, and in another when a cause was considered internal, suggesting that stability might moderate the influence of controllability.

In a discussion of previous findings in the attribution literature, Weiner stated that the onset and offset distinction was an important contribution to the applicability of the theory;

however, it has not been applied as often as the original controllability dimension, likely due to the unexpected death of Brickman who was the first to discuss this distinction (B. Weiner, personal communication, November 13, 2018). The distinction between onset and offset controllability was explored by Siegel and colleagues (2012) regarding depression, and in a correlational study by Ruybal and Siegel (2017) regarding postpartum depression (PPD). It appears that onset and offset controllability are in fact applicable to depression; however, neither study examined stability at the same time. We suspected that inconsistent associations between stability and controllability could be due to research not distinguishing between onset and offset controllability. Therefore, the current research was designed to examine general controllability, onset controllability, and offset controllability to determine whether onset controllability would have higher correlations with anger, sympathy, and willingness to provide social support when applied to PPD. Further a potential interaction between onset controllability and stability was predicted for a few reasons. Recent research has not found an interaction between general controllability and stability (see Muschetto & Siegel, 2018). General controllability is often used in research, but the distinction between onset and offset controllability is rarely studied. This may lead unintentionally to the confounding of onset and offset controllability with some participants thinking about onset controllability and others thinking about offset controllability. Further, by definition, offset controllability does not lend itself to interact with stability by definition. If there is an offset of an ailment, this would mean that someone has the ability to recover. If recovery is possible, an ailment cannot be permanent, it must have the potential to be temporary. A permanent ailment does not allow for recovery. For example, AIDS has no offset controllability or recovery as it is a permanent condition.

Effort

Karasawa (1991) posited that effort may enhance the attribution-emotion-action model. If someone is choosing healthier foods and exercising, they are more likely to be perceived as expending effort to improve their health, and this may lead to reduced anger and increased sympathy toward the individual. Karasawa (1991) tested this idea by randomly assigning participants to read one of three vignettes (i.e., someone who was sick, someone who gave effort, someone who gave no effort) concerning onset controllability. Afterward participants read a second vignette concerning one of the three conditions, but focused on offset controllability. Emotion and willingness to help were measured after an onset task and again after an offset task. Results concerning onset and offset controllability indicated that effort was important in predicting emotion and willingness to help. When no effort was perceived, participants thought the person in the vignette was responsible for the onset of their situation, had the highest levels of anger, and the lowest levels of pity. Likewise, participants in a no effort condition had the lowest levels of wanting to offer help. Concerning offset controllability, being sick, but giving no effort led to negative affect and lower levels of intentions to help. Perceived effort, like controllability, influenced willingness to offer help through emotion.

Similar to Brickman and colleagues (1982), Karasawa explains these findings through the lens of a moral judgment. If individuals are perceived to give no effort, regardless of considerations of onset responsibility, they are viewed as lazy or unwilling to help themselves. If effort was given but the outcome was not positive, individuals were more likely to view the person in need as lacking the ability to improve their situation. Brickman and colleagues (1982) viewed effort and ability as opposites, with effort being something that can be increased willingly and ability as something static. Effort, as long as it is perceived as being present, has an important impact on decisions to provide help to someone in need, and is related to perceived

offset controllability. Although this research had promising implications, effort seems to have remained dormant in this literature. This is unfortunate as research on attribution theory in the education realm often uses effort as part of the model with success (Weiner, 2018).

Effort seems to be a construct that fits well into understanding attributions about depression. If one were to observe an individual with depression lying in bed all day, it would be easy to conclude they were not allocating effort to overcome their depression. This may even result in loved ones justifying negligence toward helping. However, an unfortunate symptom of depression is a lack of energy (see National Alliance on Mental Illness, 2017 for other symptoms). Another example might be showering, which the average person finds to be a low effort activity. This might require massive effort for someone with depression. Even if someone has a good understanding of depression, it may be difficult to understand how a mundane action for most people might take extreme effort for someone with depression.

Social Support Outcome Expectations

Social support outcome expectations (SSOEs) refer to whether an individual believes giving social support will lead to beneficial outcomes. Siegel and colleagues (2012) found that higher SSOEs were associated with lower anger, higher sympathy, and a greater willingness to help a loved one with depression. Ruybal and Siegel (2017) explored attributions related to PPD and found that controllability indirectly predicted SSOEs, through decreased anger and increased sympathy. Likewise, Ruybal and Siegel (2019a) explored the relationship among stability, affect, and SSOEs, and found that stability indirectly predicted SSOEs through increased sympathy for women with PPD. Further, positive affect has been found to influence thought-action repertoires (Fredrickson & Branigan, 2005), as well as cognitive flexibility (Isen & Labroo, 2003; Isen, Niedenthal, & Cantor, 1992) and controllability and stability have been found to influence

SSOEs through sympathy across several studies (Ruybal & Siegel, 2017, 2019a). Recently Muschetto and Siegel (2019) found that focusing on depression as temporary had an indirect effect on increasing willingness to provide social support via increased SSOEs and decreased anger in one study, and only through SSOEs in another. Although a number of studies have explored SSOEs within an attribution framework, each has done so in a slightly different way. The current research effort will be the first to our knowledge to explore the relationship among stability, onset controllability, effort, and SSOEs in the same study.

Summary

Postpartum depression affects large numbers of women (Patel et al., 2012) and stigma surrounding PPD keeps women from getting help for their ailment (O'Mahony et al., 2013). Weiner's attribution-emotion-action model has proven a useful framework for increasing help-giving and reducing stigma in a wide variety of scenarios. Research on depression and PPD in particular has been successful in this endeavor (Muschetto & Siegel, 2018, 2019; Ruybal & Siegel, 2017, 2019a; Siegel et al., 2012). Although research on attribution theory and help-giving typically has used the controllability dimension to decrease anger and increase sympathy, onset controllability provides an extra layer of specificity and has been used in some depression related studies (see Ruybal & Siegel, 2017, Study 1; Siegel et al., 2012). Stability also has proven useful in this domain (Muschetto & Siegel, 2019; Ruybal & Siegel, 2019a). Onset controllability and effort in combination (Karasawa, 1991) also has resulted in increased help-giving. With this evidence in mind, it is predicted that through emotion (anger and sympathy), stability, onset controllability, and effort should predict willingness to provide social support and SSOEs.

As most research has focused on strangers or more distant acquaintances, there is a need for understanding helping behaviors in close relationships. This approach is less common but

likely imperative to understanding willingness to provide support to someone with PPD. Further, close loved ones are in a better position to aid an individual with PPD than acquaintances. The current research endeavor seeks to demonstrate the applicability of attribution theory to help women with PPD, provide insight into the stigmatization of women with this ailment, and offer a possible means for reducing stigmatization, all while expanding the current understanding of attribution theory through a novel approach.

CHAPTER 3

RATIONALE OF THE PROPOSED STUDIES

Postpartum depression is a form of depression that affects many women (Patel et al., 2012). This form of depression is particularly problematic as the entire family unit can be negatively affected (Letourneau et al., 2012). Unfortunately, the more severe depressive symptoms become, the less likely people are to seek help for their ailment (Sawyer et al., 2012). Although effective treatments are available for PPD, many barriers exist. Stigma is one such barrier, as illustrated by Goodman (2009) who found that because of stigma, 42.5% of pregnant women without depressive symptoms stated they would not seek help if they developed PPD. Public stigma surrounding depression exists, and even loved ones are known to stigmatize individuals with depressive symptomatology (Drake, Howard, & Kinsey, 2014; Edwards & Timmons, 2005; McCarthy & McMahon, 2008; Teng, Blackmore, & Stewart, 2007).

Accordingly, the approach taken herein is to assess a means of influencing the behavior of loved ones of the person with depression (e.g., Siegel et al., 2012) so that they can facilitate support for the woman in need. This approach has been used in previous research on PPD with the aid of attribution theory. Stigma can be reduced by emphasizing that PPD is temporary (Ruybal & Siegel, 2019a), or is uncontrollable (Ruybal & Siegel, 2017), resulting in loved ones being more willing to provide social support, as well as to think their help will make a positive difference. Building on this foundation, the current studies emphasized that PPD is temporary with treatment, and women are not to blame for the onset of PPD. Effort was also explored as there is support that it can influence help-giving when coupled with onset controllability (Karasawa, 1991). Three studies were conducted to explore this approach. A Pilot Study was conducted to examine whether stability, onset controllability, and effort were associated with

anger, sympathy, SSOEs, and social support. This study was also an important step in comparing the effect of general controllability, onset controllability, and offset controllability. Study 1 explored whether emphasizing the temporary nature of PPD, the uncontrollable development of PPD, and the presence of effort given will decrease anger, improve sympathy, and increase willingness to help a loved one with PPD through written vignettes. Study 2 applied this theoretical framework to anti-stigma video PSAs to determine if such an approach was feasible in a campaign setting.

CHAPTER 4

PILOT STUDY

Purpose

This pilot study was designed to examine the associations among stability, onset controllability, and effort, as well as the relationships between these constructs and emotion (anger and sympathy), social support outcome expectations (SSOEs), and willingness to provide social support to a loved one with postpartum depression. Further this study was a necessary step to establish if differences exist among different forms of controllability (i.e., general controllability, onset controllability, offset controllability) as this distinction is often overlooked in the attribution literature and may be a meaningful distinction when applied to postpartum depression (PPD). This approach will test the feasibility of applying combinations of attributions as a means of reducing stigma toward women with PPD.

Hypothesis 1. Stability, onset controllability, general controllability, and offset controllability, and effort will correlate with anger, sympathy, and SSOEs. Anger, sympathy, and SSOEs will in turn correlate with willingness to provide social support.

Hypothesis 2. Onset controllability will have a stronger positive association with anger and a negative association with sympathy compared to general controllability and offset controllability.

Research question 1. Will onset controllability, general controllability, and offset controllability differ in their relationship with SSOEs?

Research question 2. What is the relationship among stability, onset controllability, and effort?

Method

Participants and procedure. Participants were recruited from TurkPrime, a platform partnered with Amazon's Mechanical Turk (Litman, Robinson, & Abberbock, 2016); they were required to read and write English, reside in the United States, and be at least 18 years old. Participants were presented with informed consent information and then given a description of PPD and asked to think of a loved one who could hypothetically have PPD. They then gave their relationship to this individual (e.g., wife, sister, daughter), and this relationship was piped into the directions for the remainder of the survey (see Ruybal & Siegel, 2017, 2019a for a similar method). Individuals were debriefed, offered web-links for more information on PPD and depression, and compensated \$.50. Studies 1 and 2 used a similar procedure.

Measures. Several different scales measured attributions about PPD, emotion, social support, depressive symptoms, and demographic information.

Attributions. To examine causal attributions, stability of PPD and controllability of PPD were both examined. These items were adapted from the Causal Dimension Scale (CDS; $\alpha = .84$ for stability, $\alpha = .73$ for controllability; Russell, 1982) and were presented to participants on 7-point semantic differential items. Sub-scales from the CDS have been used in various other research (see Fleming & Resick, 2017; Kirrane, O'Shea, Buckley, Grazi, & Prout, 2017 for examples).

Stability. Three questions were asked concerning perceived stability of PPD. Participants were asked if the cause of their loved one's depression was stable using a semantic differential scale with 7 options. The following poles were used: *temporary/permanent*, *unstable/stable*, and *changeable/unchangeable*. One item, *unstable to stable*, was dropped in this sub-scale due to poor reliability. Muschetto and Siegel (2018; $\alpha = .71$) and Ruybal and Siegel (2019a; $\alpha = .80$) used similar items regarding depression and PPD. Both studies found that stability was

associated with anger, sympathy, and willingness to provide social support.

Controllability. For exploratory purposes, three questions were asked concerning perceived controllability of PPD using a semantic differential scale with 7 options. Perceived general controllability included, “My _____’s postpartum depression is:” and used the following poles: *uncontrollable/controllable*, *something she cannot influence/something she can influence*, and *something she is not responsible for/something she is responsible for*. Another question focused on onset controllability, “My _____’s development of postpartum depression was something:” with the following pole options: *uncontrollable/controllable*, *she could not influence/she could influence*, and *she is not responsible for/she is responsible for*. Offset controllability was also examined with the question, “My _____’s recovery from postpartum depression is something:” and utilized the following response options, *uncontrollable/controllable*, *she cannot influence/she can influence*, and *she is not responsible for/she is responsible for*. These questions were adapted from previous research on depression (Muschetto & Sigel, 2018; general controllability, $\alpha = .89$) and measure controllability, ability, and responsibility. Research on PPD found onset internal controllability (Study 1 $\alpha = .86$, Study 2 $\alpha = .85$, Study 3 $\alpha = .90$), and offset internal controllability (Study 1 $\alpha = .89$, Study 2 $\alpha = .84$, Study 3 $\alpha = .90$), were associated with anger, sympathy, and willingness to provide social support (Ruybal & Siegel, 2017).

Effort. Two exploratory questions were asked inspired by Karasawa’s (1991) research regarding onset and offset controllability and effort. As effort has not been explored in this context, the following questions were created for this study: “How much personal effort do you think your _____ should give in the future to overcome her postpartum depression?” and “How much effort do you think she would be giving to overcome it?” Response options were

given on items scaled from 1 (*no effort at all*) to 7 (*a lot of effort*). Although Karasawa manipulated effort via vignettes, it was found to be associated with onset controllability, offset controllability, anger, and intentions to help.

Emotion. Following similar prior research, emotion was measured using anger and sympathy to examine emotions commonly occurring when issues of control arise (Piliavin, Rodin, & Piliavin, 1969; Weiner et al., 1988). All participants were given the same prompt, “Imagine you spent an extensive amount of time with your _____ with postpartum depression. To what extent would you feel each of the following emotions toward your _____?”

Anger. Anger was measured via five emotions potentially felt toward a loved one with PPD: a) anger (Weiner et al., 1988), b) annoyance (Karasawa, 2003), c) bothered (Chavira, Lopez, Blacher, & Shapiro, 2000), d) frustration (Harter & Monsour, 1992), and e) impatience (Meyer & Mulherin, 1980). All items were measured on 7-point Likert items from 1 (*not at all*) to 7 (*very much*). Ruybal and Siegel (2017) previously used these items in relation to individuals thinking about a potential loved one with PPD across three studies (Study 1 $\alpha = .88$, Study 2 $\alpha = .90$, Study 3 $\alpha = .91$). Ruybal and Siegel (2019a; Study 1 $\alpha = .94$) also found anger to be associated with stability, sympathy, SSOEs, and willingness to provide social support and Muschetto and Siegel (2018; Study 1 $\alpha = .91$) found anger was associated with controllability, stability, sympathy, and willingness to provide social support.

Sympathy. Sympathy was measured via five emotions potentially felt toward a loved one with PPD: a) endearment (Siegel et al., 2012), b) kindness (Weiner, Amirkhan, Folkes, & Verette, 1987), c) tenderness (Dooley, 1995), d) understanding (Weisman, Lopez, Karno, & Jenkins, 1993), and e) warmth (Hooley & Licht, 1997). All items were measured on 7-point Likert items from 1 (*not at all*) to 7 (*very much*). Similar to anger, these items were previously

used by Ruybal and Siegel (2017) across three studies (Study 1 $\alpha = .88$, Study 2 $\alpha = .94$, Study 3 $\alpha = .91$) and associated with anger, onset controllability, offset controllability, SSOEs, and willingness to provide social support.

Social support outcome expectations (SSOEs). Six items were used to measure SSOEs. Participants answered on 7-point Likert items from 1 (*strongly disagree*) to 7 (*strongly agree*). Questions included: a) There is something I can do to help my _____, b) There is something I can do to shorten the length of time she is depressed, c) There is something I can do to help with her depression recovery, d) My help will make a positive difference, e) My help would be needed if she is going to get better, and f) The more help I can give, the less depressed she will become. This same scale has been used by Ruybal and Siegel (2017; Study 1 $\alpha = .90$, Study 2 $\alpha = .92$, Study 3 $\alpha = .90$) regarding PPD. This scale was also found to be associated with onset controllability, offset controllability, sympathy, and willingness to provide social support (Siegel et al., 2012; Study 1 $\alpha = .88$, Study 2 $\alpha = .79$). Muschetto and Siegel (2019) found this scale to be associated with stability, anger, and willingness to provide social support (Study 1 $\alpha = .90$, Study 2 $\alpha = .89$).

Willingness to provide social support. Six questions were asked regarding willingness to provide social support to a loved one with PPD inspired by research on mental health and social support (Cohen, Mermelstein, Kamarck, & Hoberman, 1985; Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003). Questions included, “I would be willing to help my _____ if...” a) she wanted to talk about her private feelings. , b) ... she wanted someone to point out her good qualities, c) ... she needed someone to tell her she was loved by others, d) ... she needed advice, e) ... she felt lonely, and f) ... she needed someone to make her feel better. Participants were given the option to answer on 7-point Likert items from 1 (*strongly disagree*) to 7 (*strongly*

agree). Ruybal and Siegel (2019a; Study 1 $\alpha = .95$, Study 2 $\alpha = .94$) used this scale in PPD research as did Muschetto and Siegel (2019; Study 1 $\alpha = .95$, Study 2 $\alpha = .95$) in research on depression. This scale was found to be associated with anger, sympathy, and SSOEs in two studies (Siegel et al., 2012; Study 1 $\alpha = .97$, Study 2 $\alpha = .93$).

Current depressive symptoms. The Patient Health Questionnaire-8, an eight-item quick depression assessment based on the DSM-IV requirements for depression, was used to assess depressive symptomatology (Kroenke et al., 2009). Participants were able to answer from 0 to 3 resulting in a possible total score between 0–24. Respondents were asked, “Over the last 2 weeks, how often have you been bothered by any of the following problems?” Answer options include: 0 – Not at all, 1 – Several days, 2 – More than half the days, 3 – Nearly every day. A score of ten or more indicates major depression.

Demographics. Demographics were assessed to provide descriptive information about the sample, including age, gender, ethnicity, education, income, and parental status. See [Table 1](#) for Pilot Study demographic information.

Table 1

| <i>Pilot Study Participant Demographic Information</i> | |
|--|--|
| Variable | <i>N</i> = 251 |
| Age | 20–71 years <i>M</i> = 40.58, <i>SD</i> = 12.69 |
| Gender (woman) | 53.00% |
| Ethnicity (Caucasian) | 78.90% |
| Education (BA/BS or higher) | 59.70% |
| Household Income | |
| \$0 - \$20,000 | 12.00% |
| \$20,001 - \$40,000 | 23.20% |
| \$40,001 - \$80,000 | 38.80% |
| \$80,001+ | 26.00% |
| Is a parent | 54.20% |

Results

Prior to any statistical analyses, the data were examined for duplicate IP addresses, failure to follow directions, failure to pass attention checks, outliers, and violations of normality. As our goal was to influence individuals to help those with PPD, we a priori decided to remove individuals currently diagnosed with depression. This was done as our focus was on public rather than self-stigma and was in line with prior research on increasing social support for individuals with depression and PPD (Muschetto & Siegel, 2018; Ruybal & Siegel, 2019a). Moreover, people with depression do not cognitively process self-relevant information in the same way as individuals without depression (see Siegel, Lienemann, & Rosenberg, 2017 for reviews). As such, 6 cases were deleted due to being duplicate Internet protocol (IP) addresses, 2 individuals listed male loved ones rather than female, 41 did not pass attention checks, and 62 individuals had elevated levels of depressive symptomology. Eight individuals were found to be univariate outliers (i.e., responded more than three standard deviations from the mean), and eight individuals were found to be multivariate outliers using Mahalanobis distance (Tabachnick & Fidell, 2007). Their removal resulted in a final sample of 251 participants.

All measures had acceptable skew and kurtosis. Similar procedures were used across Study 1 and 2 as well. Following data cleaning, Pearson bivariate correlations were conducted to assess relationships between variables. See [Table 2](#) for a correlation matrix, means, standard deviations, and reliability estimates.

Table 2

Pilot Study Correlation Matrix, Means, Standard Deviations, and Alphas

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|------------------|--------|----------------------|--------------------|-------------------|--------|-------|--------|-------|-------|------|
| 1 Stability | - | | | | | | | | | |
| 2 Onset | .26** | - | | | | | | | | |
| 3 Control | -.01 | .52** | - | | | | | | | |
| 4 Offset | -.24** | .09 | .38** | - | | | | | | |
| 5 Current Effort | -.34** | -.22** | .06 | .23** | - | | | | | |
| 6 Future Effort | -.27** | -.15* | .12* | .34** | .48** | - | | | | |
| 7 Anger | .29** | .38** ^{ab} | .12 ^a | -.09 ^b | -.25** | -.12 | - | | | |
| 8 Sympathy | -.40** | -.45** ^{cd} | -.11 ^{cd} | -.09 ^d | .36** | .25** | -.57** | - | | |
| 9 SSOEs | -.22** | .06 | .22** | .23** | .24** | .18** | -.23** | .31** | - | |
| 10 WPSS | -.39** | -.52** | -.25** | .06 | .34** | .33** | -.48** | .70** | .25** | - |
| <i>M</i> | 2.33 | 2.31 | 3.44 | 4.76 | 5.90 | 5.85 | 2.09 | 6.04 | 4.99 | 6.42 |
| <i>SD</i> | 1.13 | 1.42 | 1.35 | 1.40 | 1.04 | 1.02 | 1.11 | 0.96 | 1.12 | 0.80 |
| α | .71 | .91 | .72 | .89 | - | - | .87 | .89 | .87 | .93 |

Notes. All correlations are two-tailed, ** $p < .01$, * $p < .05$, ^a $p = .002$, ^{bcd} $p < .001$

Onset (Onset controllability); Control (General controllability); Offset (Offset controllability); SSOEs (Social support outcome expectations); WPSS (Willingness to provide social support)

Cronbach's alpha for Stability is based on two items, rather than three for an improved reliability statistic.

Hypothesis 1 results. Results of the pilot study found a positive correlation between stability and anger and a negative relationship between stability and sympathy and stability and SSOEs. Onset controllability had a positive relationship with anger and a negative relationship with sympathy. Onset controllability was not significantly related to SSOEs. Results differed for controllability, with a positive correlation with anger, no correlation to sympathy, and a positive relationship with SSOEs. Offset controllability was only positively associated with SSOEs. Effort was found to be negatively associated with anger and positively associated with sympathy and SSOEs. Anger was negatively associated with willingness to provide social support, while sympathy and SSOEs were positively associated with willingness to provide social support.

These results indicate that if people think PPD is temporary rather than permanent, they are likely to have lower levels of anger and higher levels of sympathy toward a woman with PPD

as well as positive beliefs that giving social support will be beneficial. Similarly, believing that a loved one cannot control developing PPD is associated with lower anger, and higher sympathy compared to respondents who believed that their loved one's development of PPD was controllable. Examining only whether PPD is controllable and ignoring the development or recovery aspect of PPD, it was found that controllable PPD was associated with more anger and lower beliefs that help can make a difference, but there was no association with sympathy. Focusing on the overcoming or recovery of PPD being controllable was associated with increased beliefs that additional help from a loved one would be beneficial in overcoming PPD. This form of controllability was not related to anger or sympathy, however. Regarding effort, overall more effort was associated more sympathy and stronger beliefs that social support could make a difference for the woman with PPD. Current effort was associated with less anger and future effort was marginally associated with anger. In turn, lower levels of anger, and higher levels of sympathy and beliefs that help can make a difference were related to higher levels of willingness to provide social support.

Hypothesis 2 results. Utilizing a Hotelling's t-test revealed that onset controllability had stronger associations with anger and sympathy than general controllability and offset controllability. This means that individuals who believe that the development of PPD was uncontrollable were more likely to have lower anger and higher sympathy toward a woman with the ailment than people who thought the development of PPD was controllable. Further, this association was stronger among respondents who believed PPD was generally an uncontrollable ailment or who thought recovery was uncontrollable.

Research question 1 results. Differences in SSOEs also were associated with variations in onset controllability, general controllability, and offset controllability. Onset controllability

was not associated with SSOEs, but general controllability and offset controllability were positively related with SSOEs. This means that the belief that the development of PPD is uncontrollable is not associated with the belief that providing help to the woman with PPD would provide positive outcomes for her. Believing that PPD is generally uncontrollable and that the recovery of PPD is uncontrollable were both associated with beliefs that providing help would lead to positive outcomes.

Research question 2 results. This research was interested not only in types of controllability and whether effort would influence emotions and outcome expectations, but also in exploring combinations of attributions. As such, correlations among stability, onset controllability, and effort were explored. There was a positive association between stability and onset controllability: when PPD was perceived to be temporary, it was also perceived to be onset uncontrollable. Examining effort, if effort was perceived to be high, PPD was also likely to be viewed as temporary and onset uncontrollable.

Discussion

Previous research demonstrated that stability (Ruybal & Siegel, 2019a) and onset controllability (Ruybal & Siegel, 2017, Study 1) could be applied to PPD. However, even though effort has been studied in connection to helping behavior (Karasawa, 1991), it has not been investigated in PPD contexts. This Pilot Study supports the idea that effort may be useful if applied to this form of depression. Further, effort worked in a similar manner to stability in this study. Perceiving PPD to be temporary and perceiving that effort was being exerted were both associated with lower anger, and higher sympathy and SSOEs. This study also found that effort is associated with the offset controllability of PPD, or the overcoming of the ailment. Brickman and colleagues (1982) discussed perceived willingness and ability to overcome an issue as

important factors in prompting an individual to assist someone in need, and Karasawa (1991) described laziness and ability as potential interpretations of a lack of effort given by someone in need.

This study was also designed to determine if onset controllability could be more useful in regard to PPD than general controllability and offset controllability. Results indicate that onset controllability had stronger correlations with anger and sympathy compared to the other two types of controllability. However, there was not an association with SSOEs, which was present for general controllability and offset controllability. As anger and sympathy are central to the attribution mediation model (Rudolph et al., 2004), onset controllability's association with the two emotions is of the utmost importance. Onset controllability and SSOEs have previously been explored together in a correlational study where they also were not associated with each other (Ruybal & Siegel, 2017). However, SSOEs have been important contributors to the attribution literature in a number of other studies (see Muschetto & Siegel, 2019; Ruybal & Siegel, 2019a; Siegel et al., 2012 for examples).

We want to further explore whether onset controllability is key to increasing the usefulness of the stability dimension of attribution theory as well as test the usefulness of effort in this context. However, a few limitations need to be addressed. Sub-scales of the CDS (Russell, 1982) were used to measure controllability and stability; however, an essential item in the stability sub-scale was dropped due to poor fit. Thus, the resulting two-item composite for stability was not a validated measure. Although effort was examined via two single item questions in this study, one item concerned future effort, which is more in line with expectancies and not attributions. Further both effort items were not previously validated and could have been a source of measurement error.

As this study was correlational, we hope to test the causal relationships of these results by applying the findings experimentally. To the best of our knowledge, onset controllability has not been explored in combination with stability as a predictor in any published research, and research has not examined stability, onset controllability, and effort together as predictors. These preliminary results suggest this combination has the potential to increase social support for PPD. This approach may lead to more effective anti-stigma messages focused on PPD. Moreover, an experimental finding can alert the field to the high potential of focusing on effort – something that has been overlooked since Karasawa’s work (1991).

CHAPTER 5

STUDY 1

Purpose

The current research is designed to apply a novel combination of attributions about women with PPD and to lay the foundation for an anti-stigma campaign. To test this approach three focus areas were explored: PPD has a fluid and treatable nature, the onset or development of the ailment with an emphasis on responsibility or lack thereof, and the idea of effort in dealing with overcoming PPD. Study 1 utilized an experimental approach common in attribution research, which involved the use of written vignettes. These vignettes focused on PPD being temporary or permanent, onset uncontrollable or controllable, and on the woman with PPD giving effort or not giving effort to overcome her ailment. These three areas of focus were factorially combined. This study was designed to experimentally test different attributions in combination with one another following the results of the Pilot Study.

Hypotheses

With the potential application to a campaign setting in mind, and with the confirmation from the Pilot Study that this approach has potential, a number of hypotheses were derived from prior theory and research. Study 1 sought to replicate previous findings that attributions, particularly stability (Muschetto & Siegel; 2019), onset controllability (Ruybal & Siegel, 2017), and effort (Karasawa, 1991) are related to willingness to provide social support and willingness to provide general support indirectly through emotion. Seven hypotheses were developed. Three hypotheses and two research questions concerned the main effects of perceptions of stability, onset controllability, and effort. Three hypotheses focused on potential two-way interactions between attributions, and one hypothesis on a potential three-way interaction among variables.

Models for each hypothesis can be found in [Appendix A](#).

H1 stability. Attributing postpartum depression as a temporary rather than a permanent ailment will indirectly increase willingness to provide social support and willingness to provide general support through higher levels of sympathy and social support outcome expectations (SSOEs) and lower levels of anger.

H2 onset controllability. Attributing postpartum depression as something that is onset uncontrollable rather than onset controllable will indirectly increase willingness to provide social support and willingness to provide general support through higher levels of sympathy and lower levels of anger.

RQ1 onset controllability. What is the effect of onset uncontrollability and onset controllability on SSOEs?

RQ2 onset controllability. Does the effect of postpartum depression being attributed as onset uncontrollable rather than onset controllable indirectly increase willingness to provide social support and willingness to provide general support through SSOEs?

H3 effort. Attributing that someone is giving effort to overcome their postpartum depression rather than giving no effort will indirectly increase willingness to provide social support and willingness to provide general support through higher levels of sympathy and SSOEs and lower levels of anger.

H4 stability (temporary vs permanent) x onset controllability (onset uncontrollable vs onset controllable). Perceiving postpartum depression as a temporary rather than a permanent ailment will indirectly increase willingness to provide social support and willingness to provide general support through higher levels of sympathy and SSOEs and lower levels of anger. This effect will be moderated by perceptions of controllability such that the influence of perceptions

of stability on sympathy, SSOEs, and anger will be greater when postpartum depression is perceived as onset controllable rather than onset uncontrollable.

H5 effort (effort vs no effort) x stability (temporary vs permanent). Perceiving that the person with postpartum depression is giving effort to overcome their ailment will indirectly increase willingness to provide social support and willingness to provide general support through higher levels of sympathy and SSOEs and lower levels of anger. This effect will be moderated by perceptions of stability such that the influence of perceptions of effort on sympathy, SSOEs, and anger will be greater when the postpartum depression is perceived as temporary rather than permanent.

H6 effort (effort vs no effort) x onset controllability (onset uncontrollable vs onset controllable). Perceiving that the person with postpartum depression is giving effort to overcome their ailment will indirectly increase willingness to provide social support and willingness to provide general support through higher levels of sympathy and SSOEs and lower levels of anger. This effect will be moderated by perceptions of controllability such that the influence of perceptions of effort on sympathy, SSOEs, and anger will be greater when postpartum depression is perceived as onset controllable rather than onset uncontrollable.

H7 effort (effort vs no effort) x onset controllability (onset uncontrollable vs onset controllable) split by stability (temporary vs permanent). Perceiving that the person with postpartum depression is giving effort to overcome their ailment will indirectly increase willingness to provide social support and willingness to provide general support through higher levels of sympathy and SSOEs and lower levels of anger. This effect will be moderated by perceptions of controllability such that the influence of perceptions of effort on sympathy, SSOEs, and anger will be greater when postpartum depression is perceived as onset controllable

rather than onset uncontrollable. However, this interaction will be stronger when PPD is perceived as temporary than when it is perceived as permanent.

Method

Participants and procedure. As in the Pilot Study, participants were recruited from Amazon's TurkPrime. Participants were once again required to read and write English, reside within the United States, and be a minimum of 18 years of age. They were provided with an informed consent that gave information about the survey and how to contact the primary investigator. Individuals answered questions about depressive symptoms they may have experienced in the past two weeks. If they had elevated depressive symptoms, they were paid \$.10, debriefed, and provided links about depression. If they did not have elevated symptoms and consented to a follow up study, they were paid an additional \$.50 for completion of a second study, debriefed, and offered web-links for more information on PPD and depression. This study was preregistered via the Open Science Framework: <https://osf.io/bngca>.

Measures. The same scales used in the Pilot Study were utilized for Study 1. These scales included anger, sympathy, SSOEs, willingness to provide social support, depression, and demographic questions. An additional scale, willingness to provide general support was added to measure support. Composite variables were made from these scales and all were found to be normally distributed. Survey scales for emotion, SSOEs, and willingness to provide support can be found in [Appendix B](#).

Willingness to provide social support. As in the pilot study, six items concerning social support were presented to participants; however, in this study participants were given the option to answer using a slider from 0 (*strongly disagree*) to 100 (*strongly agree*) rather than a 7-point Likert scale. This approach was adopted from previous depression research (Muschetto & Siegel,

2019).

Willingness to provide general support. An additional scale was included to measure general support. These five items were used in previous research by Muschetto and Sigel (2019) on depression. Questions included, “If my _____ had postpartum depression...” a) I would be there for this person no matter what she needed. , b) I would make helping her one of my top priorities, c) I would help her before I help others who need my help, d) I would help her as long as she needed help, and e) she would always be able to count on me. Participants answered using a slider from 0 (*strongly disagree*) to 100 (*strongly agree*).

Experimental manipulations. Participants were presented with a description of PPD and then asked to think of a female loved one who could have PPD. Utilizing a 2 x 2 x 2 factorial combination of perceived stability (temporary, permanent), onset controllability (onset uncontrollable, onset controllable), and effort (effort, no effort), participants were then randomly assigned to one of eight written vignettes. These vignettes were identical except for three bullet points which stated one of eight potential situations regarding a loved one’s PPD: 1) temporary, onset uncontrollable, effort, 2) temporary, onset uncontrollable, no effort, 3) temporary, onset controllable, effort, 4) temporary, onset controllable, no effort, 5) permanent, onset uncontrollable, effort, 6) permanent, onset uncontrollable, no effort, 7) permanent, onset controllable, effort, 8) permanent, onset controllable, no effort. Three multiple choice questions were asked following the written vignette to ensure that respondents adequately understood the scenarios presented. See [Appendix C](#) for the vignettes and follow up questions. This method and the written vignettes were adapted from work on stability and PPD (Ruybal & Siegel, 2019a), controllability and PPD (Ruybal & Siegel, 2017), and stability and depression (Muschetto & Siegel, 2019). Following, participants were presented measures of emotion, social support, and

demographics. Debriefing followed and included links to websites with more information on PPD and depression.

Results

Individuals who reported elevated levels of depressive symptoms were excluded from analyses. Prior to any statistical analyses, the data were examined for duplicate IP addresses, attention checks, outliers, and violations of normality. The same processes used in the Pilot Study were applied to Study 1. A total of 2,312 participants were collected over a two-day period. Data were excluded for the following reasons: duplicate IP addresses ($n = 106$), having depressive symptoms ($n = 535$), not consenting to continue the survey if depression was not present ($n = 128$), not following directions in providing a relationship to a female loved one ($n = 51$), failing the three-item manipulation check ($n = 361$), dropping out mid-survey ($n = 4$), stating they did not pay attention on a self-reported attention check ($n = 0$), being univariate outliers ($n = 33$), or being multivariate outliers ($n = 3$). This resulted in a total of 1091 cases for all structural equation analyses and 1090 for analyses with gender and age used as covariates. See [Table 3](#) for demographic information.

Table 3

Study 1 Participant Demographic Information

| Variable | $N = 1090$ |
|-----------------------------|--|
| Age | 18–88 years $M = 40.75, SD = 13.50$ |
| Gender (woman) | 57.90% |
| Ethnicity (Caucasian) | 76.00% |
| Education (BA/BS or higher) | 61.30% |
| Household Income | |
| \$0 - \$20,000 | 9.20% |
| \$20,001 - \$40,000 | 26.90% |
| \$40,001 - \$80,000 | 35.30% |
| \$80,001+ | 28.60% |
| Is a parent | 49.00% |

Following data cleaning, all model testing was conducted in AMOS and all other descriptive information and MANCOVAs were analyzed in SPSS version 25. All data analyzed in AMOS was standardized via z-scores. Prior to testing the structural models, a confirmatory factor analysis was conducted to test the measurement model and determine the structure of the data. This included five latent variables and 27 manifest variables. The latent variables were anger (5-items), sympathy (5-items), SSOEs (6-items), willingness to provide social support (6-items), and willingness to provide general support (5-items). In testing the measurement model, all latent factors were free to correlate with one another. The measurement model was an acceptable fit of the data, $\chi^2 / df = 4.65$, CFI = .95, TLI = .95, RMSEA = .06, AIC = 1642.40. All items had relatively high loadings on their intended latent variables ranging from .70 to .93. Further, all latent variables correlated with one another. Based on these results, composite variables were created to determine means, standard deviations, and normality for use in SPSS. See [Table 4](#) for correlation matrix.

Table 4

Study 1 Correlation Matrix, Means, Standard Deviations, and Cronbach's Alphas

| | Anger | Sympathy | SSOEs | WPSS | WPGS |
|-----------|--------|----------|-------|-------|-------|
| Anger | - | | | | |
| Sympathy | -.57** | - | | | |
| SSOEs | -.18** | .33** | - | | |
| WPSS | -.22** | .47** | .22** | - | |
| WPGS | -.22** | .48** | .32** | .69** | - |
| <i>M</i> | 2.76 | 5.65 | 4.67 | 90.74 | 87.03 |
| <i>SD</i> | 1.44 | 1.13 | 1.38 | 11.47 | 14.41 |
| α | .91 | .90 | .92 | .90 | .93 |

Notes. All correlations were two-tailed, ** $p < .01$.

SSOEs (Social support outcome expectations); WPSS (Willingness to provide social support); WPGS (Willingness to provide general support); All variables in this table are non-standardized.

Following confirmatory factor analyses, seven structural equation modeling (SEM) analyses were conducted to test whether the written vignettes predicted willingness to provide social support and willingness to provide general support indirectly via anger, sympathy, and SSOEs. The models also tested the relationships among anger, sympathy, and SSOEs, as well as the relationship between willingness to provide social support and willingness to provide general support. Each model tested one of the seven hypotheses. Research Questions 1 and 2 were explored in the same model as Hypothesis 2. Respecification of the models was conducted by removing non-significant paths. No covariates were used in the SEM models.

A p-value of $\leq .05$ was used to determine statistical significance for all paths. The following cut-offs were applied to determine acceptable model fit: Model χ^2 to degrees of freedom ratio < 3 (Kline, 1998), CFI $\geq .95$ (Hu & Bentler, 1999), TLI $\geq .95$ (Hu & Bentler, 1999), and RMSEA $\leq .06$ (Hu & Bentler, 1999). The model χ^2 to degrees of freedom ratio was chosen rather than model χ^2 , which is especially sensitive to sample size (Bentler & Bonnet, 1980; Jöreskog & Sörbom, 1993). However, all model χ^2 to degrees of freedom ratios were above the predetermined cut off of 3, yet below the common convention of 5 (Marsh & Hocevar, 1985; Wheaton, Muthen, Alwain, & Summers, 1977). As there is no consensus on the acceptable ratio for this statistic, and since all other fit indices were acceptable, we did not attempt to adjust the models further. See [Table 5](#) for fit indices for all seven SEM models and modifications of these models.

Table 5

Study 1 Fit Indices for All Models

| Model | χ^2 / df | CFI | TLI | RMSEA | AIC |
|--------|---------------|------|------|-------------------|---------|
| CFA | 4.651 | .951 | .945 | .058 [.055, .061] | 1642.40 |
| H1 | 4.581 | .954 | .949 | .057 [.054, .060] | 1740.45 |
| H1 Mod | 4.570 | .954 | .949 | .057 [.054, .060] | 1739.08 |
| H2 | 4.463 | .955 | .950 | .056 [.053, .059] | 1700.33 |
| H2 Mod | 4.442 | .955 | .950 | .056 [.053, .059] | 1698.43 |
| H3 | 4.454 | .956 | .950 | .056 [.053, .059] | 1697.50 |
| H3 Mod | 4.437 | .956 | .951 | .056 [.053, .059] | 1696.48 |
| H4 | 4.209 | .953 | .947 | .054 [.052, .057] | 1842.70 |
| H4 Mod | 4.393 | .953 | .948 | .056 [.053, .059] | 1799.02 |
| H5 | 4.211 | .953 | .947 | .054 [.052, .057] | 1843.28 |
| H5 Mod | 4.376 | .953 | .948 | .056 [.053, .058] | 1797.77 |
| H6 | 4.096 | .955 | .949 | .053 [.051, .056] | 1799.19 |
| H6 Mod | 4.066 | .955 | .949 | .053 [.050, .056] | 1795.83 |
| H7 | 3.637 | .952 | .944 | .049 [.047, .052] | 2046.83 |
| H7 Mod | 4.043 | .952 | .947 | .053 [.050, .055] | 1899.92 |

Note. χ^2 / df (Model chi-square, degrees of freedom ratio); CFI (comparative fit index); TLI (Tucker Lewis index); RMSEA (root mean square error of approximation); AIC (Akaike information criterion)

As attribution theory is a mediation model, indirect effects of attributions on willingness to provide social support and willingness to provide general support were analyzed as well. Although the different models had some differing results, some results were consistent across all seven models. All models had significant correlations between anger, sympathy, and SSOEs. Willingness to provide social and general support were also correlated. All models demonstrated that anger and sympathy predicted willingness to provide social support and willingness to provide general support. All models found that SSOEs predicted willingness to provide general support, but never willingness to provide social support. Effort alone or in combination with stability or onset controllability never predicted SSOEs. See [Table 6](#) for Study 1 indirect effects.

Table 6

Study 1 Indirect Effects

| Model | Willingness to Provide Social Support | | Willingness to Provide General Support | |
|----------------------------|---------------------------------------|---------|--|---------|
| | Point Estimate [95% CI] | p-value | Point Estimate [95% CI] | p-value |
| H1 | .033 [.001, .064] | .047 | .054 [.020, .086] | .002 |
| Modified | .028 [-.002, .055] | .070 | .050 [.017, .082] | .002 |
| H2 | .049 [.018, .082] | .002 | .048 [.014, .080] | .004 |
| Modified | .057 [.028, .088] | .001 | .058 [.030, .086] | .001 |
| H3 | .075 [.044, .108] | .001 | .083 [.050, .115] | .001 |
| Modified | .068 [.038, .100] | .001 | .072 [.041, .102] | .001 |
| H4 | | | | |
| Stability | .034 [.002, .065] | .037 | .055 [.021, .088] | .002 |
| Onset | .050 [.019, .082] | .001 | .049 [.016, .081] | .003 |
| Stability x Onset | .018 [-.013, .047] | .254 | .016 [-.016, .045] | .346 |
| Modified | | | | |
| Stability | .030 [-.001, .058] | .058 | .052 [.020, .083] | .002 |
| Onset | .057 [.028, .088] | .001 | .058 [.030, .087] | .001 |
| H5 | | | | |
| Stability | .030 [-.001, .061] | .060 | .051 [.017, .084] | .004 |
| Effort | .074 [.043, .106] | .001 | .081 [.048, .114] | .001 |
| Stability x Effort | -.009 [-.038, .019] | .530 | -.005 [-.036, .024] | .729 |
| Modified | | | | |
| Stability | - | - | .021 [.010, .033] | .001 |
| Effort | .070 [.039, .101] | .001 | .073 [.043, .103] | .001 |
| H6 | | | | |
| Onset | .048 [.017, .080] | .002 | .046 [.013, .078] | .003 |
| Effort | .074 [.042, .107] | .001 | .082 [.049, .114] | .001 |
| Onset x Effort | .027 [-.002, .058] | .071 | .026 [-.004, .058] | .095 |
| Modified | | | | |
| Onset | .056 [.027, .087] | .001 | .057 [.028, .086] | .001 |
| Effort | .067 [.037, .099] | .001 | .070 [.040, .100] | .001 |
| Onset x Effort | .030 [.002, .058] | .034 | .030 [.003, .056] | .028 |
| H7 | | | | |
| Stability | .053 [.001, .064] | .047 | .033 [.020, .087] | .002 |
| Onset | .048 [.018, .080] | .001 | .047 [.014, .078] | .003 |
| Effort | .074 [.042, .107] | .001 | .080 [.047, .113] | .001 |
| Stability x Onset | .019 [-.011, .049] | .222 | .017 [-.015, .048] | .279 |
| Stability x Effort | -.006 [-.037, .021] | .625 | -.002 [-.034, .026] | .852 |
| Onset x Effort | .027 [-.002, .059] | .061 | .027 [-.004, .059] | .085 |
| Stability x Onset x Effort | .006 [-.022, .036] | .669 | .003 [-.025, .033] | .830 |
| Modified | | | | |
| Stability | .028 [-.003, .056] | .073 | .050 [.018, .082] | .002 |
| Onset | .056 [.027, .087] | .001 | .056 [.028, .085] | .001 |
| Effort | .068 [.037, .099] | .001 | .071 [.040, .100] | .001 |
| Onset x Effort | .029 [.001, .058] | .039 | .029 [.003, .056] | .030 |

Indirect effects for H1, H2, and H3. Results indicated that stability predicted willingness to provide general support indirectly through anger, sympathy, and SSOEs, 95% CI [.017, .082], $p = .002$. This same pattern of results did not occur for willingness to provide social support, 95% CI [-.002, .055], $p = .070$. This was likely due to SSOEs not being associated with willingness to provide social support (see Figure 1). Results for onset controllability (see Figure 2) and effort (see Figure 3) were similar to one another, with each predicting both willingness to provide social support (onset controllability: 95% CI [.028, .088], $p < .001$, effort: 95% CI [.038, .100], $p < .001$) and general support (onset controllability: 95% CI [.030, .086], $p < .001$, effort: 95% CI [.041, .102], $p < .001$) for a woman with PPD through anger and sympathy. Onset controllability and effort did not predict SSOEs and SSOEs did not predict willingness to provide social support.

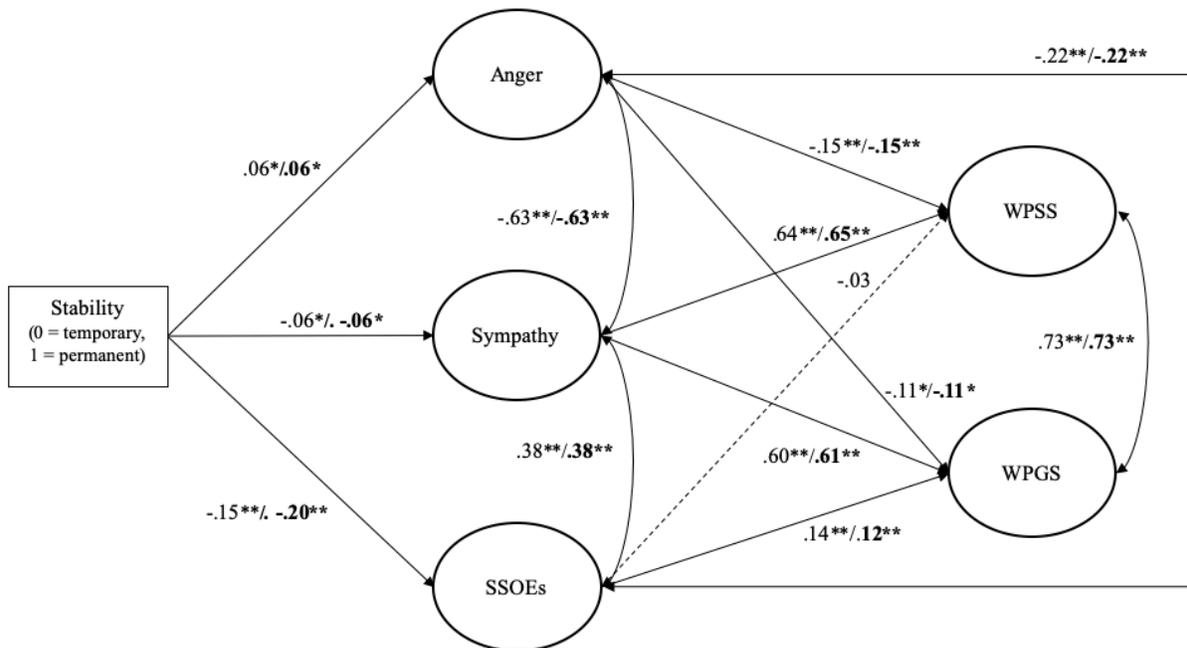


Figure 1. Study 1 simplified SEM model for Hypothesis 1. The first number for each path indicates the original model and the second number in bold indicates the modified model. ** $p < .001$, * $p < .05$. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

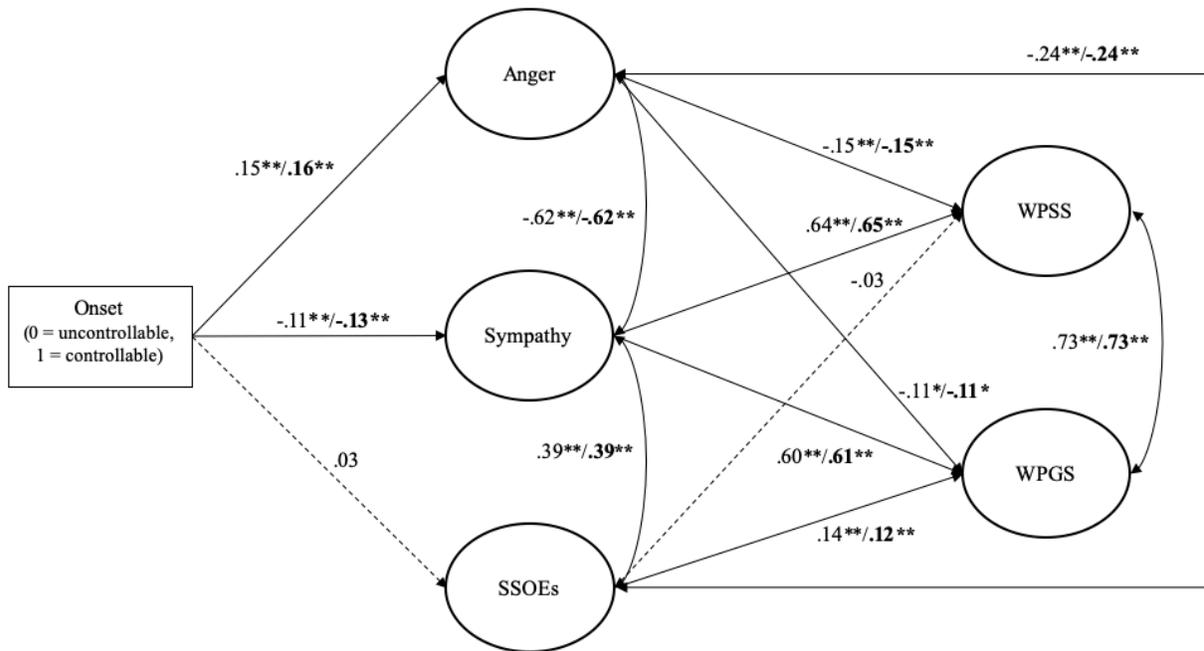


Figure 2. Study 1 simplified SEM model for Hypothesis 2 and Research Questions. The first number for each path indicates the original model and the second number in bold indicates the modified model. $** p < .001$, $* p < .05$. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

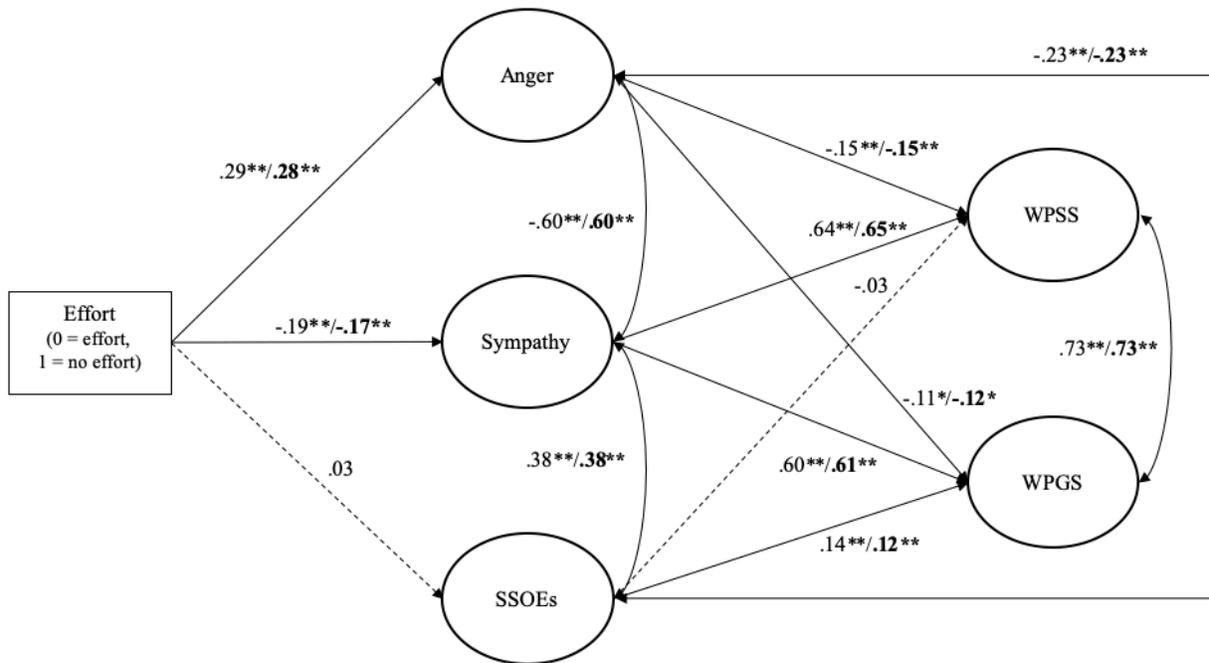


Figure 3. Study 1 simplified SEM model for Hypothesis 3. The first number for each path indicates the original model and the second number in bold indicates the modified model. ** $p < .001$, * $p < .05$. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

Indirect effects for H4. Examining the interaction of perceived stability and onset controllability did not result in significant indirect effects; however, two main effects were found. Stability did not predict willingness to provide social support through anger, sympathy, and SSOEs, 95% CI [-.001, .059], $p = .058$; however, it did predict willingness to provide general support indirectly through all three mediators, 95% CI [.020, .083], $p = .002$. Onset controllability predicted both willingness to provide social support (95% CI [.028, .088], $p < .001$) and willingness to provide general support (95% CI [.030, .087], $p < .001$) through anger and sympathy, but not through SSOEs. See Figure 4 for SEM results.

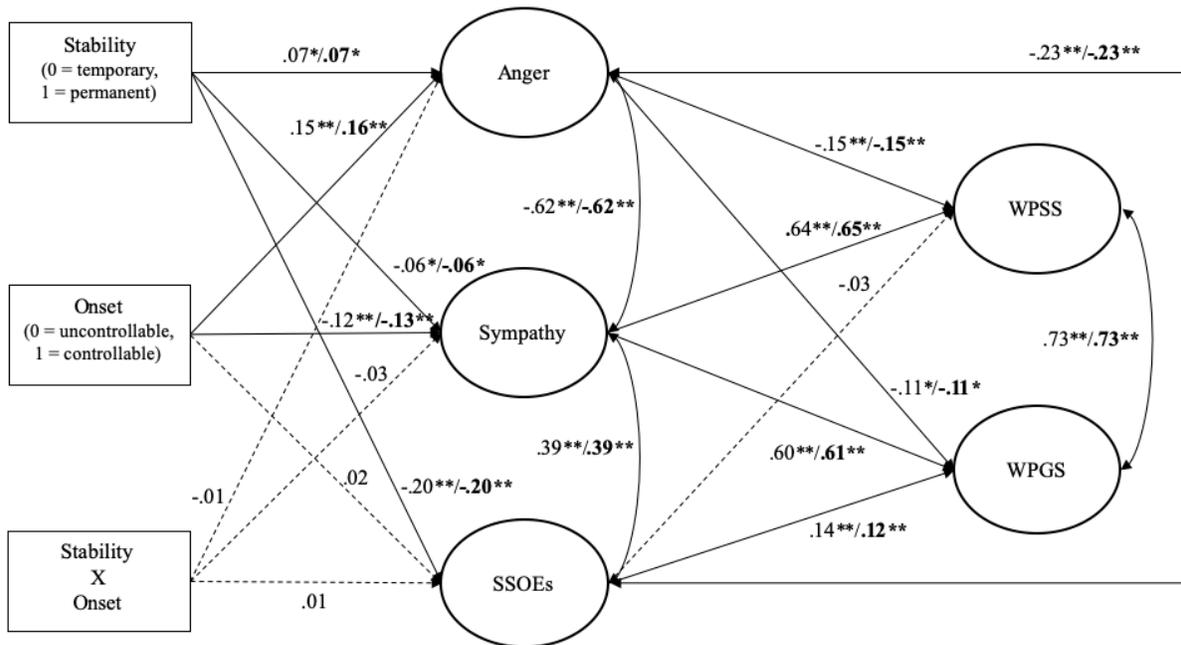


Figure 4. Study 1 Hypothesis 4 Simplified SEM model. The first number for each path indicates the originally proposed model and the second number in bold indicates the modified model. $** p < .001$, $* p < .05$. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

Indirect effects for H5. Examining the interaction of perceived stability and effort did not result in significant indirect effects; however, two main effects were present. Stability did not predict willingness to provide social support through anger, sympathy, and SSOEs, 95% CI [- .012, .003], $p = .262$; however, did predict willingness to provide general support indirectly through SSOEs, 95% CI [.006, .031], $p = .006$. Effort predicted both willingness to provide social support (95% CI [.040, .101], $p < .001$) and willingness to provide general support (95% CI [.043, .103], $p < .001$) through anger and sympathy, but not through SSOEs. See Figure 5 for SEM results.

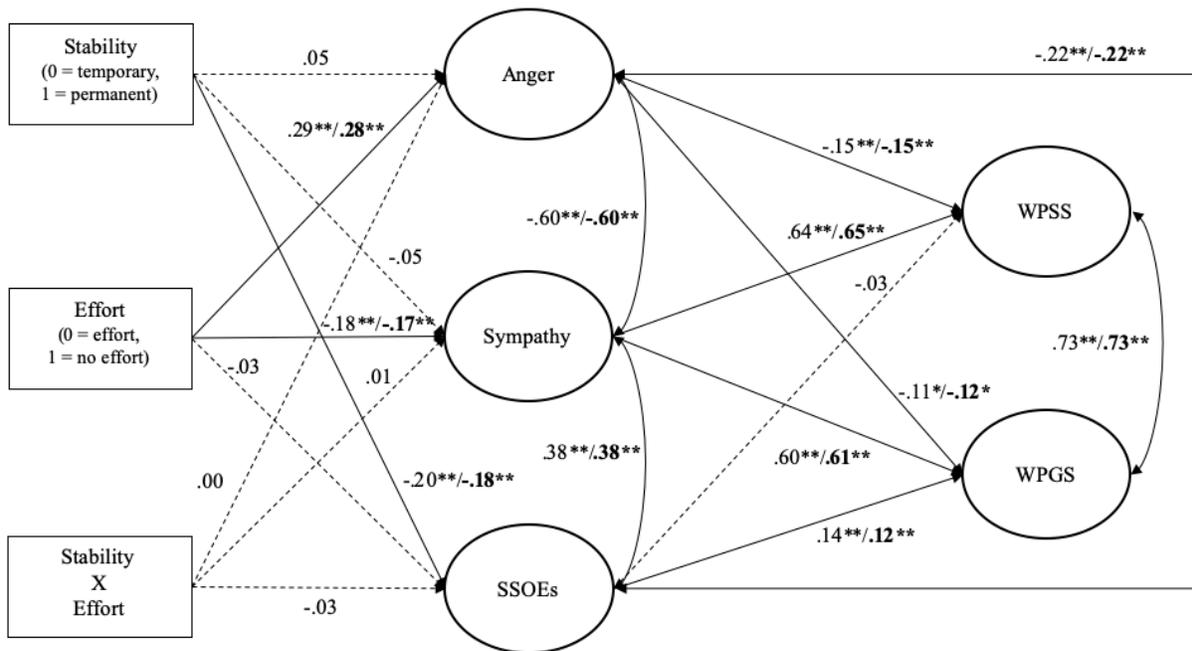


Figure 5. Study 1 Hypothesis 5 Simplified SEM model. The first number for each path indicates the originally proposed model and the second number in bold indicates the modified model. ** $p < .001$, * $p < .05$. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

Indirect effects for H6. Examining the interaction of onset controllability and effort resulted in significant indirect effects for both willingness to provide social support (95% CI [.002, .058], $p = .034$) and willingness to provide general support (95% CI [.003, .056], $p = .028$) through anger and sympathy, but not through SSOEs. Two main effects were also present. Onset controllability predicted willingness to provide social support through anger and sympathy, 95% CI [.027, .087], $p < .001$, as well as predicted willingness to provide general, 95% CI [.028, .086], $p < .001$. Onset controllability was not associated with SSOEs. Effort predicted both willingness to provide social support (95% CI [.037, .099], $p < .001$) and willingness to provide general support (95% CI [.040, .100], $p < .001$) through anger and sympathy, but not through SSOEs. See Figure 6 for SEM results.

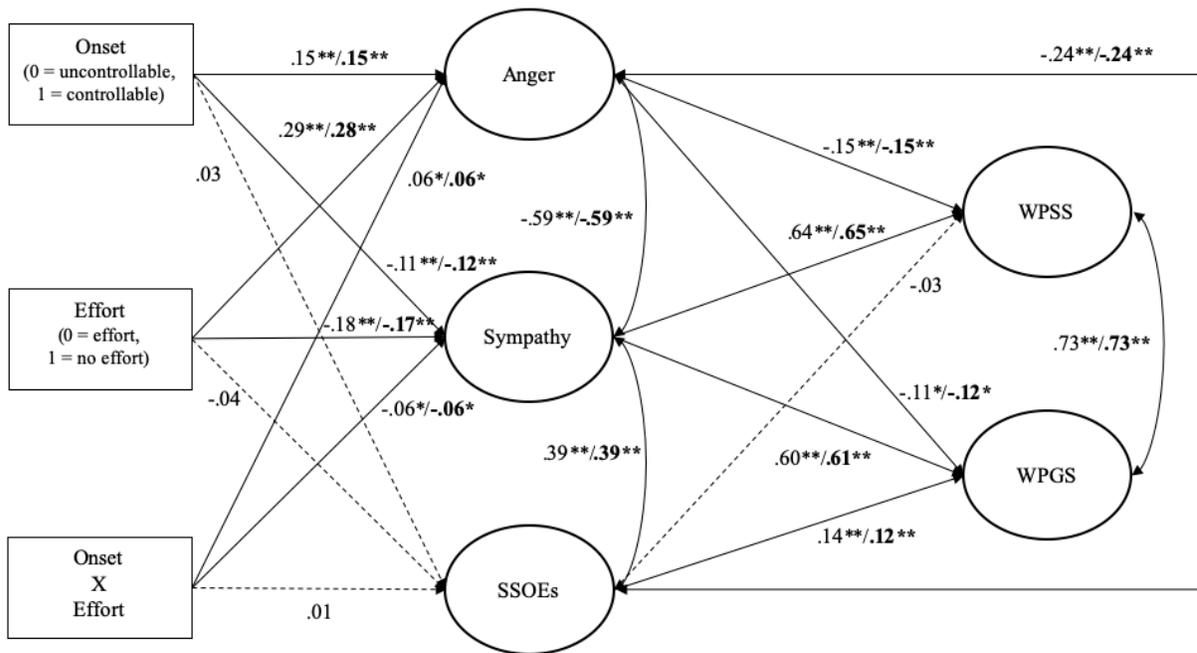


Figure 6. Study 1 Hypothesis 6 Simplified SEM model. The first number for each path indicates the originally proposed model and the second number in bold indicates the modified model. ** $p < .001$, * $p < .05$. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

Indirect effects for H7. The three-way interaction between perceived stability, onset controllability, and effort was not significant. However, several significant indirect effects were present. Results indicated that stability predicted willingness to provide general support indirectly through anger, sympathy, and SSOEs, 95% CI [.018, .082], $p = .002$, but not willingness to provide social support, 95% CI [-.003, .056], $p = .073$. Onset controllability predicted willingness to provide social support through anger and sympathy, 95% CI [.027, .087], $p < .001$, as well as willingness to provide general, 95% CI [.028, .085], $p < .001$. Effort predicted both willingness to provide social support (95% CI [.037, .099], $p < .001$) and willingness to provide general support (95% CI [.040, .100], $p < .001$) through anger and sympathy, but not through SSOEs. The interaction between onset controllability and effort significantly predicted willingness to provide social support (95% CI [.001, .058], $p = .039$) and willingness to provide general support (95% CI [.003, .056], $p = .030$) through anger and sympathy, but not through SSOEs. See [Figure 7](#) for simplified SEM results.

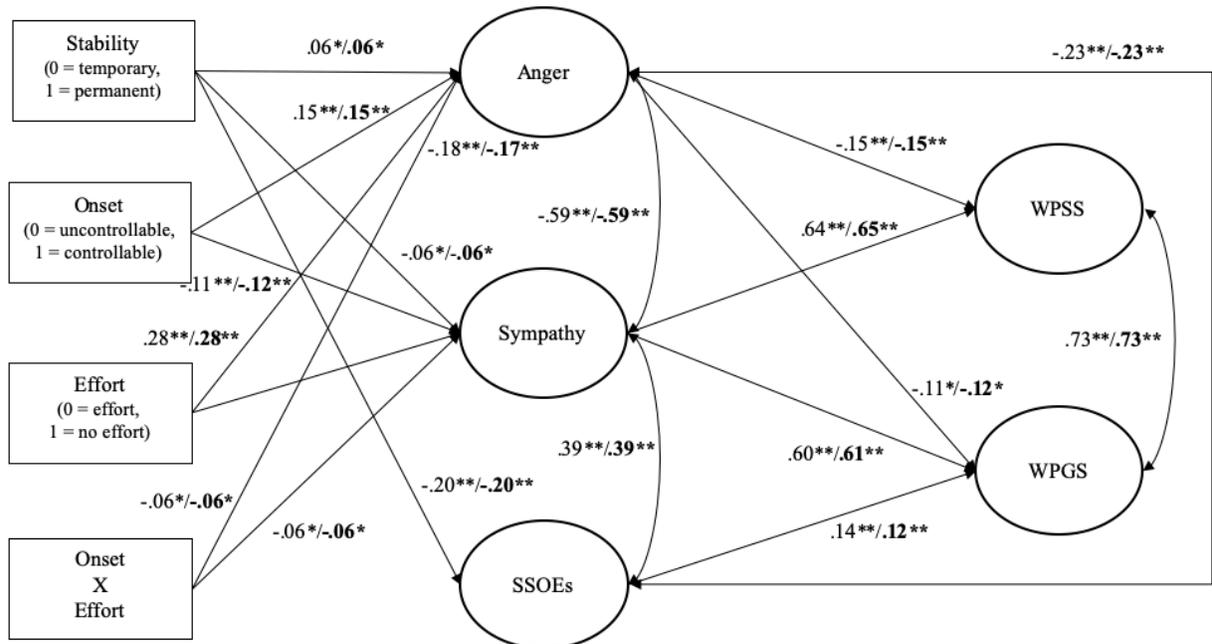


Figure 7. Study 1 Hypothesis 7 Simplified SEM model. The first number for each path indicates the originally proposed model and the second number in bold indicates the modified

model. ** $p < .001$, * $p < .05$. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

MANCOVA results. A MANCOVA also was conducted to explore if interactions between perceived stability, onset controllability, and effort exist on all measures (anger, sympathy, SSOEs, willingness to provide social support, and willingness to provide general support) and to allow for interactions to be easily plotted. To stay consistent with previous research on PPD (see Ruybal & Siegel, 2017, 2019a), gender and age were used as covariates and significant at $p < .001$. Main effects for perceived stability, onset controllability, and effort were all significant $p < .001$, as was an interaction between onset controllability and effort, $p = .006$, mirroring the results of the SEM analyses. See [Table 7](#) for MANCOVA results.

Table 7

Study 1 MANCOVA

| Predictor Variable | Pillai's Trace | <i>F</i> | Hypothesis df | Error df | p-value | Partial Eta Squared |
|----------------------------|----------------|----------|---------------|----------|---------|---------------------|
| Gender | .03 | 7.48 | 5 | 1076 | .001 | .03 |
| Age | .04 | 8.45 | 5 | 1076 | .001 | .04 |
| Stability | .07 | 15.21 | 5 | 1076 | .001 | .07 |
| Onset | .04 | 10.01 | 5 | 1076 | .001 | .04 |
| Effort | .12 | 27.93 | 5 | 1076 | .001 | .12 |
| Stability x Onset | .01 | 1.10 | 5 | 1076 | .359 | .01 |
| Stability x Effort | .01 | 1.00 | 5 | 1076 | .417 | .01 |
| Onset x Effort | .02 | 3.31 | 5 | 1076 | .006 | .02 |
| Stability x Onset x Effort | .00 | 0.56 | 5 | 1076 | .733 | .00 |

A follow up ANCOVA found that gender, stability, onset controllability, effort, and the interaction between onset controllability and effort all predicted anger. Anger was lowest when participants identified as women, PPD was seen as temporary, onset uncontrollable, and effort was being given. Gender, age, stability, onset controllability, effort, and the interaction between onset controllability and effort all predicted sympathy. Sympathy was highest when participants

identified as women, were older in age, PPD was thought to be temporary, onset uncontrollable, and effort was being given. Only stability predicted SSOEs, such that SSOEs were highest when PPD was perceived to be temporary. Consistent with attribution theory, there were no direct effects between attributions and willingness to provide social support or willingness to provide general support. Gender and age predicted willingness to provide general support, such that women and older individuals were more willing to provide support, but only gender predicted willingness to provide social support with women being more willing to provide help. See [Table 8](#) and [Figures 8 – 12](#) for summaries of significant results and [Appendix A](#) for ANCOVA results including non-significant results.

Table 8

Study 1 ANCOVAs

| Predictor Variable | Outcome Variables | Type III Sum of Squares | df | Mean Square | <i>F</i> | p-value | Partial Eta Squared |
|------------------------|-------------------|-------------------------|----|-------------|----------|---------|---------------------|
| Gender | Anger | 25.50 | 1 | 25.50 | 14.20 | .001 | .01 |
| | Sympathy | 9.58 | 1 | 9.58 | 8.20 | .004 | .01 |
| | WPSS | 3216.21 | 1 | 3216.21 | 24.91 | .001 | .02 |
| | WPGS | 949.06 | 1 | 949.06 | 4.62 | .032 | .00 |
| Age | Sympathy | 16.40 | 1 | 16.40 | 14.05 | .001 | .01 |
| | WPGS | 1691.91 | 1 | 1691.91 | 8.24 | .004 | .01 |
| Stability | Anger | 15.02 | 1 | 15.02 | 8.36 | .004 | .01 |
| | Sympathy | 6.71 | 1 | 6.71 | 5.75 | .017 | .01 |
| | SSOES | 124.83 | 1 | 124.83 | 69.31 | .001 | .06 |
| Onset Control | Anger | 67.85 | 1 | 67.85 | 37.78 | .001 | .03 |
| | Sympathy | 21.66 | 1 | 21.66 | 18.55 | .001 | .02 |
| Effort | Anger | 212.64 | 1 | 212.64 | 118.39 | .001 | .10 |
| | Sympathy | 71.50 | 1 | 71.50 | 61.23 | .001 | .05 |
| Onset Control x Effort | Anger | 8.93 | 1 | 8.93 | 4.97 | .026 | .00 |
| | Sympathy | 6.64 | 1 | 6.64 | 5.69 | .017 | .01 |

Notes. Only significant results are given in this table see [Appendix A](#) for non-significant results.

SSOEs (Social support outcome expectations); WPSS (Willingness to provide social support); WPGS (Willingness to provide general support)

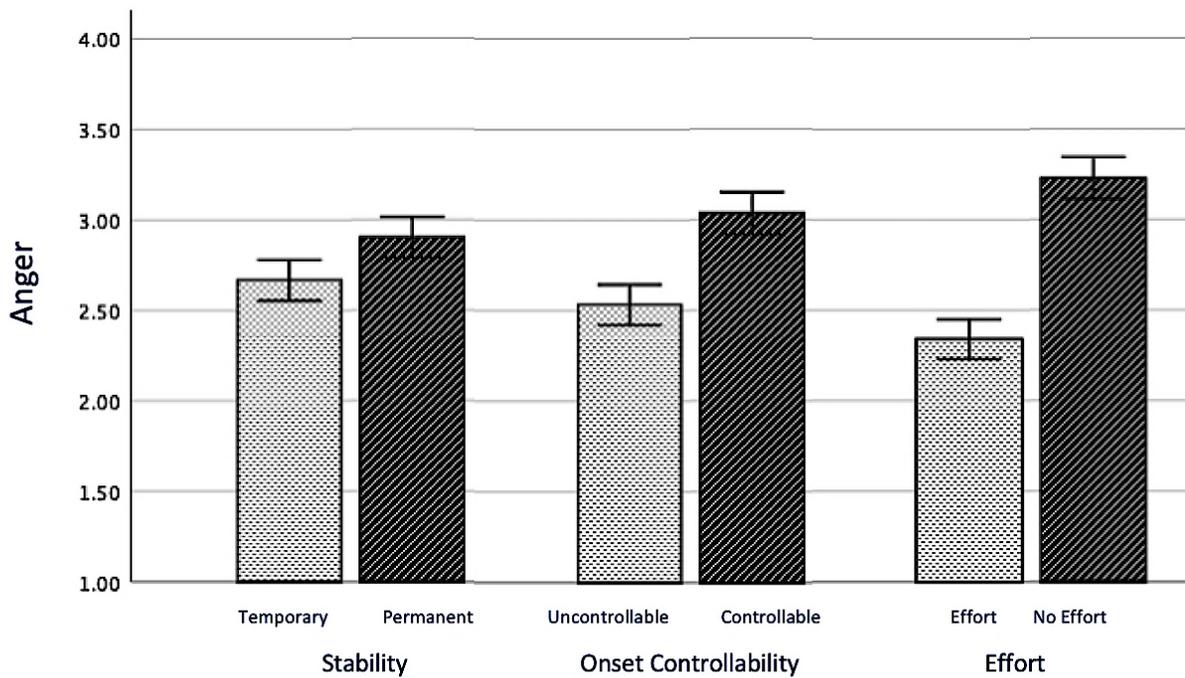


Figure 8. Significant main effects for stability, onset controllability, and effort for levels of anger. The means depicted are controlling for gender and age. Error bars represent 95% confidence intervals.

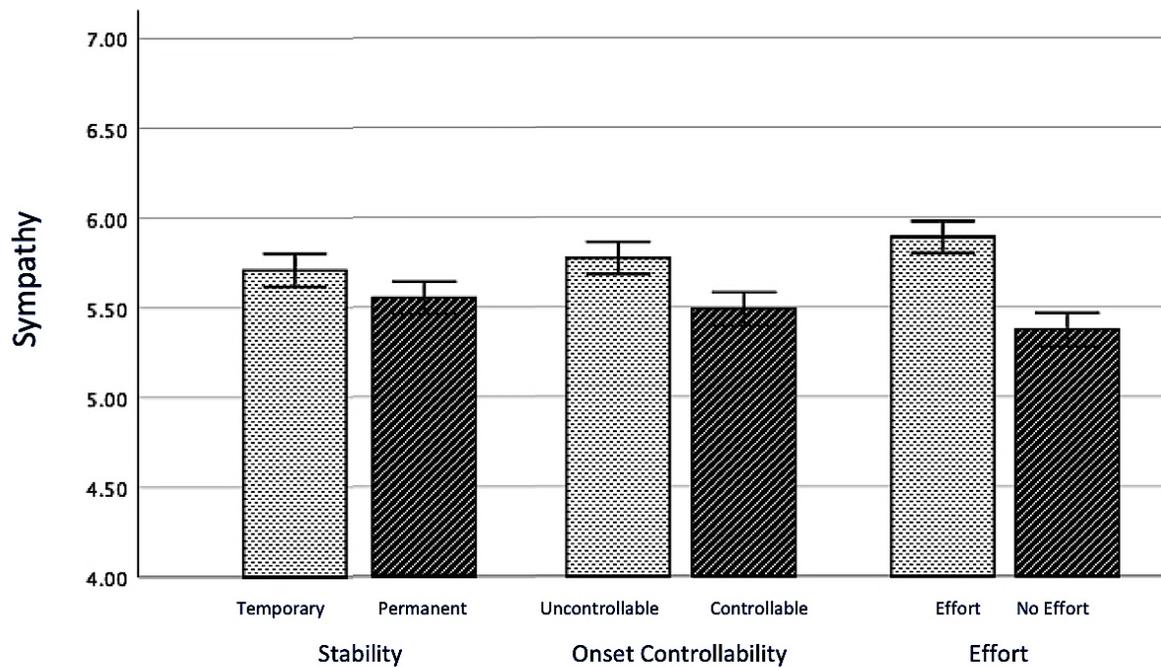


Figure 9. Significant main effects for stability, onset controllability, and effort for levels of sympathy. The means depicted are controlling for gender and age. Error bars represent 95% confidence intervals.

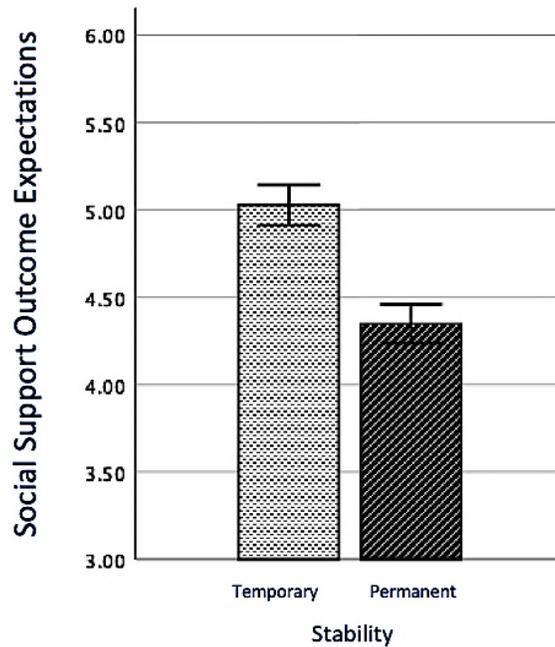


Figure 10. Significant main effects for stability for levels of social support outcome expectations. The means depicted are controlling for gender and age. Error bars represent 95% confidence intervals.

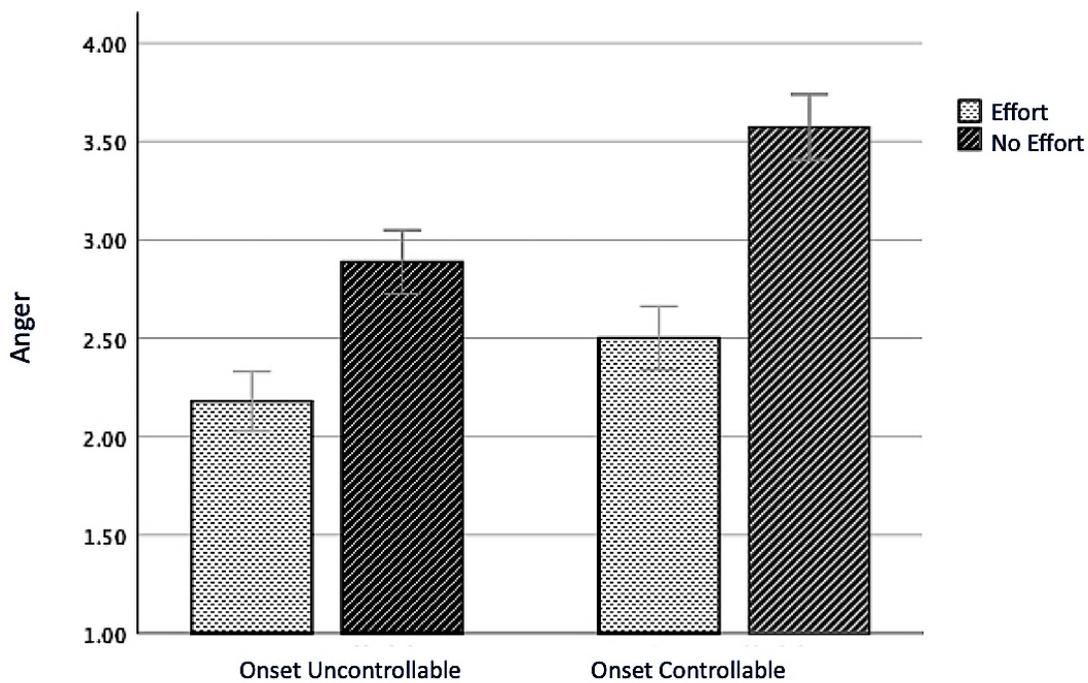


Figure 11. Significant interaction between onset controllability and effort for levels of anger. The means depicted are controlling for gender and age. Error bars represent 95% confidence intervals.

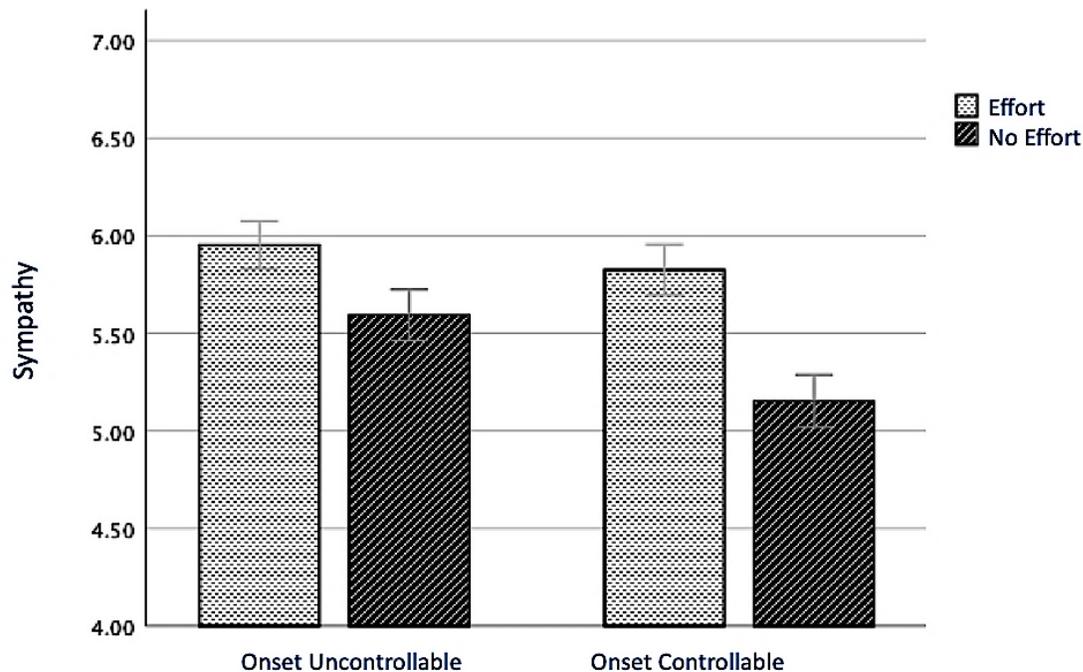


Figure 12. Significant interaction between onset controllability and effort for levels of sympathy. The means depicted are controlling for gender and age. Error bars represent 95% confidence intervals.

Discussion

This study sought to offer additional support for applying attribution theory to guide an anti-stigma campaign for PPD by experimentally testing the influence of perceived stability, onset controllability, and effort in combination with one another. Although attributions have been explored in depression (stability and controllability, Muschetto & Siegel, 2018; stability, Muschetto & Siegel, 2019), PPD research (controllability, Ruybal & Siegel, 2017; stability, Ruybal & Siegel, 2019a), and in help giving (onset controllability and effort, Karasawa, 1991), to the best of our knowledge, research concerning PPD has not examined how stability, onset controllability, and effort *together* might influence emotion and social support.

It was expected that people told PPD was temporary (rather than permanent), that a woman was not at fault for her depression developing (rather than at fault), and was expending

effort to overcome her depression (rather than not doing so), would feel the lowest levels of anger and greatest levels of sympathy toward their loved one, as well as higher levels of SSOEs. Further this combination would contribute to the highest levels of willingness to provide social support and general support compared to all other conditions. Main effects were found for each of these attributions, as well as a significant interaction with a combination of attributions, onset controllability and effort.

Results concerning stability are in line with Muschetto and Siegel's (2019) work, as well as Ruybal and Siegel's (2019a) work, both of which tested written vignettes exploring increasing social support for depression and PPD respectively. Willner and Smith (2008) and Muschetto and Siegel (2019) explored the relationship between stability and helping indirectly through SSOEs. Following this theorizing, results indicated that perceived stability had an indirect effect on willingness to provide general support, but not willingness to provide social support through all three mediators: anger, sympathy, and SSOEs. This indicates that perceiving PPD as temporary rather than permanent elicited lower levels of anger, greater sympathy, and greater beliefs that help would make a positive difference for a loved one with PPD. In turn these emotions and beliefs predicted a willingness to provide a woman with PPD general support. Anger, sympathy, and SSOEs also had bidirectional relationships, as did willingness to provide social and general support. This expanded attribution model replicates the work of Muschetto and Siegel (2019) but concerning PPD and lends additional support to the contribution of stability in increasing social support.

Research also has found a similar pattern of results concerning controllability with the use of vignettes for depression (Muschetto & Siegel, 2018) and PPD (Ruybal & Siegel, 2017), but with the exception of one correlational study, these studies focused on general controllability,

not onset controllability. When individuals perceived that a woman was not at fault for developing PPD compared to when they thought a woman was at fault, anger decreased, and sympathy increased. Further, willingness to provide social and general support increased as well. In line with the pilot study, onset controllability did not predict SSOEs. However, SSOEs, which were associated with anger and sympathy, predicted willingness to provide general support, but not social support. Both types of support were associated with each other. Anger and sympathy once again had a bidirectional relationship.

The current study further explored effort as a means of decreasing anger and increasing sympathy and SSOEs. Karasawa (1991) explored a number of scenarios exploring effort and found that individuals expected someone in need to exert effort to overcome a situation. When this did not occur, participants had increased anger and decreased pity, as well as decreased intentions to aid the individual in need. This is in line with the results of the current research which found that individuals told a woman was not expending effort to overcome her PPD felt increased levels of anger and decreased levels of sympathy. By extension, willingness to provide social and general support was diminished. There was no support for effort being associated to SSOEs, which Karasawa did not explore.

This study also found a significant interaction between onset controllability and effort. Stating that PPD was onset uncontrollable and that effort was being expended to bring about the offset of the ailment resulted in higher willingness to provide social and general help indirectly through lower levels of anger and higher levels of sympathy. A similar result was found by Karasawa (1991); however, regarding offset controllability and effort. Karasawa's model indicated that if effort to overcome a problem was not given at the offset, anger increased and pity decreased, which by extension resulted in participants having low helping intentions.

Results of the current study's 2 x 2 x 2 experimental design indicated that PPD perceived to be temporary rather than permanent, onset uncontrollable rather than onset controllable, and if someone is perceived as giving effort rather than not putting forth effort to get better, result in decreased anger, and increased sympathy. Anger and sympathy in turn influence willingness to provide social and general support. In situations concerning stability, SSOEs also are useful in predicting helping intentions. To explore usefulness of perceived stability, onset controllability, and perceptions of effort in an applied real-world setting, Study 2 sought to expand these results by exploring a potential media campaign.

CHAPTER 6

STUDY 2

Purpose

Study 2 sought to enhance the ecological validity of the current approach by using anti-stigma video PSAs. This study focused on the temporary nature of postpartum depression (PPD) as opposed to emphasizing its permanence, onset uncontrollability rather than onset controllability, and effort rather than no effort in responding to PPD. This departure from the dichotomies used in Study 1 was necessary as much of the attribution research ask participants to imagine someone's situation in one of two contrasting manners, (i.e., uncontrollable or controllable). This is a promising and appropriate approach when testing the theory. However, if an anti-stigma campaign were created utilizing an attribution framework, the comparison group would not be individuals told to imagine that PPD is permanent, that women have control over the development of the ailment, and that no effort is being put forth. Rather, a comparison group would simply be made up of individuals in the general population at the time and their current beliefs about PPD.

Results of the Pilot Study indicated that overall people felt that PPD could be temporary, that women were not at fault for developing PPD, and that women would likely be giving effort to overcome PPD. Therefore, given these likely held beliefs, it was important to determine whether a campaign that espouses the temporary nature of PPD, the belief that PPD is onset uncontrollable, and the belief that effort is being given by a woman with PPD, be able to reduce stigma or will it have no effect as most people already believe the message being put forth by the campaign. Overall, we proposed that even though people might hold positive attributions regarding PPD, making such beliefs salient and accessible would influence emotion and possibly

SSOEs, which would then influence willingness to provide social and general support.

Hypotheses

With the knowledge gained in the Pilot Study and Study 1, the current study explored the possibility of an anti-stigma campaign via PSA videos. A model was hypothesized whereby PSA videos including perceived stability, onset controllability, and perceived effort would predict willingness to provide social and general support through higher levels of sympathy and SSOEs and lower levels of anger. Anger, sympathy, and social support outcome expectations (SSOEs) were predicted to be intercorrelated with one another. Likewise, willingness to provide social and general support were hypothesized to be significantly related.

H1 temporary. Viewing a PSA video describing postpartum depression as a temporary ailment compared to one that does not mention the temporary nature of postpartum depression will indirectly increase willingness to provide social and general support through higher levels of sympathy and SSOEs and lower levels of anger.

H2 onset uncontrollability. A PSA video describing postpartum depression as something that is onset uncontrollable versus one that does not mention controllability will indirectly increase willingness to provide social and general support through higher levels of sympathy and lower levels of anger.

RQ1. What is the effect of onset uncontrollability compared to no mention of onset uncontrollability on SSOEs?

RQ2. Does the effect of postpartum depression being attributed as onset uncontrollable compared to no mention of onset uncontrollability increase willingness to provide social and general support through SSOEs?

H3 effort. Viewing a PSA video describing someone making an effort to overcome their

postpartum depression compared to one that does not mention effort will indirectly increase willingness to provide social and general support through higher levels of sympathy and SSOEs and lower levels of anger.

H4 temporary (vs control) x onset uncontrollability (vs control). Viewing a PSA video describing postpartum depression as a temporary condition will indirectly increase willingness to provide social and general support through higher levels of sympathy and SSOEs and lower levels of anger. This effect will be moderated by perceptions of controllability such that the influence of perceptions of stability on sympathy, SSOEs, and anger will be greater when postpartum depression is perceived as onset uncontrollable.

H5 effort (vs no control) x temporary (vs control). Viewing a PSA video describing the person with postpartum depression as giving effort to overcome their ailment will indirectly increase willingness to provide social support and willingness to provide general support through higher levels of sympathy and SSOEs and lower levels of anger. This effect will be moderated by perceptions of stability such that the influence of perceptions of effort on sympathy, SSOEs, and anger will be greater when the postpartum depression is perceived as temporary.

H6 effort (vs control) x onset uncontrollable (vs control). Viewing a PSA video describing a person with postpartum depression as exerting effort to overcome their ailment will indirectly increase willingness to provide social and general support through higher levels of sympathy and SSOEs and lower levels of anger. This effect will be moderated by perceptions of controllability, such that the influence of perceptions of effort on sympathy, SSOEs, and anger will be weaker when postpartum depression is perceived as onset uncontrollable.

H7 effort (vs control) x onset uncontrollable (vs control). Viewing a PSA video describing a person with postpartum depression who is exerting effort to overcome their ailment

will indirectly increase willingness to provide social and general support through higher levels of sympathy and SSOEs and lower levels of anger. This effect will be moderated by perceptions of controllability such that the influence of perceptions of effort on sympathy, SSOEs, and anger will be weaker when postpartum depression is perceived as onset uncontrollable. This interaction is expected to be stronger when PPD is perceived as temporary.

Method

This study examined whether attribution theory can be applied to a hypothetical video campaign to reduce stigma toward women with PPD. This was done testing the effectiveness of seven anti-stigma videos and one control video. The aim of this study was to sway perceptions of individuals who think that women are at fault for the development of PPD, who think PPD is something that cannot be overcome, and that women do not try to overcome their depression. By convincing these individuals otherwise, they will be more inclined to offer support for women affected by PPD. This also offers a realistic application of attribution theory while laying the foundation for an attribution-based campaign. This study was preregistered via the Open Science Framework: <https://osf.io/6m3ke>.

Participants and procedure. As in previous studies, participants were recruited from Amazon's TurkPrime. Requirements and procedures for this study were similar to Study 1, except participants were not prescreened for depression, but rather everyone was allowed to complete the survey and asked about current depressive symptoms at the end of the survey. This was the same procedure as the Pilot Study. Reverting to the procedure completed in the Pilot Study rather than Study 1 ensured that participants would not drop out between the screener and main survey, was a more cost-effective approach, and allowed for easier predictability concerning the number of participants required for the study. Participants were compensated \$.60

for participation.

Measures. All scales were identical to Study 1. Scales measured emotion, social support, depression, and demographic questions.

Experimental manipulations. Perceived stability, onset controllability, and effort were combined in a 2 x 2 x 2 factorial experiment in this study. Participants were randomized to watch one of eight video PSAs, either a control video or one of seven attribution-based videos. Videos were identical with the exception of two sentences addressing stability, onset controllability, and effort. The PSA conditions were as follows: 1) temporary, 2) onset uncontrollable, 3) effort, 4) temporary and onset controllable, 5) temporary and effort, 6) onset uncontrollable and effort, 7) temporary, onset uncontrollable, and effort, 8) control condition containing no mention of temporary, onset uncontrollable, or effort. The wording of these PSA videos was based on the results of Study 1 and adapted from Muschetto and Siegel's (2019) work on depression video PSAs. Three follow up questions were utilized to ensure participants watched the PSA. See [Appendix C](#) for video text and follow up questions.

Results

Prior to any statistical analyses, the data were examined for audio/visual capabilities, duplicate IP addresses, having depression, manipulation checks, attention checks, outliers, and violations of normality. A total of 2,848 participants were collected over a two-day period. Participants were excluded for the following reasons: failed a visual test ($n = 82$), dropped out after passing visual test ($n = 4$), failed an audio test ($n = 166$), had duplicate IP addresses ($n = 870$), failed the three-item manipulation check ($n = 422$), dropped out after passing the manipulation check but before answering the depression questions ($n = 226$), had depressive symptoms ($n = 217$), did not follow directions in providing a relationship to a female loved one

($n = 15$), self-reported not paying attention ($n = 1$), refused to answer the self-reported attention check ($n = 2$), were univariate outliers ($n = 39$), or were multivariate outliers ($n = 8$). This resulted in a total of 796 cases for all structural equation analyses and MANCOVAs with gender and age used as covariates. See [Table 9](#) for study demographics.

Following data cleaning, all model testing was conducted in AMOS and all other descriptive information and MANCOVAs were analyzed in SPSS version 25. Data analyzed in

Table 9

| <i>Study 2 Participant Demographic Information</i> | |
|--|--|
| Variable | $N = 796$ |
| Age | 18–83 years $M = 41.70, SD = 13.11$ |
| Gender (woman) | 58.20% |
| Ethnicity (Caucasian) | 78.50% |
| Education (BA/BS or higher) | 58.30% |
| Household Income | |
| \$0 - \$20,000 | 8.90% |
| \$20,001 - \$40,000 | 22.50% |
| \$40,001 - \$80,000 | 40.10% |
| \$80,001+ | 28.40% |
| Is a parent | 56.60% |

AMOS were standardized via z-scores. Identical to Study 1, a confirmatory factor analysis was conducted to test the measurement model and determine the structure of the data. This included five latent variables and 27 manifest variables. The latent variables were anger (5-items), sympathy (5-items), SSOEs (6-items), willingness to provide social support (6-items), and willingness to provide general support (5-items). In testing the measurement model, all latent factors were free to correlate with one another. The measurement model indicated acceptable fit of the data, $\chi^2 / df = 4.17$, CFI = .93, TLI = .92, RMSEA = .06, AIC = 1490.89. All items had relatively high loadings on their intended latent variables ranging from .70 to .93. Further, all latent variables correlated with one another. Based on these results, composite variables were

created to determine means, standard deviations, and normality. See Table 10 for a correlation matrix.

Table 10

Study 2 Correlation Matrix, Means, Standard Deviations, and Cronbach's Alphas

| | Anger | Sympathy | SSOEs | WPSS | WPGS |
|-----------|--------|----------|-------|-------|-------|
| Anger | - | | | | |
| Sympathy | -.51** | - | | | |
| SSOEs | -.14** | .27** | - | | |
| WPSS | -.31** | .49** | .20** | - | |
| WPGS | -.25** | .47** | .37** | .65** | - |
| <i>M</i> | 2.12 | 6.00 | 5.15 | 91.85 | 89.71 |
| <i>SD</i> | 1.21 | 0.91 | 1.14 | 10.57 | 11.81 |
| α | .88 | .85 | .88 | .90 | .91 |

Notes. All correlations were two-tailed, ** $p < .01$.

SSOEs (Social support outcome expectations); WPSS (Willingness to provide social support);

WPGS (Willingness to provide general support)

All variables in this table are non-standardized.

Seven structural equation modeling (SEM) analyses were conducted to test whether the anti-stigma video PSAs predicted willingness to provide social support and willingness to provide general support indirectly via anger, sympathy, and SSOEs. The models also tested the relationships among anger, sympathy, and SSOEs, as well as the relationship between willingness to provide social and general support as in Study 1. Each model tested one of the seven hypotheses. Research Questions 1 and 2 were explored in the same model as Hypothesis 2. Respecification of the models was conducted by removing non-significant paths. Due to some non-significant findings, modifications were not reported for all hypotheses. No covariates were used in the SEM models.

A p-value of $\leq .05$ was used to determine statistical significance for all paths. The same cut-offs used in Study 1 were applied to determine acceptable model fit: Model χ^2 to degrees of freedom ratio < 3 (Kline, 1998), CFI $\geq .95$ (Hu & Bentler, 1999), TLI $\geq .95$ (Hu & Bentler,

1999), and RMSEA \leq .06 (Hu & Bentler, 1999). See Table 11 for fit indices for all seven SEM models and modifications, when applicable, of these models. See Table 12 for indirect effects of each predictor variable on willingness to provide social and general support.

Table 11

Study 2 Fit Indices for All Models

| Model | χ^2 / df | CFI | TLI | RMSEA | AIC |
|--------|---------------|------|------|-------------------|---------|
| CFA | 4.168 | .931 | .923 | .063 [.060, .067] | 1490.89 |
| H1 | 3.997 | .930 | .922 | .061 [.058, .065] | 1542.94 |
| H1 Mod | 3.957 | .930 | .923 | .061 [.058, .064] | 1537.20 |
| H2 | 3.993 | .930 | .922 | .061 [.058, .065] | 1541.47 |
| H2 Mod | - | - | - | - | - |
| H3 | 3.945 | .931 | .923 | .061 [.057, .064] | 1525.23 |
| H3 Mod | 3.910 | .931 | .924 | .060 [.057, .064] | 1521.12 |
| H4 | 3.651 | .929 | .921 | .058 [.055, .061] | 1627.33 |
| H4 Mod | - | - | - | - | - |
| H5 | 3.664 | .929 | .920 | .058 [.055, .061] | 1632.32 |
| H5 Mod | 3.748 | .930 | .923 | .059 [.056, .062] | 1571.43 |
| H6 | 3.629 | .930 | .921 | .058 [.054, .061] | 1618.97 |
| H6 Mod | - | - | - | - | - |
| H7 | 3.185 | .928 | .916 | .052 [.049, .055] | 1825.51 |
| H7 Mod | - | - | - | - | - |

Note. χ^2 / df (Model chi-square, degrees of freedom ratio); CFI (comparative fit index); TLI (Tucker Lewis index); RMSEA (root mean square error of approximation); AIC (Akaike information criterion)

Table 12

Study 2 Indirect Effects

| Model | Willingness to Provide Social Support | | Willingness to Provide General Support | |
|----------------------------|--|---------|---|---------|
| | Point Estimate [95% CI] | p-value | Point Estimate [95% CI] | p-value |
| H1 | .014 [-.021, .049] | .395 | .037 [-.002, .078] | .066 |
| Modified | .011 [.003, .024] | .006 | .035 [.020, .056] | .001 |
| H2 | -.004 [-.044, .029] | .809 | -.007 [-.037, .031] | .649 |
| No Modification | - | - | - | - |
| H3 | .047 [.015, .081] | .008 | .050 [.014, .089] | .010 |
| Modified | .034 [.010, .060] | .011 | .033 [.010, .058] | .011 |
| H4 | | | | |
| Temporary | .014 [-.018, .049] | .368 | .037 [.001, .078] | .044 |
| Onset | -.004 [-.037, .029] | .803 | -.007 [-.046, .030] | .667 |
| Temporary x Onset | -.006 [-.038, .027] | .748 | -.012 [-.050, .024] | .531 |
| No Modification | - | - | - | - |
| H5 | | | | |
| Temporary | .013 [-.021, .049] | .410 | .051 [-.003, .076] | .075 |
| Effort | .047 [.015, .080] | .008 | .049 [.013, .088] | .011 |
| Temporary x Effort | -.022 [-.055, .010] | .185 | -.030 [-.066, .008] | .114 |
| Modified | | | | |
| Temporary | .012 [.003, .024] | .004 | .035 [.020, .055] | .001 |
| Effort | .035 [.010, .060] | .011 | .033 [.010, .058] | .012 |
| H6 | | | | |
| Onset | -.004 [-.037, .028] | .790 | -.007 [-.043, .031] | .669 |
| Effort | .047 [.016, .081] | .007 | .050 [.014, .088] | .012 |
| Onset x Effort | -.006 [-.040, .027] | .720 | -.003 [-.042, .034] | .893 |
| No Modification | - | - | - | - |
| H7 | | | | |
| Temporary | .011 [-.023, .047] | .477 | .031 [-.011, .071] | .124 |
| Onset | -.003 [-.036, .030] | .837 | -.005 [-.040, .034] | .774 |
| Effort | .047 [.016, .082] | .006 | .050 [.014, .088] | .009 |
| Temporary x Onset | -.006 [-.040, .026] | .724 | -.013 [-.052, .022] | .464 |
| Temporary x Effort | -.022 [-.054, .011] | .204 | -.029 [-.065, .009] | .139 |
| Onset x Effort | -.006 [-.041, .027] | .689 | -.005 [-.044, .034] | .798 |
| Temporary x Onset x Effort | -.001 [-.037, .030] | .926 | .009 [-.031, .046] | .642 |
| No Modification | - | - | - | - |

Indirect effects for H1, H2, and H3. Results for main effects of perceptions of stability, onset uncontrollability, and effort, indicated that in all three models, anger, sympathy, and SSOEs were significantly correlated with one another, both types of support were correlated with each other as well, and anger did not predict willingness to provide social support or general support. Results indicated that being told that PPD is temporary predicted willingness to provide social support, 95% CI [.003, .024], $p = .006$, as well as willingness to provide general support, 95% CI [.020, .056], $p < .001$ indirectly through SSOEs. Anger and sympathy did not mediate this relationship. See [Figure 13](#) for simplified SEM results.

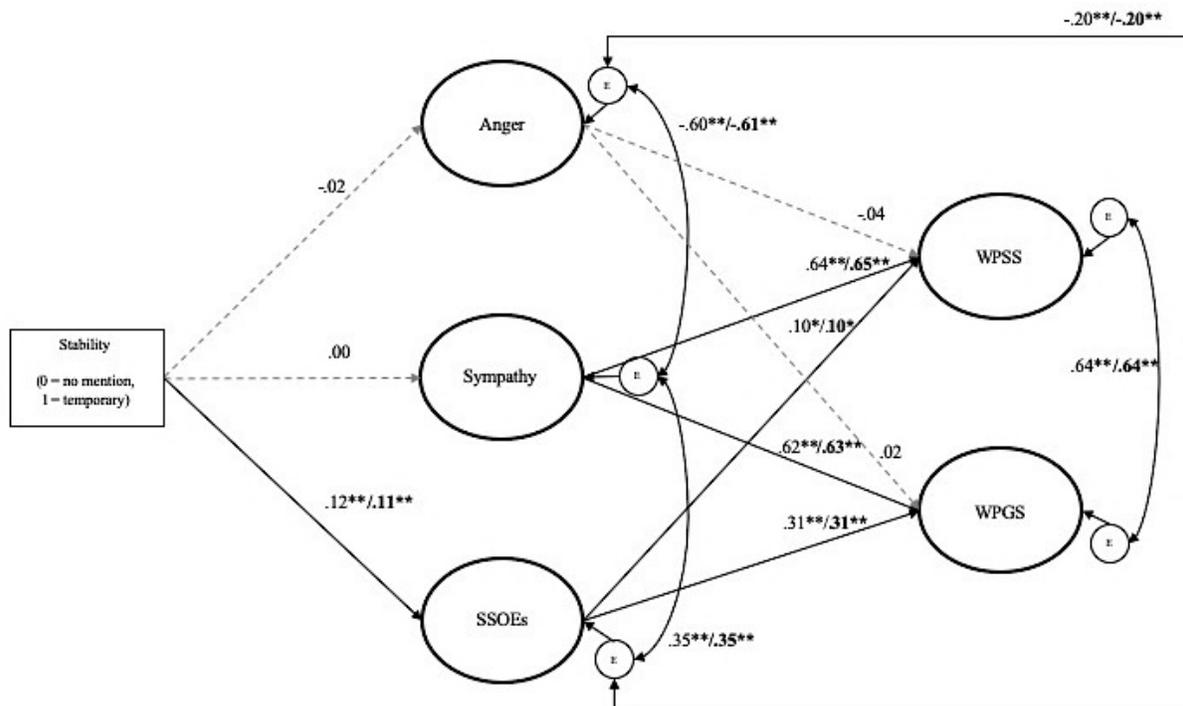


Figure 13. Study 2 Hypothesis 1 Simplified SEM model. The first number for each path indicates the originally proposed model, the second number in bold indicates the modified model. ** $p < .001$, * $p < .05$. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

Analysis for onset uncontrollability found that onset controllability did not predict a willingness to provide social support (95% CI [-.044, .029], $p = .809$) or general support (95% CI [-.037, .031], $p = .649$). Although sympathy and SSOEs predicted both outcomes, onset uncontrollability did not predict the mediators and anger did not predict the two outcome measures. See Figure 14 for simplified SEM results.

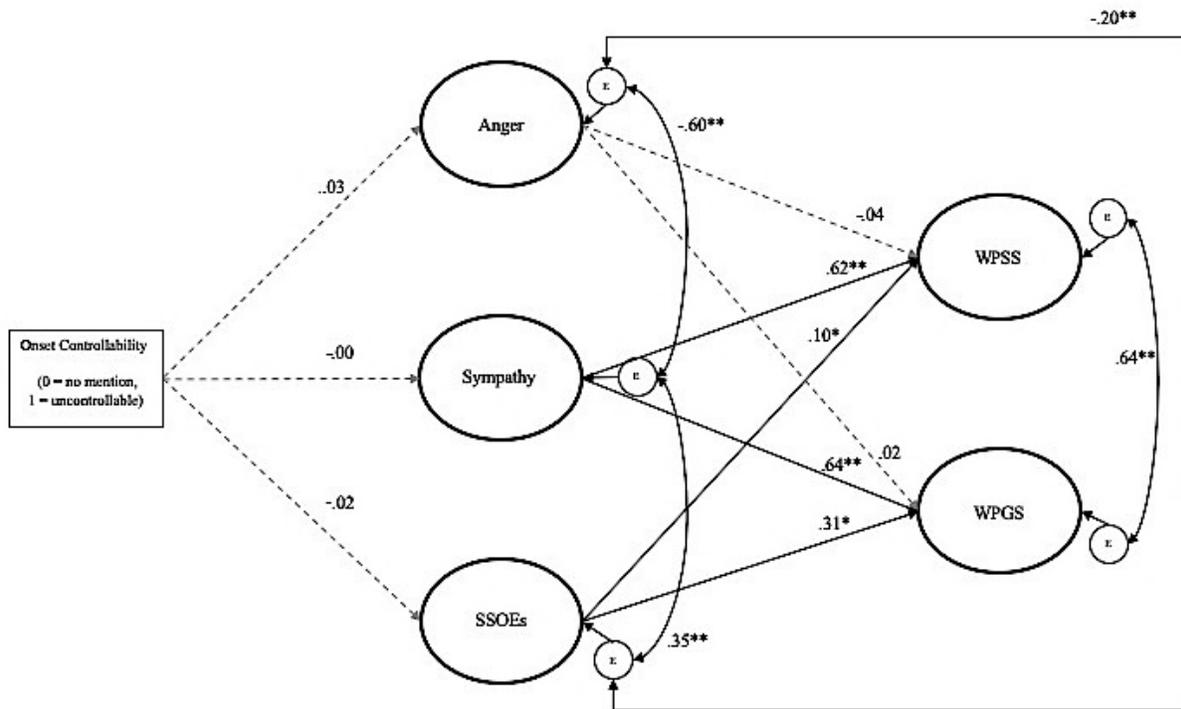


Figure 14. Study 2 SEM Results for Hypothesis 2 and Research Questions. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

Effort successfully predicted both willingness to provide social support (95% CI [.010, .060], $p = .011$) and general support (95% CI [.010, .058], $p = .011$) for a woman with PPD through sympathy. Both sympathy and SSOEs predicted willingness to provide social and general support. See [Figure 15](#) for simplified SEM results.

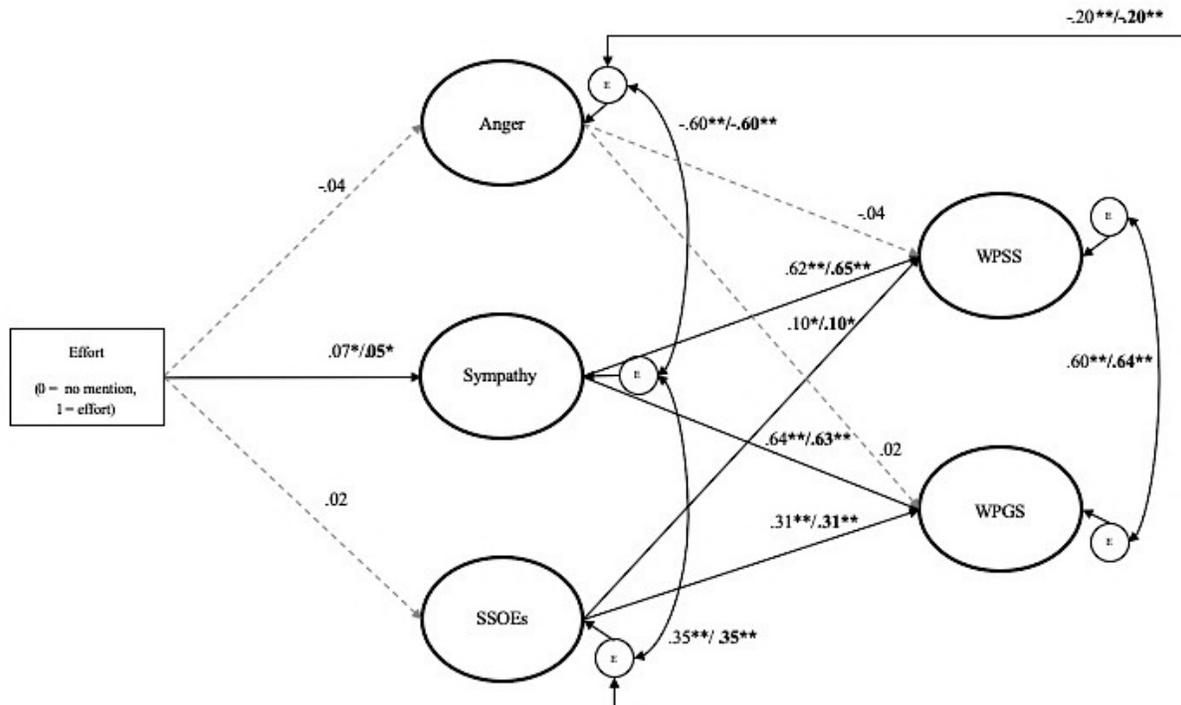


Figure 15. Study 2 Hypothesis 3 Simplified SEM model. The first number for each path indicates the originally proposed model and the second number in bold indicates the modified model. ** $p < .001$, * $p < .05$. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

Indirect effects for H4. Examining the interaction of stability and onset controllability did not result in significant indirect effects (social support: 95% CI [-.038, .027], $p = .748$ general support: 95% CI [-.050, .024], $p = .531$); however, one main effect emerged in the analysis. Videos that mentioned PPD being temporary predicted willingness to provide general support through SSOEs, 95% CI [.001, .078], $p = .044$. Modifications were not made to this model as deleting non-significant paths would result in a model identical to Model 1. All three mediators were correlated, and both willingness to provide social and general support were correlated as well. Sympathy and SSOEs predicted the outcome measures, but anger did not. See [Figure 16](#) for simplified SEM results.

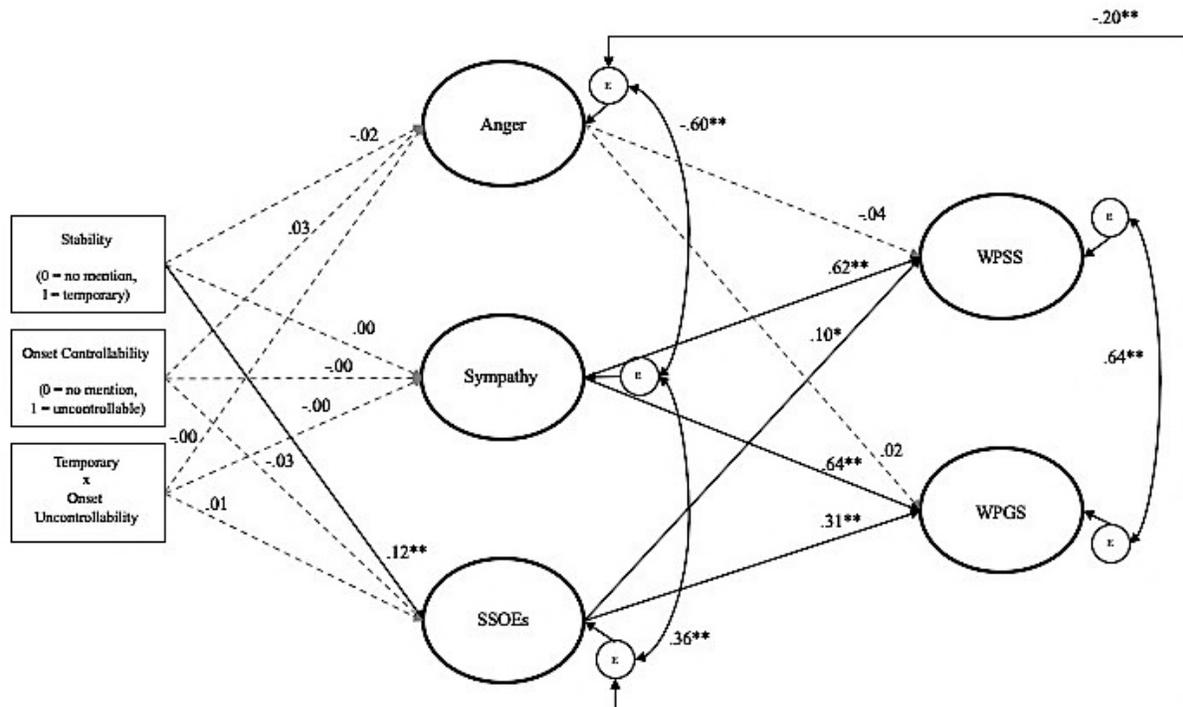


Figure 16. Study 2 SEM Results for Hypothesis 4. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

Indirect effects for H5. Examining the interaction between being told PPD is temporary and effort being expended to overcome PPD did not result in significant indirect effects; however, two main effects were found. Temporary PPD predicted willingness to provide social support through SSOEs, 95% CI [.003, .024], $p = .004$, and willingness to provide general support indirectly through SSOEs, 95% CI [.020, .055], $p < .001$. Effort also predicted both willingness to provide social support (95% CI [.010, .060], $p = .011$) and general support (95% CI [.010, .058], $p = .012$) through sympathy, but not through anger nor SSOEs. Anger did not predict the outcome measures but was correlated with sympathy and SSOEs. SSOEs also were correlated with sympathy, and willingness to provide social and general support were likewise correlated. See Figure 17 for simplified SEM results.

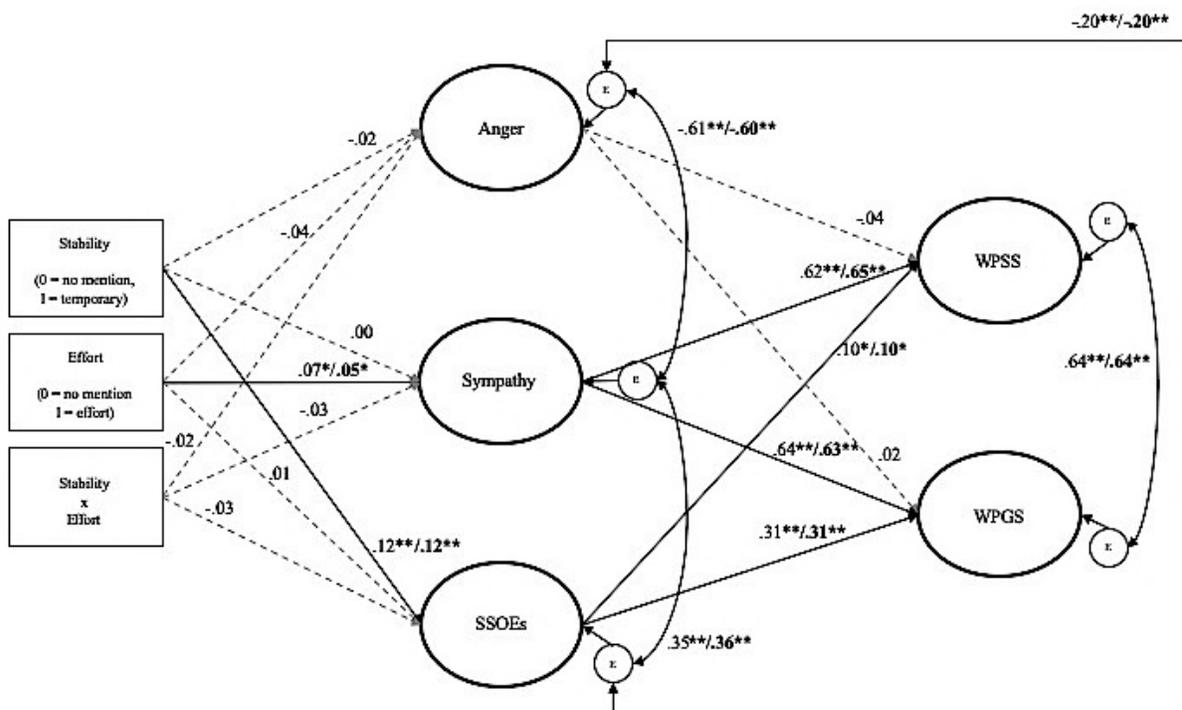


Figure 17. Study 2 Hypothesis 5 Simplified SEM model. The first number for each path indicates the originally proposed model and the second number in bold indicates the modified model. ** $p < .001$, * $p < .05$. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

Indirect effects for H6. The interaction of onset controllability and effort did not result in significant indirect effects for willingness to provide social support (95% CI [-.040, .027], $p = .720$) or general support (95% CI [-.042, .034], $p = .893$) through anger, sympathy, and SSOEs. A main effect of effort was found. Effort predicted both willingness to provide social support (95% CI [.016, .081], $p = .007$) and general support (95% CI [.014, .088], $p = .012$) through sympathy, but not through anger or SSOEs. All three mediators; however, were correlated, as were the outcome measures. Sympathy and SSOEs both predicted the outcomes; however, anger did not. No modifications were conducted as removing non-significant paths would have resulted in a model identical to Model 3. See [Figure 18](#) for simplified SEM results.

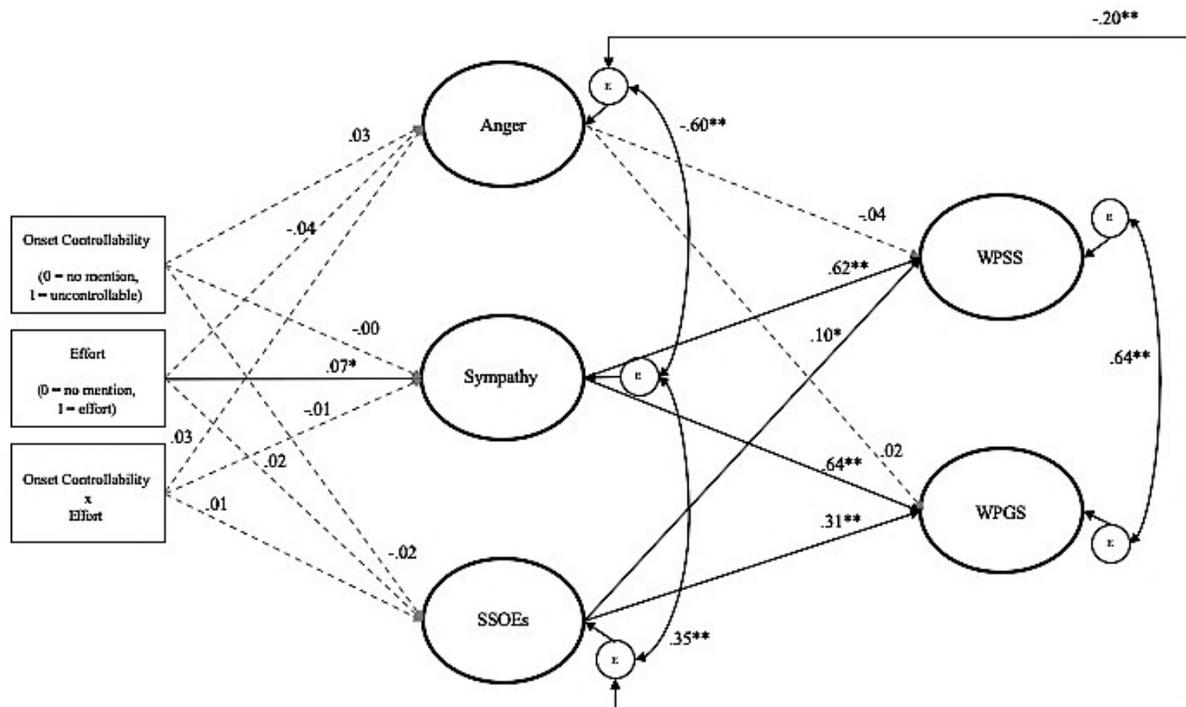


Figure 18. Study 2 SEM Results for Hypothesis 6. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

Indirect effects for H7. The three-way interaction between stability, onset controllability, and effort was not significant, nor were any of the two-way interactions. However, a main effect was found for effort: effort predicted sympathy, and sympathy in turn predicted both willingness to provide social support (95% CI [.016, .082], $p = .006$) and general support (95% CI [.014, .088], $p = .009$). Sympathy and SSOEs both predicted the outcomes, but anger did not. All three mediators were correlated, and both outcomes were correlated as well. Modifications were not made to this model due to the high number of non-significant paths. See [Figure 19](#) for simplified SEM results.

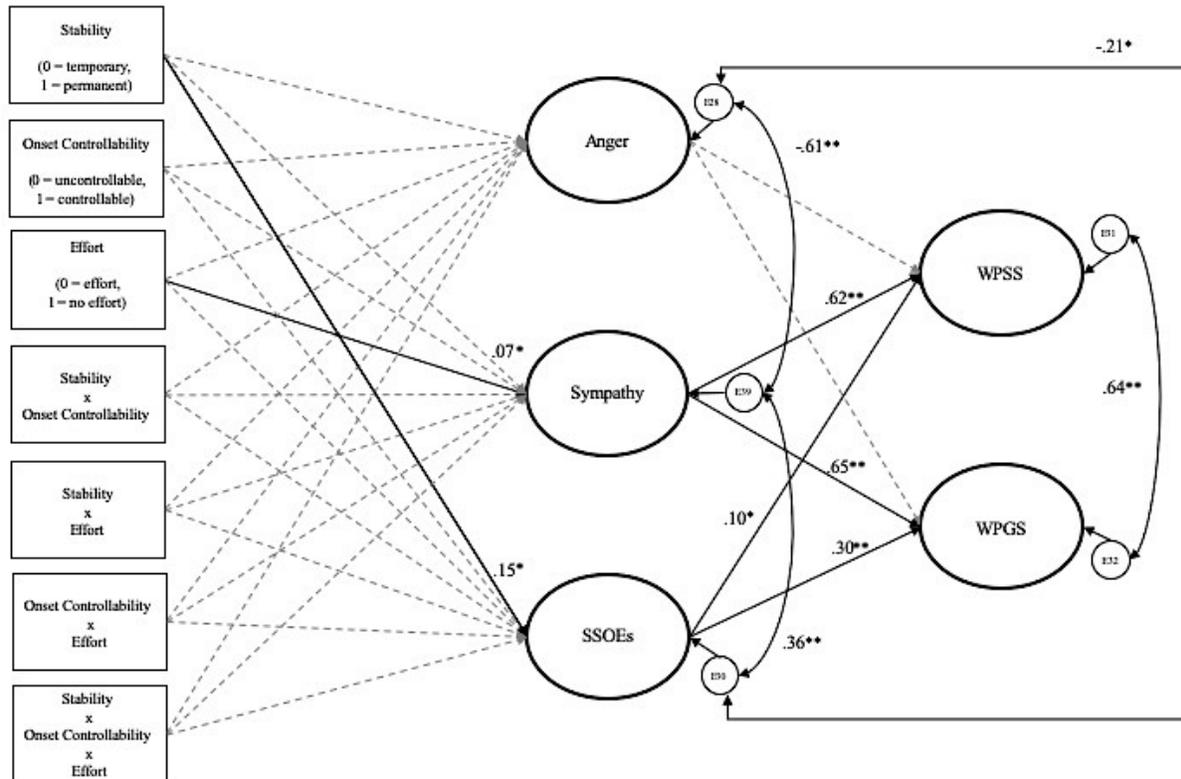


Figure 19. Study 2 Simplified SEM Results for Hypothesis 7. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

MANCOVA results. A MANCOVA was also conducted to explore the interactions of perceived stability, onset controllability, and effort on all measures (anger, sympathy, SSOEs,

willingness to provide social and general support). As in Study 1, gender and age were used as covariates and were statistically significant, $p < .001$. Main effects for stability ($p < .001$) and effort ($p = .012$) were significant. There main effect for onset controllability was not significant, nor were the hypothesized two-way and three-way interactions. See [Table 13](#) for MANCOVA results.

Table 13

Study 2 MANCOVA

| Predictor Variable | Pillai's Trace | F | Hypothesis df | Error df | p-value | Partial Eta Squared |
|----------------------------|----------------|-------|---------------|----------|---------|---------------------|
| Gender | .09 | 15.19 | 5 | 782 | .001 | .09 |
| Age | .04 | 6.61 | 5 | 782 | .001 | .04 |
| Temporary | .04 | 5.79 | 5 | 782 | .001 | .04 |
| Onset | .01 | 0.71 | 5 | 782 | .613 | .01 |
| Effort | .02 | 2.96 | 5 | 782 | .012 | .02 |
| Stability x Onset | .00 | 0.47 | 5 | 782 | .800 | .00 |
| Stability x Effort | .01 | 1.27 | 5 | 782 | .276 | .01 |
| Onset x Effort | .01 | 3.31 | 5 | 782 | .006 | .02 |
| Stability x Onset x Effort | .01 | 1.05 | 5 | 782 | .386 | .01 |

A follow up ANCOVA found that gender was positively associated with sympathy and willingness to provide social support and negatively associated with anger and SSOEs. These results indicated that women were more likely to be sympathetic and be willing to provide social support, and men were more likely to be angry and had lower expectations that providing help would be useful. Age was positively associated with sympathy: older individuals reported more sympathy toward their loved one with PPD. Mirroring the results of the structural equation models, viewing a PSA that stated that PPD is temporary resulted in greater SSOEs (see [Figure 20](#)). Viewing a PSA stating that a loved one with PPD was trying to overcome their ailment resulted in greater sympathy (see [Figure 21](#)). As in Study 1, willingness to provide social support and general support were both examined as well. Consistent with attribution theory, there were

no direct effects between attributions and willingness to provide social support or general support. See [Table 14](#) for significant ANCOVA results, [Table 15](#) for means by condition, and [Appendix A](#) for non-significant ANCOVA results.

Table 14

Study 2 ANCOVAs

| Predictor Variable | Outcome Variables | Type III Sum of Squares | df | Mean Square | F | p-value | Partial Eta Squared |
|--------------------|-------------------|-------------------------|----|-------------|-------|---------|---------------------|
| Gender | Anger | 41.24 | 1 | 41.24 | 29.07 | .001 | 0.04 |
| | Sympathy | 27.90 | 1 | 27.90 | 36.13 | .001 | 0.04 |
| | SSOES | 8.08 | 1 | 8.08 | 6.51 | .011 | 0.01 |
| | WPSS | 2634.28 | 1 | 2634.28 | 24.20 | .001 | 0.03 |
| Age | Sympathy | 16.00 | 1 | 16.00 | 20.71 | .001 | 0.03 |
| Stability | SSOES | 31.29 | 1 | 31.29 | 25.21 | .001 | 0.03 |
| Effort | Sympathy | 6.57 | 1 | 6.57 | 8.50 | .004 | 0.01 |

Notes. Only significant results are given in this table.

SSOEs (Social support outcome expectations); WPSS (Willingness to provide social support)

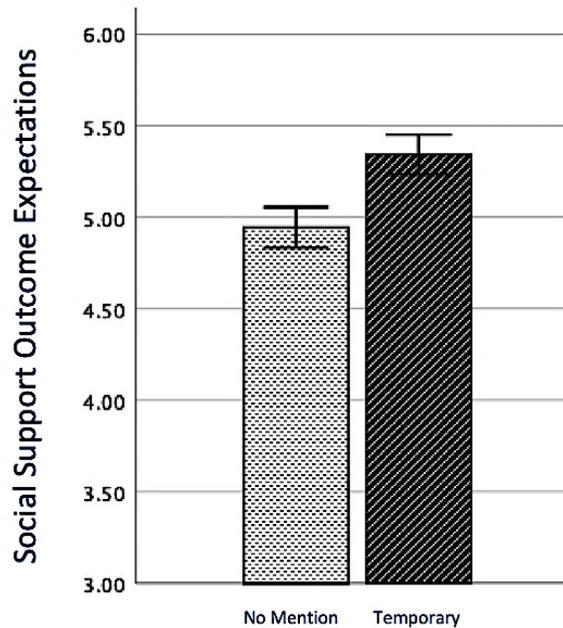


Figure 20. Significant main effects for stability for levels of social support outcome expectations. The means depicted are controlling for gender and age. Error bars represent 95% confidence intervals.

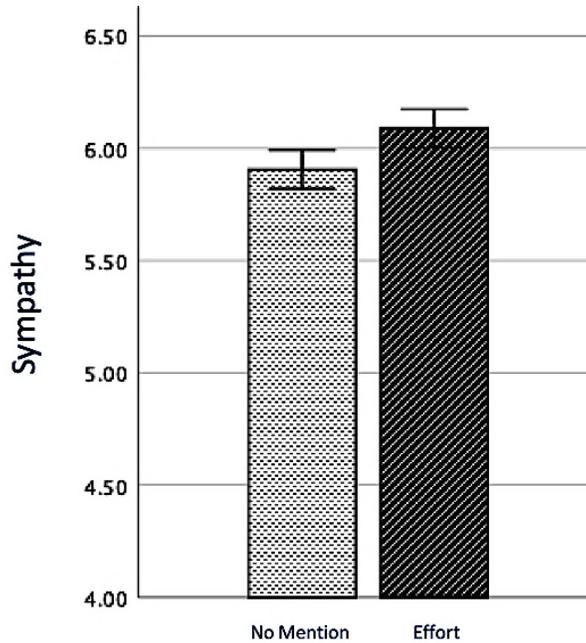


Figure 21. Significant main effects for effort for levels of sympathy. The means depicted are controlling for gender and age. Error bars represent 95% confidence intervals.

Table 15

Study 2 Means by Condition

| | Anger | | Sympathy | | SSOEs | | WPSS | | WPGS | |
|-----------------------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| | <i>M</i> | <i>SE</i> |
| Stability | | | | | | | | | | |
| Temporary | 2.10 | .06 | 6.01 | .04 | 5.34 | .06 | 92.17 | .52 | 89.89 | .59 |
| No Mention | 2.15 | .06 | 5.98 | .05 | 4.94 | .06 | 91.50 | .53 | 89.50 | .60 |
| Onset Controllability | | | | | | | | | | |
| Onset uncontrollable | 2.16 | .06 | 6.00 | .04 | 5.10 | .06 | 92.00 | .52 | 89.93 | .59 |
| No Mention | 2.09 | .06 | 6.00 | .05 | 5.19 | .06 | 91.68 | .53 | 89.46 | .60 |
| Effort | | | | | | | | | | |
| Effort | 2.08 | .06 | 6.09 | .04 | 5.18 | .06 | 91.64 | .52 | 90.20 | .59 |
| No Mention | 2.17 | .06 | 5.91 | .04 | 5.10 | .06 | 92.04 | .53 | 89.19 | .60 |

Note: All numbers account for the covariates of gender and age.

Discussion

Study 2 tested seven different models to examine whether emphasizing different attributions could succeed in indirectly increasing willingness to support a loved one with PPD through reducing anger and increasing sympathy and SSOEs. This approach was completed with the use of eight anti-stigma video PSAs, which encouraged individuals to help a loved one with the ailment, seven of which utilized attribution theory. As this study was concerned with the potential influence of an attribution based PPD campaign in an actionable setting, we compared PSAs that mentioned a specific attribution to ones that did not mention the attribution at all. Such an approach could indicate if the PSAs can influence currently held beliefs rather than beliefs dictated to the participant (e.g., “imagine your loved ones depression is their fault and permanent, and they are not giving any effort”) via a PSA manipulation and might not be truly held. In other words, we avoided the use of polar opposites, which would have included permanence, onset controllability, and no effort conditions. The use of polar opposites was necessary for theory testing in Study 1; however, a more ecologically valid approach was warranted as a follow-up. Although this approach minimizes between group differences, it is essential to determine if this method is viable in a campaign setting. To test this, we used a 2 (temporary, no mention of stability) x 2 (onset uncontrollability, no mention of controllability) x 2 (effort, no mention of effort) factorial design. Despite this more stringent test of the theory, some significant results were found.

The PSA espousing the temporary nature of PPD was successful at indirectly increasing the willingness of participants to give social and general support to a loved one with PPD through increasing the belief that help would make a positive difference. This is consistent with the findings of Muschetto and Siegel (2019). In their second study, they created PSAs which

stated that depression was temporary. Their results indicated an indirect effect existed between depression being presented as temporary and willingness to provide social and general support through SSOEs. In the current Study 2, another successful approach involved using perceived effort by emphasizing that a woman with PPD was trying her best to overcome depression. This increased willingness to provide social and general support through sympathy. These same paths were significant in Study 1 and somewhat similar to results of Karasawa (1991), which indicated that effort had an indirect effect on helping intentions through pity. Although Karasawa found this pattern of results, the current result involved an indirect effect in a more complex model. Another successful model in the current study examined both perceptions of PPD being temporary and perceptions of effort. Although an interaction between perceptions of stability and effort was not present, utilizing both approaches in the same model indirectly increased willingness to provide social and general support through SSOEs and sympathy. This approach is somewhat similar to Karasawa's work, which utilized controllability and effort in the same model to influence helping intentions via anger and pity.

Counter to our hypotheses, onset controllability did not yield significant results in this study. The Pilot Study demonstrated that onset controllability had a relatively low average ($M = 2.31$). A three-item semantic differential from 1 (uncontrollable) to 7 (controllable) with a mean this low indicated that overall, most people did not view PPD to be onset controllable in the Pilot Study. Although results of Study 1 indicated that differences existed between vignettes utilizing onset uncontrollability and onset controllability, Study 2 found that comparing an onset uncontrollability PSA to a control condition PSA did not yield significant differences. If the information from the Pilot Study is consistent with beliefs held by individuals in Study 2, the lack of significant results may be due to the onset uncontrollability group and the control

condition group both believing that PPD is not something women can control developing.

The results of the present study lend support to the value of emphasizing stability via the temporary nature of PPD, and effort, by reassuring individuals that effort to overcome the ailment exists. Effort in particular may be an important yet under explored construct as side effects of depression may lead observers to incorrectly perceive that effort is not being given when in fact women may be putting forth considerable effort. These two attributions are less common in the attribution help-giving literature; however, they warrant increased attention. Further, these results demonstrate the value of including SSOEs, which have been gaining popularity in help-giving approaches (see Muschetto & Siegel, 2019 for SSOEs as a mediator; Ruybal & Siegel, 2017, 2019a for SSOEs as an outcome; Siegel et al., 2012 for SSOEs as a moderator). Examining both stability and effort in the same campaign indicates a viable path to reduce stigma and increase help for women with PPD via a video campaign.

CHAPTER 7

GENERAL DISCUSSION

Postpartum depression (PPD) affects 10%-15% of all childbearing women (Beck, 1995; Liberto, 2012; Patel et al., 2012) and up to 85% of women report negative mood disturbance postpartum (Boland-Prom & MacMullen, 2012). Postpartum depression is a widespread phenomenon affecting women of different ages and cultural backgrounds. This form of depression negatively affects family members (Letourneau et al., 2012; Riecher-Rössler & Fallahpour, 2003) and child development in many ways (Dawson et al., 1999; Liberto, 2012; Murray & Cooper, 1997; Righetti-Veltema et al., 2003; Weinberg & Tronick, 1998). Postpartum depression is a serious issue with widespread implications and can result in death for some women (Healey et al., 2013).

Beyond dealing with the many negative consequences of depression, women with PPD face stigma as well. Stigmatization toward individuals with mental illness is harmful and well documented (Angermeyer, Beck, & Matschinger, 2003; Corrigan, Powell, & Rüscher, 2012; Lauber, Nordt, Falcato, & Rossler, 2004). An example of this harm is that individuals experiencing stigma are less likely to seek treatment (Goodman, 2009). Although efforts to reduce stigma on a societal level have been published (Bilszta, Ericksen, Buist, & Milgrom, 2010; McCarthy & McMahon, 2008; Pinto-Foltz & Logsdon, 2008), additional research is needed to understand the motivational and risk factors that help predict and prevent stigmatization. In response, there has been an increase in research focused on reducing stigma toward individuals with mental illness via the use of media-based campaigns (e.g., Evans-Lacko, Corker, Williams, Henderson, & Thornicroft, 2014), and more recently specific attempts have been employed to assist women with PPD (e.g., 2020 Mom Project, 2017; the Silence Sucks campaign, 2017). Not all campaigns have been successful (see Bologna, 2017 for criticisms of the Silence Sucks campaign), making PSAs guided by strong theoretical backing and extensive testing preceding implementation essential (Corrigan & Kosyluk, 2013; Crano, Siegel, & Alvaro, 2012).

Clearly, it is important to sway negatively biased beliefs related to mental-behavioral stigmas such as PPD. Attribution theory has been used across various ailments to understand and reduce stigma, and has been successful in areas of mental health (Amirkhan, 1990; Försterling, 1990; López & Wolkenstein, 1990; Weiner et al., 1988) and depression (Karasawa, 2003; Siegel et al., 2012; Yao & Siegel, 2019). Given the promise of this theoretical framework, this series of studies guided by attribution theory, is consistent with calls for more theoretically guided campaigns (Dumesnil & Verger, 2009) and offers additional evidence for an attribution approach

to reduce the stigmatization of women with PPD (see Ruybal & Siegel, 2017 for a similar attempt and Muschetto & Siegel, 2019 for research dealing with depression).

The current studies represent a rare and unique attempt to explore interactions among perceived stability, onset controllability, and perceived effort applied to the problem of PPD, which to the best of our knowledge has not been previously tested. This distinctive approach was utilized across a correlational Pilot Study and two experimental studies, one with the use of written vignettes, and one with video PSAs. This three-step process allowed us to measure existing attributions about women with PPD, then determine whether three attributions singly and in combination with one another could be successful in moving attributions, and whether this approach was feasible in a campaign setting. Previous research has largely lacked significant interactions between attributions; however, there is good theoretical justification for predicting an interaction between perceptions of stability and controllability to exist (Weiner et al., 1982). We hypothesized that the lack of specificity (i.e., general controllability, onset controllability, offset controllability) that most studies use regarding controllability, might be key in understanding why interactions have not emerged in research that explored both these key attributions, which individually prove useful in stigma reduction. For this reason, we chose to explore onset and offset controllability, to examine if either would be beneficial in exploring why interactions between attributions have rarely been reported. Further, inspired by Karasawa's (1991) work concerning onset and offset controllability, we decided to explore the effect effort might play in the attribution-emotion-action model.

The Pilot Study found significant correlations among variables. Perceptions of stability were associated with all variables, including onset and offset controllability, but not general controllability, which offered support for the belief that the onset and offset controllability

distinction is important in exploring the potential interaction between stability and controllability. In the Pilot Study, analysis of perceived stability revealed statistically significant associations similar to previous research. Previous investigations examined aspects such as, anger, sympathy, and willingness to provide social support in dealing with a close other with depression (Muschetto & Siegel, 2018), optimism and propensity to help among nursing staff dealing with inpatients who self-harm (Wheatley & Austin-Payne, 2009), and optimism, sympathy, and increased helping by caregivers of men with intellectual disabilities (Willner & Smith, 2008). Although different, optimism and SSOEs both explore beliefs about the future recovery from an ailment.

The Pilot Study also allowed for an exploration of three types of controllability. This correlational study provided support for the belief that different forms of controllability are differentially associated with emotion and willingness to provide support to a loved one with PPD. Onset controllability had stronger correlations with emotion and willingness to provide social support compared to general and offset controllability. General controllability as a means of understanding helping behaviors is well established in the attribution literature (see Rudolph et al., 2004 for a meta-analysis), but far fewer studies have explored the onset and offset distinction brought forward by Brickman and colleagues (1982). The finding that stability and general controllability were not associated ($r = -.01$), while onset and offset controllability were associated with stability supports the important distinction and the necessity of exploring interactions of attributions. Further, offset controllability was not associated with emotion nor willingness to provide social support, while onset controllability was associated with all other variables except offset controllability and SSOEs. Although these findings are correlational, it seems onset controllability could have more sway in reducing stigma in this context and

therefore was utilized in the experimental studies to follow.

Two measures utilized in the Pilot Study provided information on current effort and future effort. As the goal was to apply effort to the attribution-emotion-action model, it was important to understand if effort had similar associations to emotions and helping intentions as those found with stability and controllability. Results showed that both effort measures did in fact have similar associations overall, with minor differences. Although research on effort in the help-giving realm is rare, it is common in attribution research in education. For example, research examining teamwork on a group project found that effort influenced the attribution-emotion-action model. Effort predicted controllability, which in turn had an indirect effect on reprimanding and reward intentions through anger and sympathy (Harkrider, 2013). Further, Harkrider's research found that effort directly predicted controllability, anger, and sympathy, as well as reprimanding and rewards intentions. Both the Pilot Study and Harkrider's research demonstrate that effort, like controllability, is associated with emotion and helping intentions.

As mentioned, the Pilot Study found that participants overall had fairly low perceived stability, low onset controllability, and strong beliefs about effort being required to overcome PPD. Mean scores from this study were measured using a 1 to 7-point scales. Participants' mean scores on perceived stability were fairly low ($M = 2.33$), indicating that most people thought PPD could be temporary. Likewise, onset controllability had a low average ($M = 2.31$), suggesting that overall individuals on average did not think the development of PPD was controllable. Means for both effort measures were relatively high, indicating that people thought their loved one would be expend effort ($M = 5.90$) and that effort would also be needed at the offset to overcome the ailment ($M = 5.85$).

Results of the Pilot Study on stability replicated Ruybal and Siegel's (2019a) findings by

demonstrating that perceived stability can be a viable path for anti-stigma research, a useful attribution used less often than controllability. Also, as a result of this study, it was determined that differences existed among onset, offset, and general controllability, supporting the possibility that onset controllability had the most to offer an anti-stigma PPD approach, a novel result. Although onset and offset controllability have been used in some research together, they are rarely compared against general controllability. Explorations of effort demonstrated that perceived effort had similar associations with previous work utilizing stability (Ruybal & Siegel, 2019a) and controllability (Ruybal & Siegel, 2017), supporting the utility of effort in PPD stigma reduction.

Study 1 moved beyond the correlational design of the Pilot Study by experimentally examining an approach that factorially combined three attributions through the use of written vignettes. Specifically, the study tested whether different attributions were malleable by emphasizing the opposite dichotomies of perceived stability (PPD was temporary or permanent), onset controllability (PPD was onset uncontrollable or onset controllable), and effort (a loved one was exerting effort to overcome PPD or not exerting effort toward the offset of the ailment). Additionally, following the research of Muschetto and Siegel (2019) written vignettes were used to indirectly influence helping intentions, through SSOEs. Although previous studies have examined these variables, this study was unique in that it manipulated perceptions of stability, onset controllability, and perceived effort and their interactions.

The indirect effect of attributions on willingness to provide both social and general support was thus examined with anger, sympathy, and SSOEs as mediators. Results of several structural equation models provided support for this method. In particular, when participants were randomly assigned to a vignette that mentioned that PPD was temporary compared to

permanent, they expressed lower levels of anger, and higher levels of sympathy and SSOEs, leading to increased willingness to provide support. Likewise, when individuals were presented with information that led them to believe PPD was onset uncontrollable rather than controllable, anger decreased and sympathy increased. By extension both willingness to provide support measures increased as well. Following the pattern of results, expending effort to overcome PPD (verses not doing so) also led to a reduction in anger and an increase in sympathy, and likewise increased willingness to provide social and general support. Results of these models also indicated that onset uncontrollability, in combination with perceived effort, predicted willingness to provide social and general support through anger and sympathy. This finding is in line with work by Karasawa (1991), which examined onset and effort in the same study. This replicated findings from Muschetto and Siegel (2019) regarding perceptions of stability being useful at increasing willingness to provide social and general support indirectly through decreasing anger and increasing SSOEs. Further, these findings demonstrate that onset controllability is useful in reducing the stigma of PPD, and that effort is applicable to research on PPD. The combination of onset controllability and effort offers a new and unique path for stigma reduction.

Study 2 used a more conservative approach to test attribution theory applied to PPD by applying the positive side of the dichotomies presented in Study 1. In other words, anti-stigma PSA videos were created using the ideas that PPD is temporary, the development of PPD is uncontrollable, and that although you cannot always tell, your loved one is doing her best to overcome PPD. The opposite poles from Study 1 (i.e., PPD can be permanent, someone can control developing PPD, and they are not trying to overcome the ailment) were excluded from this study. Instead, a control condition with no mention of the opposite poles was utilized, creating a more stringent comparison condition. A prior study demonstrated the importance of

this approach. Muschetto and Siegel (2019) first conducted an experimental study where both sides of a stability dichotomy were presented (i.e., temporary and permanent). Results were as expected demonstrating that a temporary focus compared to a permanent focus resulted indirectly in increasing willingness to help a close other with depression through anger and SSOEs. However, once a PSA emphasizing the potential temporary nature of depression was compared to a control PSA (i.e., no mention of stability), anger no longer mediated the relationship between stability and willingness to help someone with depression. Accordingly, we felt it was critical to utilize a similar approach in Study 2. The Pilot Study found that means were relatively low for perceptions of stability ($M = 2.33$) and onset controllability ($M = 2.31$), and high for perceived effort (current effort: $M = 5.90$ future effort: $M = 5.85$), meaning that individuals found PPD to be potentially temporary, an ailment whose development a woman could not control developing, and that she would be expending effort and effort would be needed to overcome the problem. A stricter methodological approach was needed to ensure that the PSAs did not simply convince people of something they already believed.

Results of Study 2 indicated that a PSA containing a message about PPD being temporary increased SSOEs which in turn predicted willingness to provide social and general support. Onset uncontrollability did not influence emotion. In hindsight this finding is not surprising, as the Pilot Study demonstrated that the majority of people believed PPD to be something whose development could not be controlled. As such, findings might imply that loved ones did not need to be persuaded that PPD was onset uncontrollable, and that without a comparable onset controllable PSA, no significant effect could be detected due to the more conservative approach. Effort, however, did have a significant effect on willingness to provide social and general support through sympathy. Further, when PSAs containing the “PPD is temporary” and “effort is

being expended” messages were examined together in the same model, the same pattern of significant results emerged when compared to models that examined both temporary and effort alone. Findings might imply that messages such as “PPD is temporary” and “with effort can be overcome” allowed for an increase in the belief that recovery is possible and that a willingness exists to overcome PPD from women with the ailment. This is in line with Brickman and colleagues’ (1982) hypothesis that ability and willingness are important aspects of offset controllability. Our videos did not specifically mention that an offset is possible, but coupled with beliefs about PPD being temporary, there is by default an assumption that offset controllability is possible, and by expending effort, this is more likely to occur. Therefore, sympathy, as well as positive beliefs about recovery, can be increased, and both of which predict a greater willingness to provide support to a loved one with PPD.

Despite the use of a more conservative and ecologically valid approach, significant effects were still detected in Study 2. This result was also shown despite averages from the Pilot Study indicating that most individuals believed PPD to be temporary, that women are not at fault for developing the ailment, and that women would be putting forth effort to overcome it. The possibility of reducing the stigma that surrounds PPD can still be accomplished and help provision still increased by making attributions salient. Although this set of studies supports attribution theory as beneficial in campaign development, utilizing certain attributions over others may be a wise use of resources, such as focusing on perceptions of stability and effort. However, as this is an especially important issue, future exploration is advised.

These studies can inform future research to increase help-seeking in women with PPD by guiding the development of future PSAs and campaigns. For example, results suggest that new studies might consider targeting loved ones of pregnant and postpartum women. This is

especially important since people with depression are unlikely to seek help and may show resistance to campaigns aimed directly at them (Klimes-Dougan & Lee, 2010; Lienemann et al., 2012). Findings also have implications for the medical setting. As most women frequent the doctor in the months following childbirth, and often with loved ones, the opportunity for interventions during the postpartum period are available. Thus, findings imply that an intervention might focus on encouraging doctors and nurses to speak to mothers who recently gave birth, as well as their loved ones, about the temporary nature, the uncontrollable development of PPD, and how effort may be hard to judge in people with depression. This would allow the message to be delivered by a highly credible source (i.e., doctors and nurses). With increases in funding for PPD screenings, greater numbers of women and their loved ones than ever before will be having conversations about PPD with healthcare providers in the years to come.

Strengths and Limitations

This research has several strengths as well as limitations. All studies were collected via TurkPrime. Although the MTurk population offers more diversity than the traditional college classroom in many ways, it still lacks ethnic diversity with most participants reporting they are Caucasian (Casler, Bickel, & Hackett, 2013). This research also employed only participants within the United States who were proficient reading and writing English. Postpartum depression is an ailment found in many countries around the world, and research on reducing stigma and understanding it has been done in countries such as China (Tang, Zhu, & Zhang, 2016) and Australia (Barney, Griffiths, Jorm, & Christensen, 2006). As such, the current research may be generalizable to the United States, but the generalizability of the current results to other countries should be further investigated. An additional potential limitation is that all data were based on

self-reports. This is the usual practice in stigma research (Parcesepe & Cabassa, 2013; Weiner et al., 1988), but should be kept in mind. Another common limitation in this line of research and this set of studies is reporting on intentions rather than behaviors (Ruybal & Siegel, 2019b).

Intentions, unfortunately, while convenient, are not always predictive of behavior (Fishbein & Ajzen, 2009; Sheeran, 2002). Future research could strengthen support for this approach by implementing behavioral outcome indicators in addition to intentions.

Considering the manipulations used in this set of studies, Study 1 utilized written vignettes, and Study 2 video PSAs. The written vignettes described hypothetical situations. This is a common methodology in attribution research (see Betancourt, Hardin, & Manzi, 1992; Meyer & Mulherin, 1980; Weiner, 1980b), as well as in stigma research using an attribution framework (Muschetto & Siegel, 2019; Ruybal & Siegel, 2017; Weiner et al., 1988; see Parcesepe & Cabassa, 2013 for a review); however this drawback also should be considered. A strength related to the use of our vignettes is that we used eight vignettes, including a control condition. Previous work with vignettes has used only one or two conditions with a stark contrast (e.g., at fault for PPD vs not at fault for PPD) and in many cases only using one attribution (Ruybal & Siegel, 2017) or when using two, not using them in combination (Muschetto & Siegel, 2018).

Study 2 manipulations improved upon the vignettes used in Study 1 by offering a real-world application of attribution theory. Seven videos were tested against a control video all using similar texts and images. Future research could add strength to this approach by using several different texts and different images to explore the most effective combinations for creating increased willingness to support women with PPD. Although slightly different texts were used in this research all images were identical. The long-term effects of being exposed to our video

PSAs are also unexplored as these data are not longitudinal. Although a limitation, the use of seven different manipulations, as well as a control condition, test a large number of potential useful paths for a video campaign. Similar research has not utilized as many conditions. The use of anti-stigma videos in and of itself promotes a test of ecological validity as these videos were similar to videos launched at a national level.

Conclusion

The goal of the current studies was to replicate previous attribution work examining the influence of attribution-based vignettes and PSA videos using perceived stability (see Muschetto & Siegel, 2019), but also to explore the usefulness of onset controllability and effort to influence anger, sympathy, SSOEs, and support provision intentions to help women with PPD. Utilizing this novel approach, a Pilot Study explored the relationship among perceptions of stability, three different forms of controllability, and effort on emotions and help provision intentions. Study 1 then examined eight attribution-based vignettes utilizing contrasting poles, such as temporary versus permanent conditions. Study 2 complemented this approach by using a real-world approach through the use of anti-stigma video PSAs to promote help-giving for PPD. This study was especially important as Muschetto and Siegel's (2019) work was a rare attempt to use only one side of the stability dichotomy. This research demonstrates the applicability of attribution theory (Weiner, 1980a, 1980b) to video PSA campaigns and its ability to help reduce the stigmatization of women with the ailment while also expanding the current knowledge of attribution theory.

A common approach in attribution research involves the use of dichotomized attributions to manipulate attributions (e.g., PPD is presented as controllable or uncontrollable). From a theory building standpoint, dichotomizing attributions is useful and has led to decades of

successful research. However, as attribution theory is a well-established theory, one that is being applied with increasing frequency for stigma reduction, a more stringent test is needed to be able to apply the framework successfully to areas such as a campaign setting. When only one side of the attribution dichotomy is presented, overlap may occur between the test group (e.g., PPD is temporary) and the control group (e.g., no mention of attributions) in terms of their beliefs about the perceived stability of PPD. This is less pronounced when polarizing attributions such as an approach that randomizes participants to temporary or permanent conditions. For example, results of our Pilot Study for example found that most people do not think that PPD will be permanent. Accordingly, in the future, research should be conducted via non-polarized attribution studies where there is a control group, as in the real world, that is given degrees of freedom to express what they believe without being presented or persuaded to shift their beliefs in the opposite direction.

It is theoretically possible that reminding individuals of what they already believe (e.g., PPD is or can be temporary) can still be useful. This appears to be the case concerning perceptions of stability and effort; however, this was not the case concerning onset controllability. This set of studies indicated that although individuals may have favorable attributions toward women with PPD, making these attributions accessible can still significantly influence emotion and by extension intentions to provide help. Although the valance did not change, we might have changed accessibility of beliefs and increased the role they played in the decision-making process. Another key implication is that perceived effort is a useful construct in the attribution-emotion-action model and can lead to increased support via emotions. Although effort is less commonly studied than stability and controllability, in a PPD context it was most successful in increasing sympathy and willingness to assist a woman with PPD. Controllability

leading to willingness to provide help through emotion has been replicated numerous times; however, controllability was not successful in influencing emotion when only the onset uncontrollable properties were emphasized in a PPD context. This set of studies has important implications for campaigns; however, it also indicates a need to consider an individual's baseline attributions in a specific context. Future attribution-framed research being utilized with anti-stigma reduction should consider not only the typical dichotomies (e.g., temporary or permanent) but also a one-sided approach (e.g., temporary vs a control condition).

Women with PPD around the world are unable to care for their children and in some cases, die from this ailment (Dagher et al., 2012). Recent legislation is calling for more focus on this type of depression (114th Congress, 2015-2016). A campaign of focused research that provides potential solutions for these mothers is warranted. The current research, which is strongly grounded in prior evidence, offers a potential path to success. If this approach is viable in a real campaign, it could save millions of dollars and lives every year and provide a model for help-giving that could be implemented across the country.

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APPENDIX A

TABLES AND FIGURES

Study 1 Hypotheses

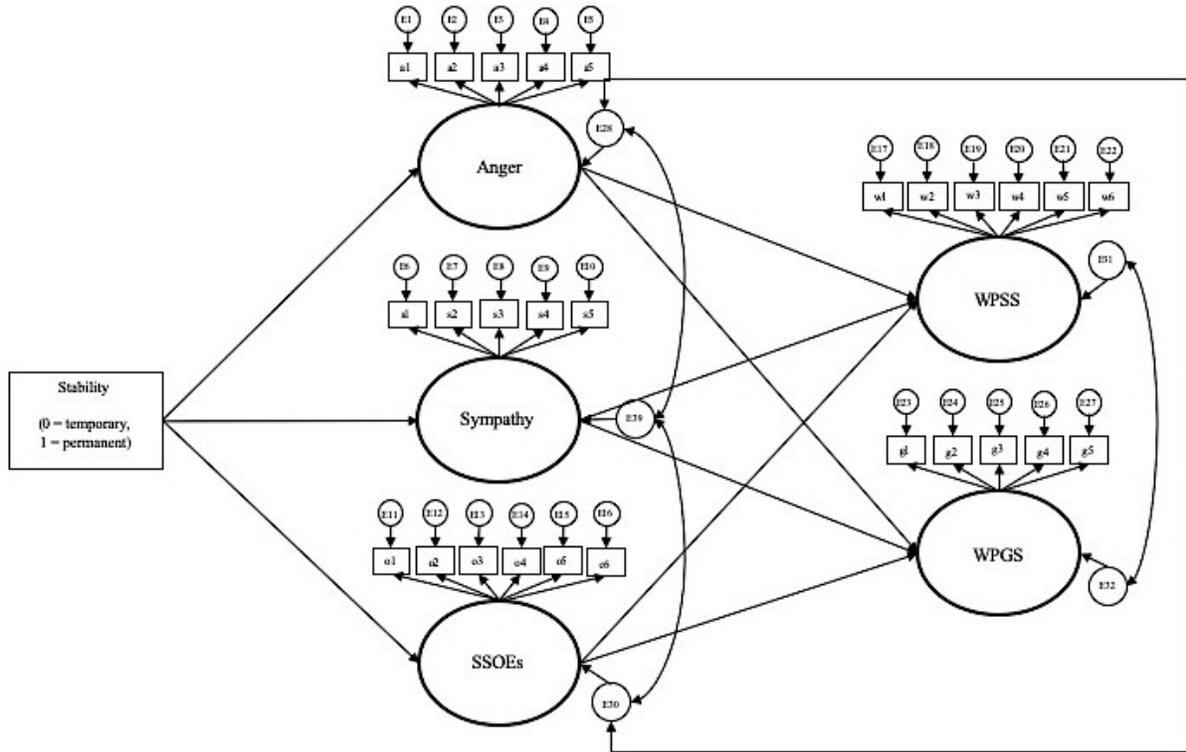


Figure 21. Study 1 Hypothesis 1. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

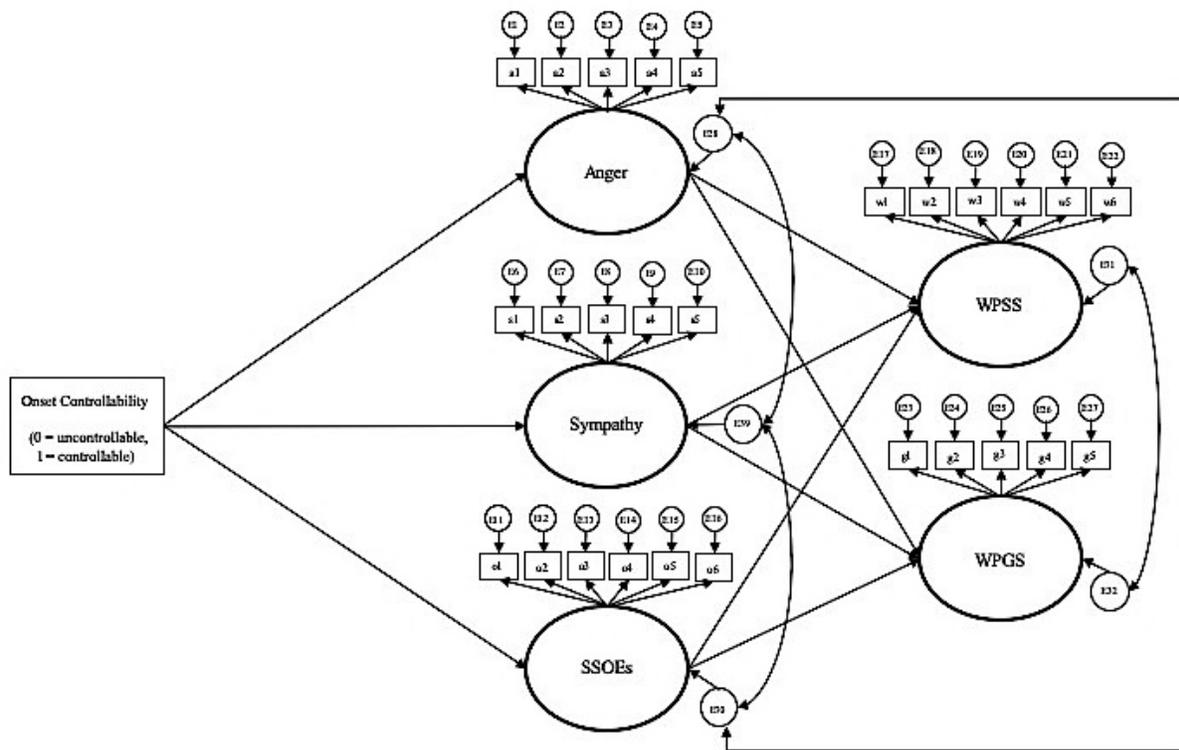


Figure 22. Study 1 Hypothesis 2 and Research Questions. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

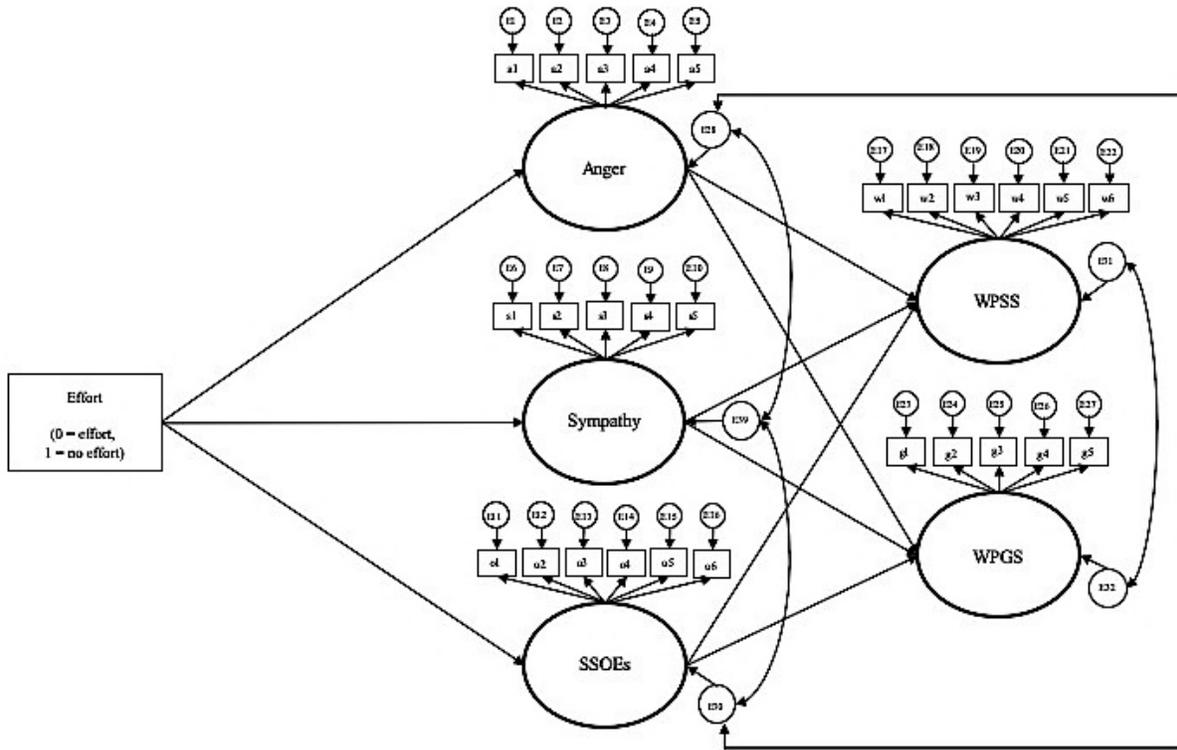


Figure 23. Study 1 Hypothesis 3. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

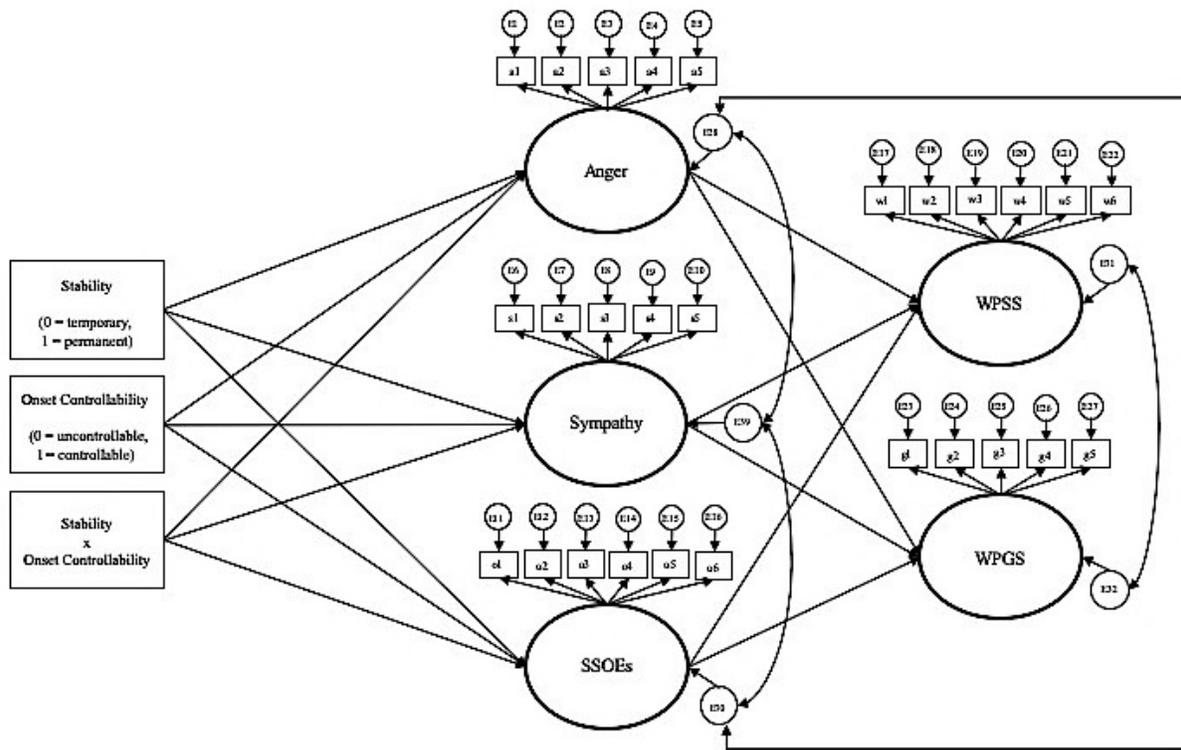


Figure 24. Study 1 Hypothesis 4. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

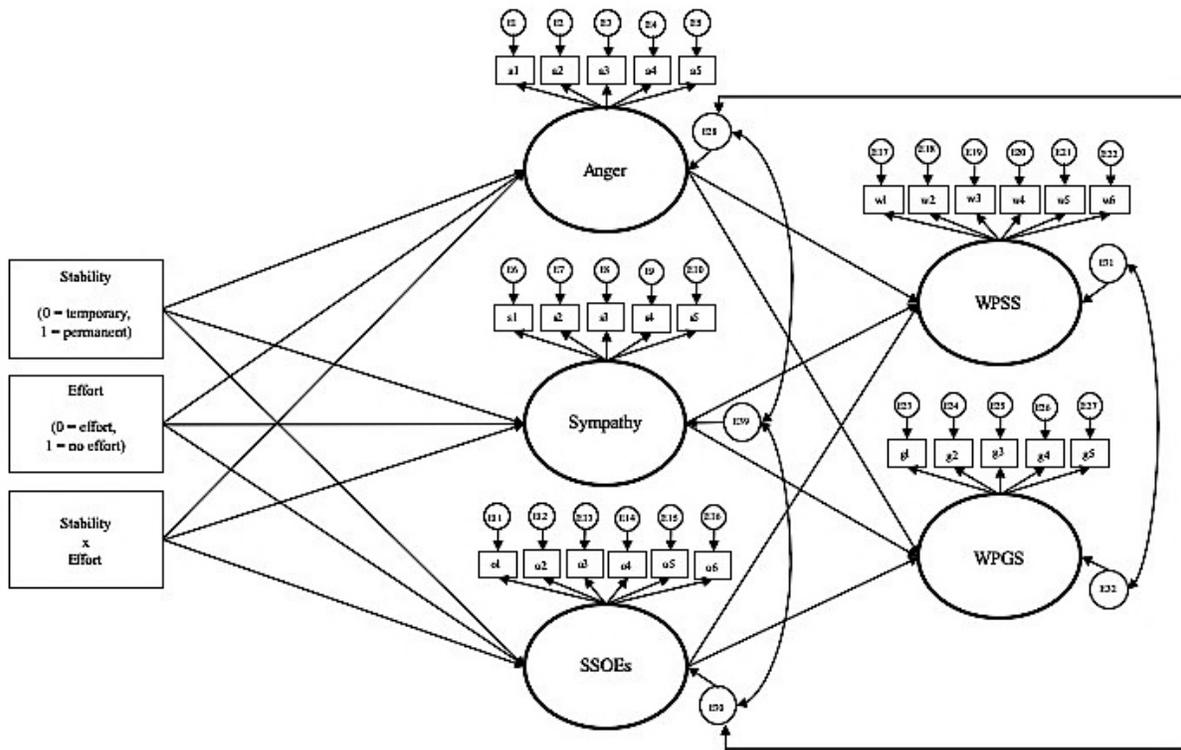


Figure 25. Study 1 Hypothesis 5. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

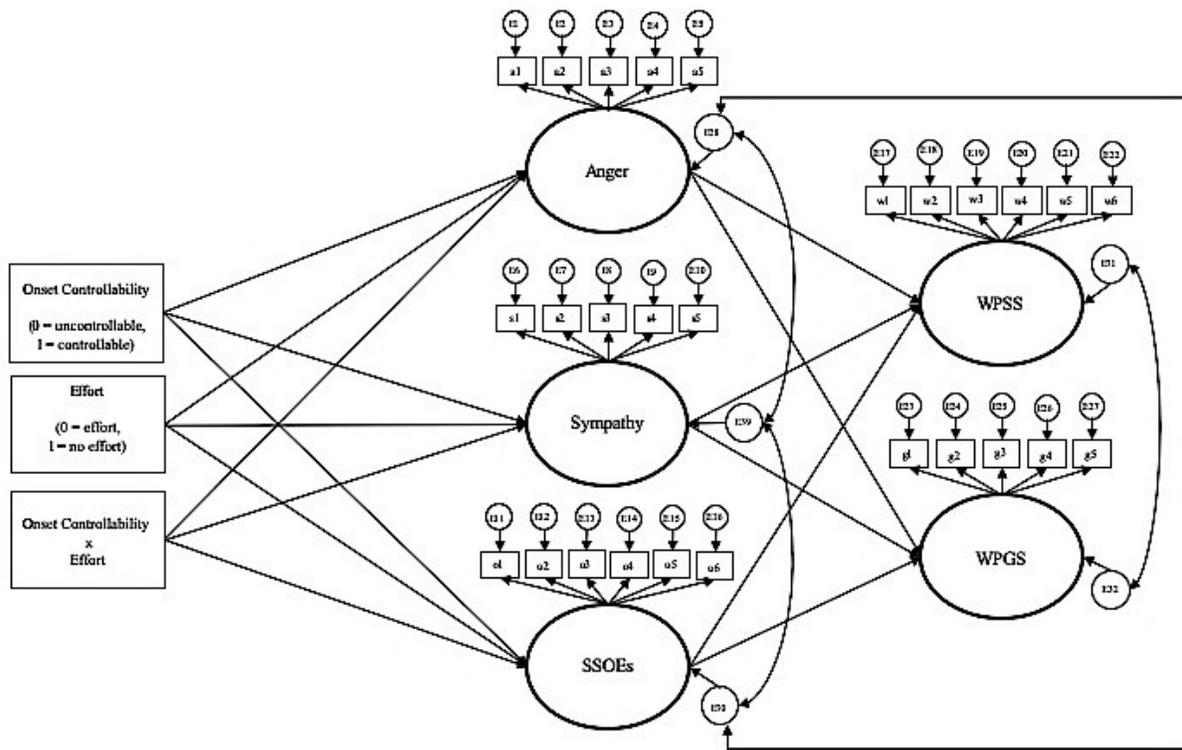


Figure 26. Study 1 Hypothesis 6. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

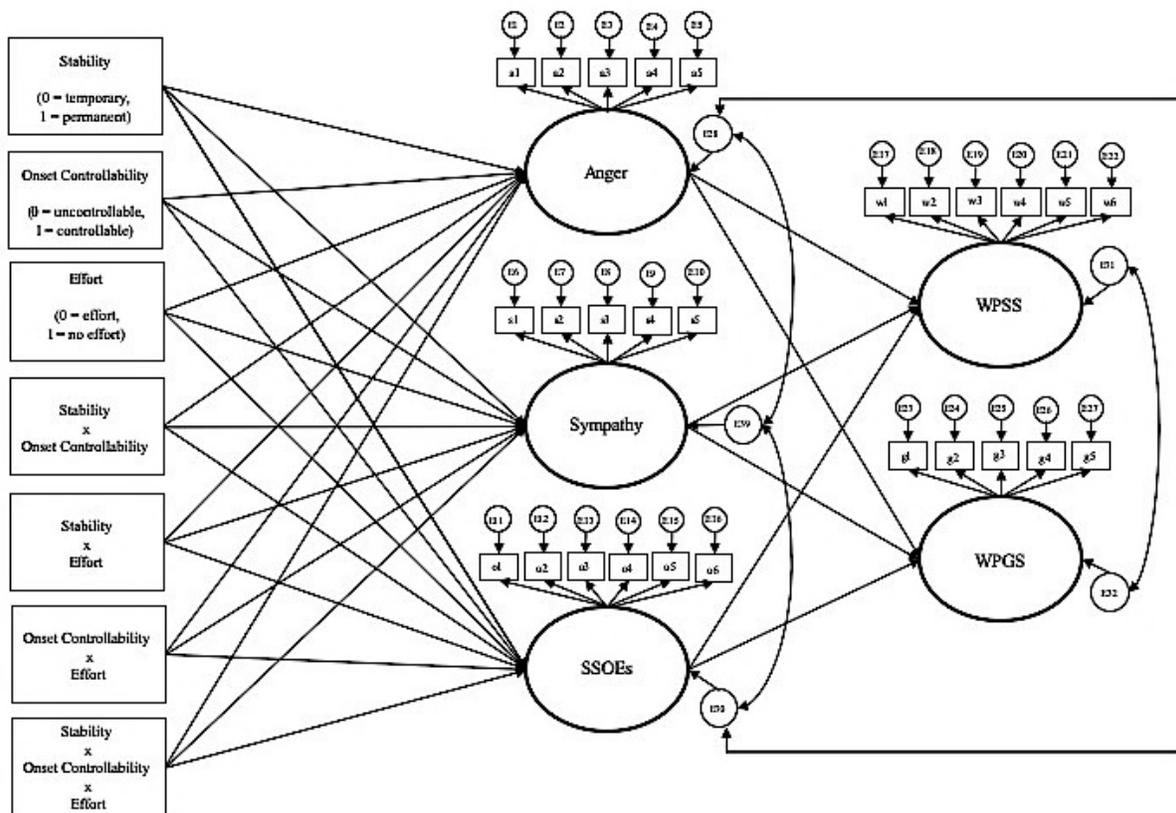


Figure 27. Study 1 Hypothesis 7. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

Study 1 Results

Table 16

Study 1 ANCOVAs

| Predictor Variable | Outcome Variables | Type III Sum of Squares | df | Mean Square | <i>F</i> | p-value | Partial Eta Squared |
|--------------------|-------------------|-------------------------|----|-------------|----------|---------|---------------------|
| Gender | Anger | 25.50 | 1 | 25.50 | 14.20 | .001 | .01 |
| | Sympathy | 9.58 | 1 | 9.58 | 8.20 | .004 | .01 |
| | SSOES | .08 | 1 | .08 | .04 | .836 | .00 |
| | WPSS | 3216.21 | 1 | 3216.21 | 24.91 | .001 | .02 |
| | WPGS | 949.06 | 1 | 949.06 | 4.62 | .032 | .00 |
| Age | Anger | 4.57 | 1 | 4.57 | 2.54 | .111 | .00 |
| | Sympathy | 16.40 | 1 | 16.40 | 14.05 | .000 | .01 |
| | SSOES | 1.75 | 1 | 1.75 | .97 | .324 | .00 |
| | WPSS | 279.19 | 1 | 279.19 | 2.16 | .142 | .00 |
| | WPGS | 1691.91 | 1 | 1691.91 | 8.24 | .004 | .01 |
| Stability | Anger | 15.02 | 1 | 15.02 | 8.36 | .004 | .01 |
| | Sympathy | 6.71 | 1 | 6.71 | 5.75 | .017 | .01 |
| | SSOES | 124.83 | 1 | 124.83 | 69.31 | .001 | .06 |
| | WPSS | 11.07 | 1 | 11.07 | .09 | .770 | .00 |
| | WPGS | 757.52 | 1 | 757.52 | 3.69 | .055 | .00 |
| Onset | Anger | 67.85 | 1 | 67.85 | 37.78 | .001 | .03 |
| | Sympathy | 21.66 | 1 | 21.66 | 18.55 | .001 | .02 |
| | SSOES | 3.41 | 1 | 3.41 | 1.89 | .169 | .00 |
| | WPSS | 157.61 | 1 | 157.61 | 1.22 | .269 | .00 |
| | WPGS | 15.11 | 1 | 15.11 | .07 | .786 | .00 |
| Effort | Anger | 212.64 | 1 | 212.64 | 118.39 | .001 | .10 |
| | Sympathy | 71.50 | 1 | 71.50 | 61.23 | .001 | .05 |
| | SSOES | 1.03 | 1 | 1.03 | .57 | .449 | .00 |
| | WPSS | 27.62 | 1 | 27.62 | .21 | .644 | .00 |
| | WPGS | 155.52 | 1 | 155.52 | .76 | .384 | .00 |

Table 16 continued

Study 1 ANCOVAs

| Predictor Variable | Outcome Variables | Type III Sum of Squares | df | Mean Square | <i>F</i> | p-value | Partial Eta Squared |
|----------------------------|-------------------|-------------------------|----|-------------|----------|---------|---------------------|
| Stability x Onset | Anger | .14 | 1 | .14 | .08 | .780 | .00 |
| | Sympathy | 2.47 | 1 | 2.47 | 2.12 | .146 | .00 |
| | SSOES | .49 | 1 | .49 | .27 | .601 | .00 |
| | WPSS | 27.50 | 1 | 27.50 | .21 | .645 | .00 |
| | WPGS | 1.59 | 1 | 1.59 | .01 | .930 | .00 |
| Stability x Effort | Anger | .19 | 1 | .19 | .10 | .748 | .00 |
| | Sympathy | .00 | 1 | .00 | .00 | .968 | .00 |
| | SSOES | 3.53 | 1 | 3.53 | 1.96 | .162 | .00 |
| | WPSS | 17.65 | 1 | 17.65 | .14 | .712 | .00 |
| | WPGS | 107.63 | 1 | 107.63 | .52 | .469 | .00 |
| Onset x Effort | Anger | 8.93 | 1 | 8.93 | 4.97 | .026 | .00 |
| | Sympathy | 6.64 | 1 | 6.64 | 5.69 | .017 | .01 |
| | SSOES | .08 | 1 | .08 | .05 | .830 | .00 |
| | WPSS | 252.36 | 1 | 252.36 | 1.95 | .162 | .00 |
| | WPGS | 296.27 | 1 | 296.27 | 1.44 | .230 | .00 |
| Stability x Onset x Effort | Anger | .62 | 1 | .62 | .35 | .557 | .00 |
| | Sympathy | .36 | 1 | .36 | .31 | .576 | .00 |
| | SSOES | 1.44 | 1 | 1.44 | .80 | .372 | .00 |
| | WPSS | 1.03 | 1 | 1.03 | .01 | .929 | .00 |
| | WPGS | 3.57 | 1 | 3.57 | .02 | .895 | .00 |

Study 2 Hypotheses

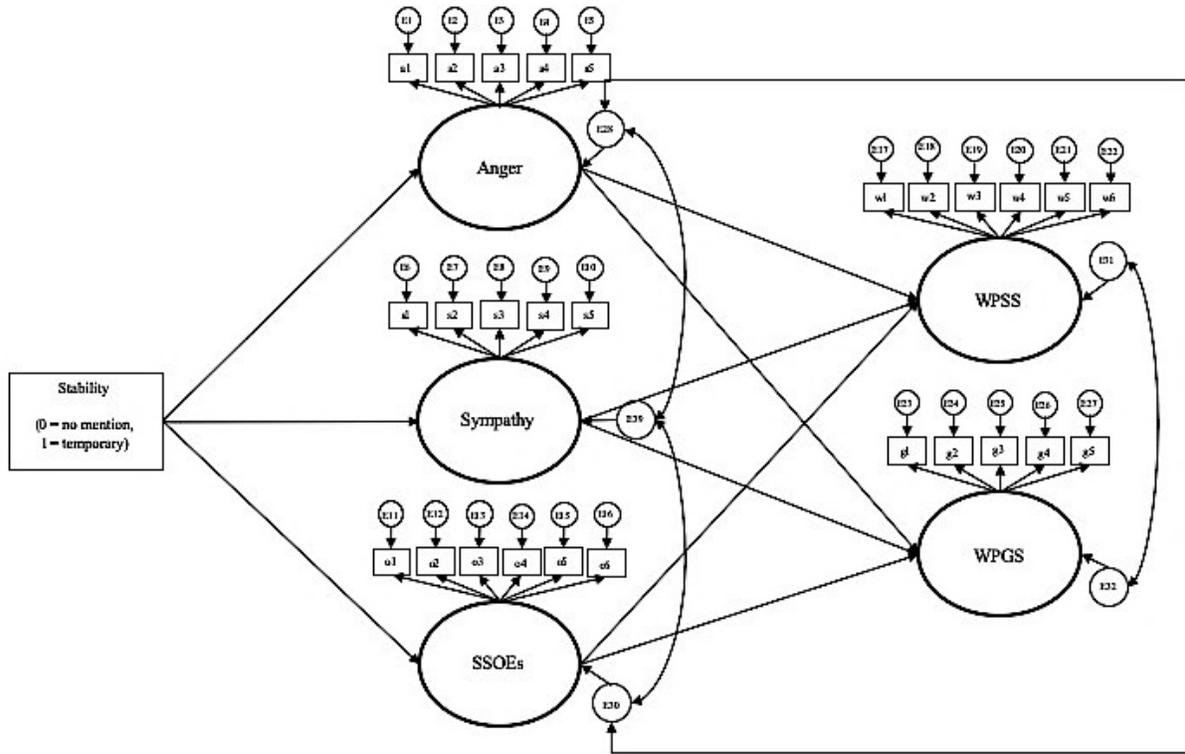


Figure 28. Study 2 Hypothesis 1. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

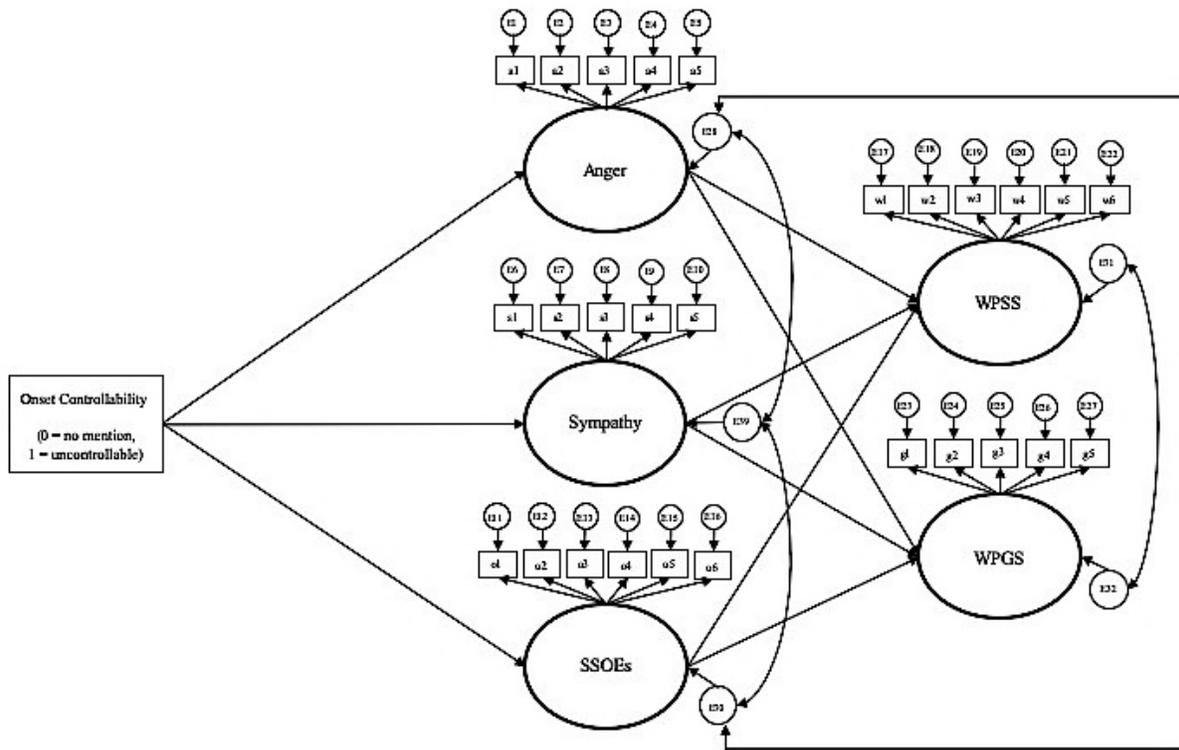


Figure 29. Study 2 Hypothesis 2 and Research Questions. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

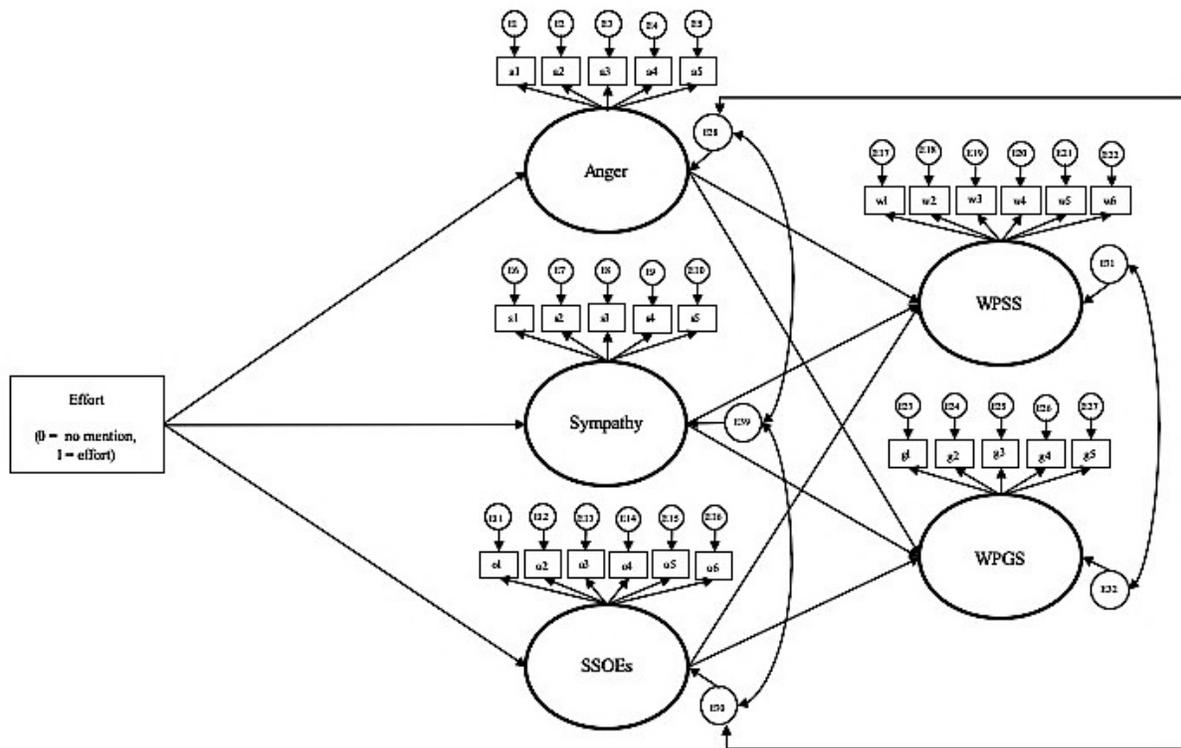


Figure 30. Study 2 Hypothesis 3. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

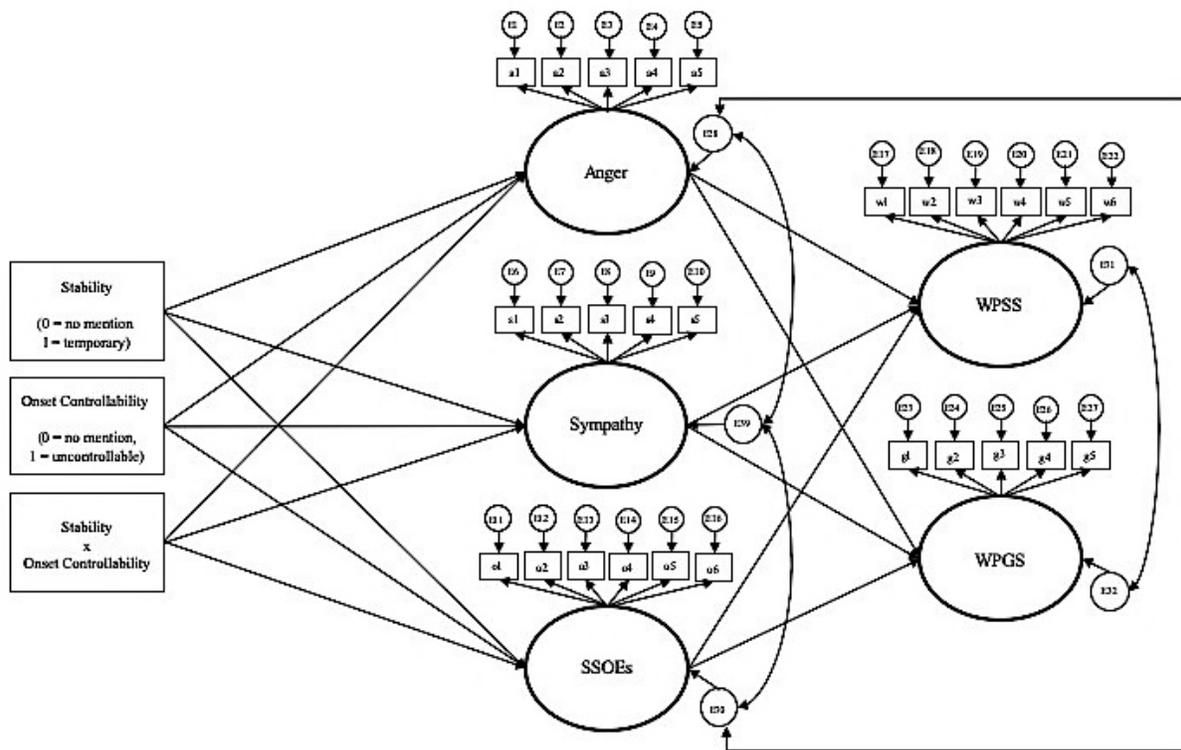


Figure 31. Study 2 Hypothesis 4. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

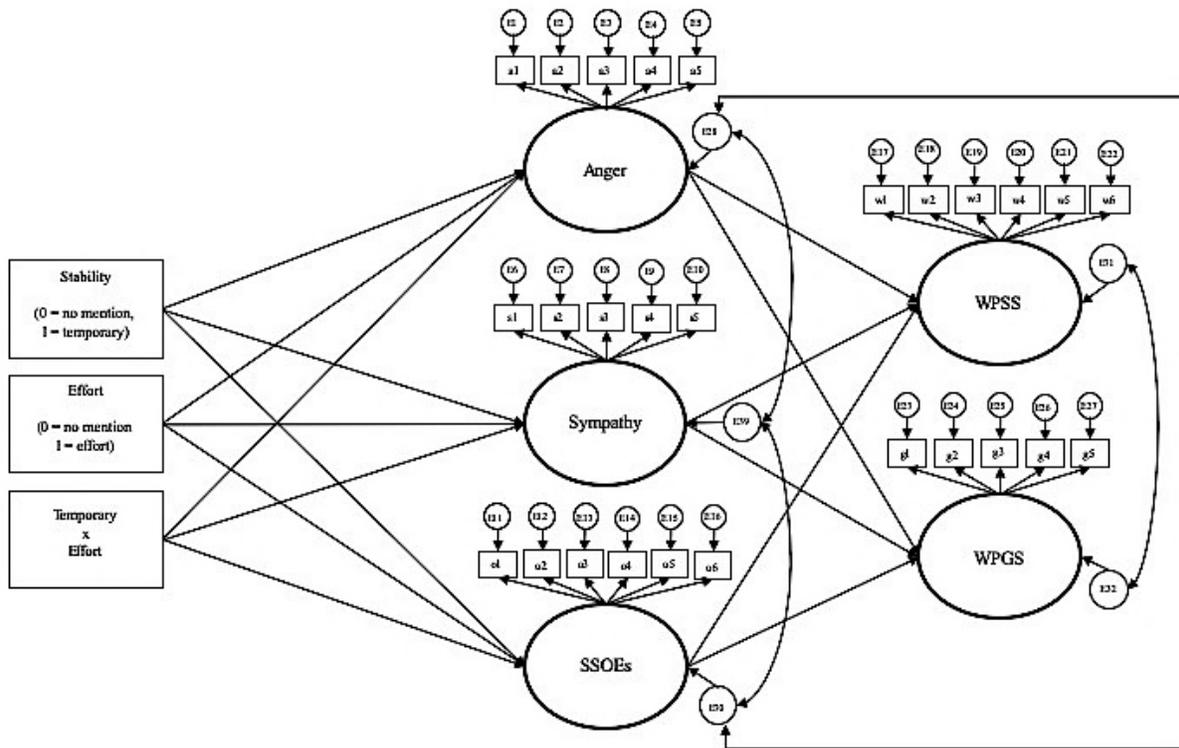


Figure 32. Study 2 Hypothesis 5. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

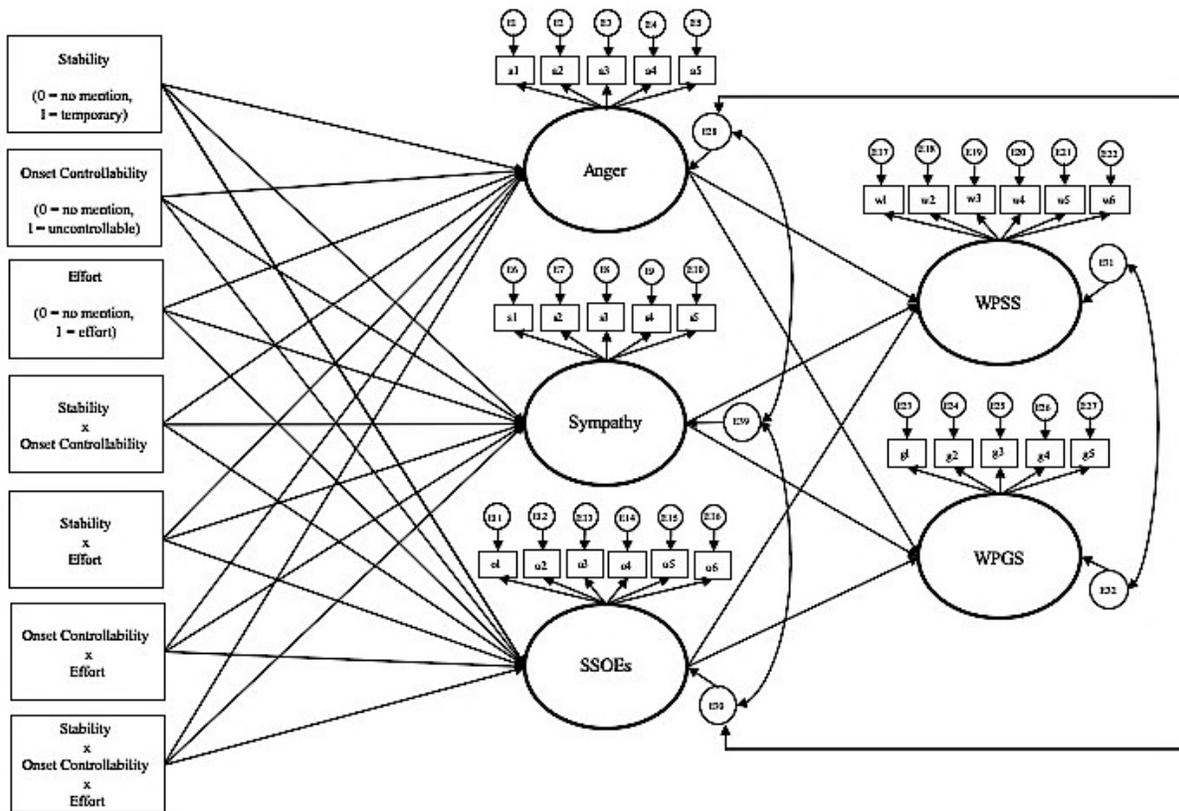


Figure 34. Study 2 Hypothesis 7. Social support outcome expectations (SSOEs), Willingness to provide social support (WPSS), Willingness to provide general support (WPGS)

Study 2 Results

Table 17

Study 2 ANCOVAs

| Predictor Variable | Outcome Variables | Type III Sum of Squares | df | Mean Square | F | p-value | Partial Eta Squared |
|--------------------|-------------------|-------------------------|----|-------------|-------|---------|---------------------|
| Gender | Anger | 41.24 | 1 | 41.24 | 29.07 | .001 | 0.04 |
| | Sympathy | 27.90 | 1 | 27.90 | 36.13 | .001 | 0.04 |
| | SSOES | 8.08 | 1 | 8.08 | 6.51 | .011 | 0.01 |
| | WPSS | 2634.28 | 1 | 2634.28 | 24.20 | .001 | 0.03 |
| | WPGS | 255.94 | 1 | 255.94 | 1.84 | .175 | 0.00 |
| Age | Anger | 0.73 | 1 | 0.73 | 0.51 | .473 | 0.00 |
| | Sympathy | 16.00 | 1 | 16.00 | 20.71 | .001 | 0.03 |
| | SSOES | 0.32 | 1 | 0.32 | 0.26 | .610 | 0.00 |
| | WPSS | 338.85 | 1 | 338.85 | 3.11 | .078 | 0.00 |
| | WPGS | 488.21 | 1 | 488.21 | 3.51 | .061 | 0.00 |
| Stability | Anger | 0.37 | 1 | 0.37 | 0.26 | .611 | 0.00 |
| | Sympathy | 0.23 | 1 | 0.23 | 0.29 | .589 | 0.00 |
| | SSOES | 31.29 | 1 | 31.29 | 25.21 | .001 | 0.03 |
| | WPSS | 86.68 | 1 | 86.68 | 0.80 | .373 | 0.00 |
| | WPGS | 30.67 | 1 | 30.67 | 0.22 | .639 | 0.00 |
| Onset | Anger | 1.07 | 1 | 1.07 | 0.75 | .387 | 0.00 |
| | Sympathy | 0.00 | 1 | 0.00 | 0.00 | .992 | 0.00 |
| | SSOES | 1.72 | 1 | 1.72 | 1.38 | .240 | 0.00 |
| | WPSS | 20.34 | 1 | 20.34 | 0.19 | .666 | 0.00 |
| | WPGS | 44.27 | 1 | 44.27 | 0.32 | .573 | 0.00 |
| Effort | Anger | 1.48 | 1 | 1.48 | 1.04 | .307 | 0.00 |
| | Sympathy | 6.57 | 1 | 6.57 | 8.50 | .004 | 0.01 |
| | SSOES | 1.29 | 1 | 1.29 | 1.04 | .309 | 0.00 |
| | WPSS | 31.63 | 1 | 31.63 | 0.29 | .590 | 0.00 |
| | WPGS | 203.79 | 1 | 203.79 | 1.47 | .226 | 0.00 |

Table 17 continued

Study 2 ANCOVAs

| Predictor Variable | Outcome Variables | Type III Sum of Squares | df | Mean Square | F | p-value | Partial Eta Squared |
|----------------------------|-------------------|-------------------------|----|-------------|------|---------|---------------------|
| Stability x Onset | Anger | 0.02 | 1 | 0.02 | 0.01 | .916 | 0.00 |
| | Sympathy | 0.00 | 1 | 0.00 | 0.00 | .952 | 0.00 |
| | SSOES | 1.78 | 1 | 1.78 | 1.43 | .231 | 0.00 |
| | WPSS | 50.81 | 1 | 50.81 | 0.47 | .495 | 0.00 |
| | WPGS | 168.99 | 1 | 168.99 | 1.22 | .271 | 0.00 |
| Stability x Effort | Anger | 0.31 | 1 | 0.31 | 0.22 | .640 | 0.00 |
| | Sympathy | 1.49 | 1 | 1.49 | 1.93 | .165 | 0.00 |
| | SSOES | 4.18 | 1 | 4.18 | 3.37 | .067 | 0.00 |
| | WPSS | 12.87 | 1 | 12.87 | 0.12 | .731 | 0.00 |
| | WPGS | 3.18 | 1 | 3.18 | 0.02 | .880 | 0.00 |
| Onset x Effort | Anger | 0.73 | 1 | 0.73 | 0.51 | .475 | 0.00 |
| | Sympathy | 0.30 | 1 | 0.30 | 0.39 | .534 | 0.00 |
| | SSOES | 0.32 | 1 | 0.32 | 0.26 | .613 | 0.00 |
| | WPSS | 0.17 | 1 | 0.17 | 0.00 | .969 | 0.00 |
| | WPGS | 353.71 | 1 | 353.71 | 2.55 | .111 | 0.00 |
| Stability x Onset x Effort | Anger | 1.02 | 1 | 1.02 | 0.72 | .397 | 0.00 |
| | Sympathy | 0.05 | 1 | 0.05 | 0.07 | .795 | 0.00 |
| | SSOES | 3.74 | 1 | 3.74 | 3.01 | .083 | 0.00 |
| | WPSS | 30.83 | 1 | 30.83 | 0.28 | .595 | 0.00 |
| | WPGS | 181.60 | 1 | 181.60 | 1.31 | .253 | 0.00 |

APPENDIX B

MEASURES

Anger and Sympathy

Please imagine you have just spent an extensive amount of time with your loved one who has postpartum depression.

To what extent do you think you might feel each of the following emotions toward your loved one?

| | Not at all | | | | | | Very much |
|---------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Tenderness | <input type="radio"/> |
| Anger | <input type="radio"/> |
| Frustration | <input type="radio"/> |
| Understanding | <input type="radio"/> |
| Kindness | <input type="radio"/> |
| Warmth | <input type="radio"/> |
| Annoyance | <input type="radio"/> |
| Impatient | <input type="radio"/> |
| Bothered | <input type="radio"/> |
| Endearment | <input type="radio"/> |

SSOEs

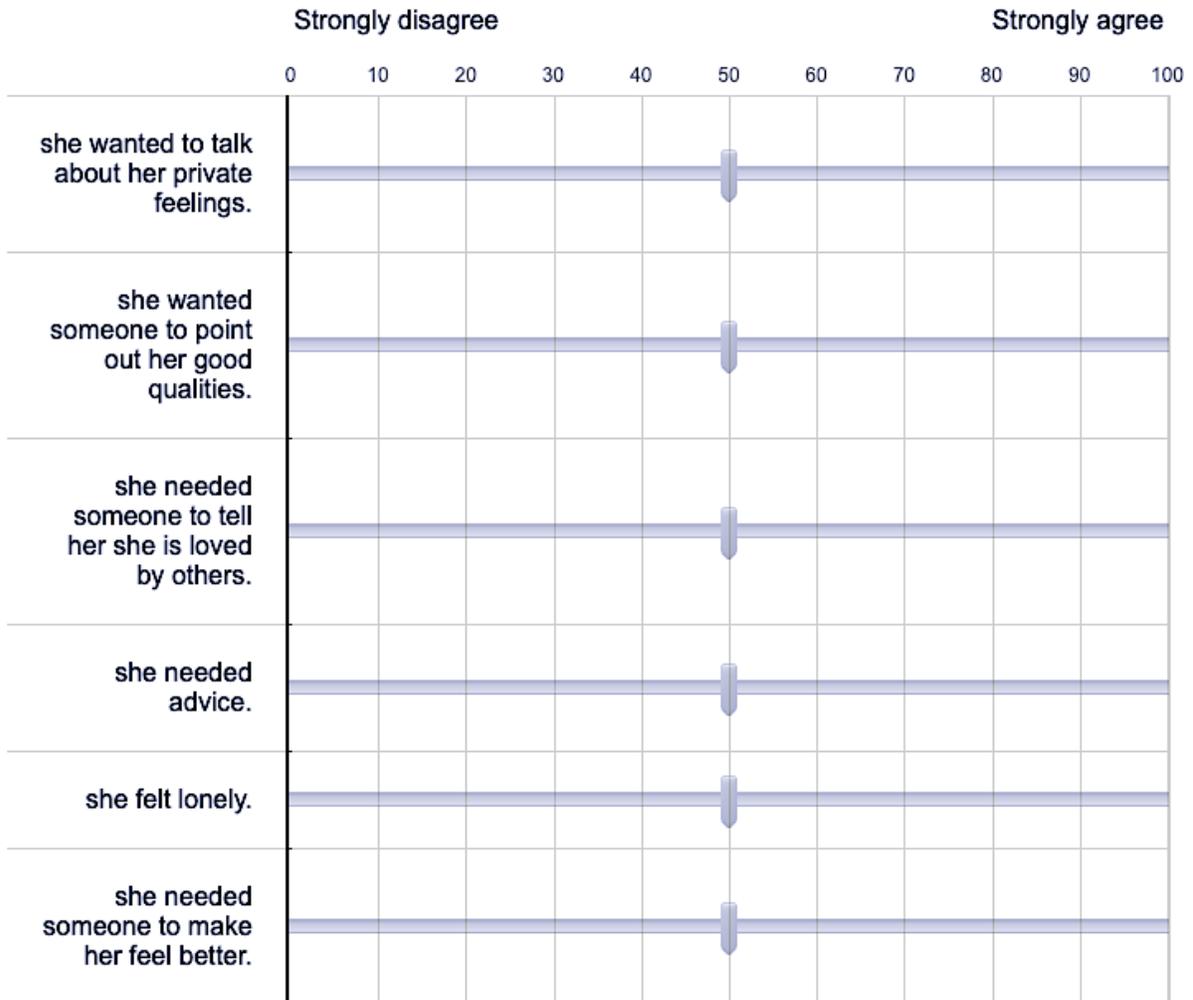
With your loved one in mind, please indicate the extent to which you *disagree* or *agree* with the following statements.

| | Strongly disagree | | | | | | Strongly agree |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| There is something I can do to help with her postpartum depression. | <input type="radio"/> |
| There is something I can do to shorten the time she has postpartum depression. | <input type="radio"/> |
| There is something I can do to help with her postpartum depression recovery. | <input type="radio"/> |
| My help will make a positive difference. | <input type="radio"/> |
| My help is needed if she is going to get better. | <input type="radio"/> |
| The more help I can give, the less depressed she will become. | <input type="radio"/> |

Willingness to Provide Social Support

Please indicate the extent to which you *disagree* or *agree* with the following statements.

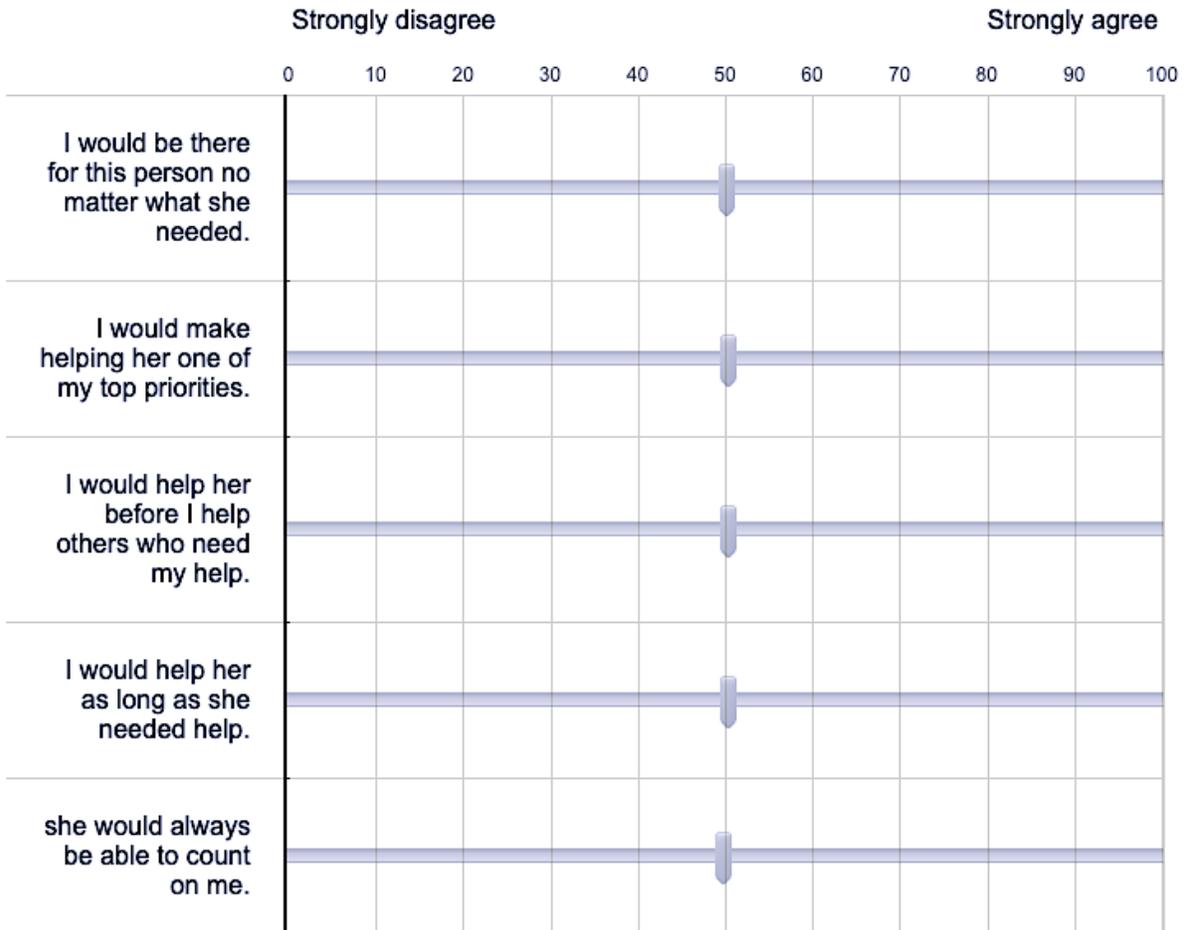
If my loved one had postpartum depression, I would be willing to help if...



Willingness to Provide General Support

Please indicate the extent to which you *disagree* or *agree* with the following statements.

If my loved one had postpartum depression...



APPENDIX C

MANIPULATIONS

Study 1 Vignettes

Your _____ has postpartum depression after having a baby. She feels sad or empty for most of the day, nearly every day and also has difficulties with concentration and decision making. Your _____ is experiencing a loss of interest in things that were once enjoyable. She also feels guilty and hopeless. These symptoms interfere with your _____'s ability to take care of her baby and social life.

Although every person and every situation is different, please imagine that your _____'s postpartum depression is:

| | Temporary | | Permanent | |
|-----------|---|---|---|---|
| | Controllability | Uncontrollability | Controllability | Uncontrollability |
| Effort | –temporary and treatable –something she could have prevented but did not –something she is giving a lot of effort to overcome | –temporary and treatable –something she is in no way at fault for developing –something she is giving a lot of effort to overcome | –permanent and untreatable –something she could have prevented but did not –something she is giving a lot of effort to overcome | –permanent and untreatable –something she is in no way at fault for developing –something she is giving a lot of effort to overcome |
| No Effort | –temporary and treatable –something she could have prevented but did not –something she is not giving effort to overcome | –temporary and treatable –something she is in no way at fault for developing –something she is not giving effort to overcome | –permanent and untreatable –something she could have prevented but did not –something she is not giving effort to overcome | –permanent and untreatable –something she is in no way at fault for developing –something she is not giving effort to overcome |

Study 1 Follow Up Questions

You were asked to imagine that your _____'s postpartum depression is:

- Permanent and untreatable
- Temporary and treatable
- There was no mention of either of the above options

You were asked to imagine that your _____'s postpartum depression is:

- Something she could control developing
- Something she could not control developing
- There was no mention of either of the above options

You were asked to imagine that your _____'s postpartum depression is:

- Something she is not giving effort to overcome
- Something she is giving a lot of effort to overcome
- There was no mention of either of the above options

Study 2 Video PSA Text

Are you concerned your loved one may have postpartum depression? Postpartum depression is more than just sadness. It is a mental illness that affects how your loved one thinks, feels, and acts. [*Condition*] Please consider reaching out to your loved one with postpartum depression. For more information, call 1-800-PPD-MOMS or visit www.postpartum.net.

1. Temporary

Your loved one's postpartum depression can be temporary and treatable. She does not have to live with depression forever.

2. Onset Uncontrollable

Uncontrollable changes in hormones after pregnancy can cause postpartum depression. Your loved one is not responsible for developing depression.

3. Effort

Your loved one is making an effort to get better. Although it might not always seem like it, she is trying her best to overcome her depression.

4. Temporary and Onset Uncontrollable

Uncontrollable changes in hormones after pregnancy can cause postpartum depression. Your loved one is not responsible for developing depression.

Postpartum depression can be temporary and treatable. Your loved one does not have to live with depression forever.

5. Temporary and Effort

Your loved one's postpartum depression can be temporary and treatable. She does not have to live with depression forever.

Your loved one is making an effort to get better. Although it might not always seem like it, she is trying her best to overcome her depression.

6. Onset Uncontrollable and Effort

Uncontrollable changes in hormones after pregnancy can cause postpartum depression. Your loved one is not responsible for developing depression.

She is making an effort to get better. Although it might not always seem like it, she is trying her best to overcome her depression.

7. Temporary and Onset Uncontrollable and Effort

Uncontrollable changes in hormones after pregnancy can cause postpartum depression. Your loved one is not responsible for developing depression.

Postpartum depression can be temporary and treatable. Your loved one does not have to live with depression forever.

She is making an effort to get better. Although it might not always seem like it, she is trying her best to overcome her depression.

8. Control

Postpartum depression affects 1 in 5 mothers within the first year after childbirth.

Study 2 Follow Up Questions

Please answer the following question about the video you just watched.

1. Temporary

The video said postpartum depression:

- affects 1 in 5 women
- affects 1 in 10 women
- affects 3 in 5 women
- none of the above were mentioned

The video said your loved one's postpartum depression can be:

- temporary and treatable
- permanent and untreatable
- temporary and untreatable
- permanent and treatable

The video said your loved one:

- has to live with depression forever
- does not have to live with depression forever
- might live with depression forever
- none of the above were mentioned

2. Onset Uncontrollable

The video said postpartum depression:

- affects 1 in 5 women
- affects 1 in 10 women
- affects 3 in 5 women
- none of the above were mentioned

The video said postpartum depression is:

- caused by uncontrollable changes in hormones after pregnancy
- not caused by uncontrollable changes in hormones after pregnancy
- caused by unknown hormones after pregnancy
- caused by known hormones after pregnancy

The video said your loved one is:

- responsible for postpartum depression developing
- not responsible for postpartum depression developing
- responsible for postpartum depression ending
- not responsible for postpartum depression ending

3. Effort

The video said postpartum depression:

- affects 1 in 5 women
- affects 1 in 10 women
- affects 3 in 5 women
- none of the above were mentioned

The video said your loved one is:

- making an effort to get better
- not making an effort to get better
- usually making an effort to get better
- none of the above were mentioned

The video said your loved one is:

- not trying her best to overcome her depression
- trying her best to overcome her depression
- usually trying her best to overcome her depression
- none of the above were mentioned

4. Temporary and Onset Uncontrollable

The video said postpartum depression:

- affects 1 in 5 women
- affects 1 in 10 women
- affects 3 in 5 women
- none of the above were mentioned

The video said your loved one's postpartum depression can be:

- temporary and treatable
- permanent and untreatable
- temporary and untreatable
- permanent and treatable

The video said your loved one is:

- responsible for postpartum depression developing
- not responsible for postpartum depression developing
- responsible for postpartum depression ending
- not responsible for postpartum depression ending

5. *Temporary and Effort*

The video said postpartum depression:

- affects 1 in 5 women
- affects 1 in 10 women
- affects 3 in 5 women
- none of the above were mentioned

The video said your loved one's postpartum depression can be:

- temporary and treatable
- permanent and untreatable
- temporary and untreatable
- permanent and treatable

The video said your loved one is:

- not trying her best to overcome her depression
- trying her best to overcome her depression
- usually trying her best to overcome her depression
- none of the above were mentioned

6. *Onset Uncontrollable and Effort*

The video said postpartum depression:

- affects 1 in 5 women
- affects 1 in 10 women
- affects 3 in 5 women
- none of the above were mentioned

The video said your loved one is:

- responsible for postpartum depression developing
- not responsible for postpartum depression developing
- responsible for postpartum depression ending
- not responsible for postpartum depression ending

The video said your loved one is:

- not trying her best to overcome her depression
- trying her best to overcome her depression
- usually trying her best to overcome her depression
- none of the above were mentioned

7. *Temporary and Onset Uncontrollable and Effort*

The video said your loved one is:

- responsible for postpartum depression developing
- not responsible for postpartum depression developing
- responsible for postpartum depression ending
- not responsible for postpartum depression ending

The video said your loved one's postpartum depression can be:

- temporary and treatable
- permanent and untreatable
- temporary and untreatable
- permanent and treatable

The video said your loved one is:

- not trying her best to overcome her depression
- trying her best to overcome her depression
- usually trying her best to overcome her depression
- none of the above were mentioned

8. *Control*

The video said postpartum depression is:

- permanent
- temporary
- uncontrollable
- none of the above were mentioned

The video said postpartum depression is:

- more than just sadness
- just sadness
- similar to sadness
- none of the above were mentioned

The video said postpartum depression:

- affects 1 in 4 women
- affects 1 in 5 women
- affects 2 in 5 women
- affects 4 in 5 women