MAN YOUR METER: THE MEDIATING ROLES OF SELF-COMPASSION AND SELF-EFFICACY BETWEEN GENDER ROLE CONFLICT AND DIABETES SELF-CARE, DIABETES DISTRESS, AND GLUCOSE CONTROL IN MEN WITH DIABETES

by

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(Under the Direction of Bernadette Heckman)

ABSTRACT

Few counseling and psychological interventions are designed specifically to reduce men's health risk behaviors (Courtenay, 2011). Socialized identity processes contribute to relational, psychological, and behavioral health outcomes in both negative and positive ways Variables of "positive masculinity" (e.g., responsibility, leadership, generativity, stoicism, strength, and self-efficacy) are linked to health outcomes, which may explain gender-socialized patterns of behavior and their complex relationships to health (Bonhomme, 2007; Levant & Wimer, 2014).

Self-compassion and self-efficacy play significant roles in health outcomes and positive health behaviors (e.g., Sirois, Kitner, & Hirsch, 2015), although few researchers have examined the impact traditional masculine gender role ideologies may have on these two constructs. Based on the Self-Regulation Resource Model (SRRM; Sirois, 2015), the present study examined self-efficacy and self-compassion as mediators that further explain how men's levels of gender role conflict may subsequently influence diabetes-related health outcome variables (e.g., diabetes

self-management, diabetes distress, and glucose control) in a population of men with either type 1 or type 2 diabetes.

A quantitative, cross-sectional, survey study administered questionnaires to 146 men > 17 years of age diagnosed with either type 1 or type 2 diabetes for > six months. Participants completed the Gender Role Conflict Scale (GRCS), the Diabetes Self-Management Questionnaire (DSMQ), the Diabetes Distress Scale (DDS), the Self-Compassion Scale (SCS), the General Self-Efficacy Scale (GSES), and a measure of HbA_{1C}.

Using the causal step approach (Baron & Kenny, 1986) and bias-corrected bootstrapping (Hayes, 2013), multiple regression analyses found that gender role conflict correlated with measures of diabetes self-care and diabetes distress and that self-compassion mediated the relationship between GRC and diabetes-related health outcomes. These results have clinical implications for treating the behavioral and psychological components of men's diabetes management, including fostering self-compassion and enhancing self-efficacy. A broader discourse within social contexts emerges for practitioners on how to balance accentuating the positive and functional aspects of masculinity, while deconstructing masculine role norms that demonstrate barriers to health management. Further research is necessary to support the causal inferences of this study's findings and to develop targeted diabetes-specific and pro-masculine health interventions for boys and men.

INDEX WORDS: Type 1 diabetes, type 2 diabetes, gender role conflict, self-compassion, self-efficacy, mediators, HbA_{1c}, diabetes self-management, diabetes distress, positive masculinity, positive psychology, health outcomes, men's health, masculinity, interventions for men

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DEDICATION

This dissertation is dedicated to the many providers, clinicians, nurses, scientists, researchers, parents, partners, and others who work tirelessly to collaborate, advocate, and share information to help improve the lives of people in the global diabetes community. Moreover, this manuscript is dedicated to the millions of individuals living with diabetes who bravely ride their daily highs and lows with courage and hope.

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CHAPTER 1

INTRODUCTION

The purpose of Chapter 1 is to provide a background on the state men's health as it relates to diabetes and address the problem of poor diabetes self-care, adherence, and glucose control in men with either type 1 or type 2 diabetes. The goal of this study was to (a) state the current problem with relevant epidemiological support, (b) outline the theoretical framework on which this study is based, (c) discuss the purpose and significance of the current study, (d) provide a review of the extant literature, (e) and present a multiple mediator model to help further explore the complex relationships between men's gender role conflict, restrictive emotionality, and diabetes health behaviors in a sample of men with either type 1 or type 2 diabetes.

Statement of the Problem

Diabetes mellitus affects over 30.3 million people nationwide (American Diabetes Association, 2019e; Xu et al., 2018). It is the seventh leading cause of death in the United States and the fourth worldwide (American Diabetes Association, 2018e; World Health Organization, 2018). Current trend estimates the prevalence of diabetes (type 2 diabetes and type 1 diabetes) will increase by 54% to more than 54.9 million Americans between 2015 and 2030; annual deaths attributed to diabetes will climb by 38% to 385,800; and total annual medical and societal costs related to diabetes will increase 53% to more than $622 billion by 2030 (Rowley, Bezold, Arikan, Byrne, & Krohe, 2017). The financial burden of diabetes in 2017 was approximately $327 billion annually in both direct medical costs and loss of workforce productivity (American

Diabetes Association, 2019a). Seniors aged 65 years or older are particularly impacted, with 26.9% (approximately 12 million) of this population currently receiving treatment for diabetes (American Diabetes Association, 2019e).

Men have higher death rates than females for all leading causes of death in the United States and suffer from more severe chronic health conditions in all age groups (Courtenay, 2011; Gough & Robertson, 2017). On average, men die more than five years younger than women (76.3 years for men, 81.1 for women); despite having greater socio-economic advantages (Hoyart & Xu, 2012). In general, men have poorer eating habits, exercise less frequently, have difficulty with weight management, and spend less time engaging in positive health practices (Galuska, Serdula, Pamuk, Siegel, & Byers, 1996; Garfield, Isacco, & Rogers, 2008).

Gender is the strongest socio-demographic predictor of health behaviors, with men engaging in less health-promoting and more high-risk behaviors than women (Courtenay, 2011). Nationally, 12% (approximately 13 million) men have a diabetes diagnosis. Compared to non-Hispanic whites, the age-adjusted prevalence of diagnosed and undiagnosed diabetes was higher among men identifying as Asian, non-Hispanic black, and Hispanic between 2011 to 2014 (Centers for Disease Control and Prevention, 2017; Jones, Crump, & Lloyd, 2012). Although the rate of persons diagnosed with both type 1 and type 2 diabetes has steadily increased since the early 80s, prevalence rates between men and women continue to widen. The male prevalence rate (4.2 per 100 persons) surpassed the female prevalence rate (4.1 per 100 persons) in 1999. The most recent data shows prevalence rates for men with diabetes (6.6 per 100 persons) continue to differentiate from female rates (5.9 per 100 persons) (Centers for Disease Control and Prevention, 2015). Additionally, some research suggests women with type 2 diabetes

demonstrate better adherence to diabetes-specific self-care behaviors and glycemic control than men (Yu, Lyles, Bent-Shaw, & Young, 2013).

Many factors contribute to positive health-behavior and life expectancy including accessibility to care, socio-economic status, and race/ethnicity (Courtenay, 2000, 2011). Health sex disparity literature suggests differences exist between men and women regarding treatment and medication adherence and management of various chronic disease states across these factors (Nilsson, Theobald, Journath, & Fritz, 2004; Ferrara et al., 2008; Jemal et al., 2008; Wexler, Grant, Meigs, Nathan, & Cagliero, 2005). Despite a greater need for education, care and support, men are considerably less likely than women to seek counseling or visit a physician's office (Ang, Lim, Tan, & Yau, 2004; McKelley, 2007; Pederson & Vogel, 2007; Good & Wood, 1995).

Researchers in the psychology of men and masculinity question how well our existing approaches and theoretical frameworks inform interventions that facilitate help-seeking behaviors from both mental and physical health care providers (Addis & Mahalik, 2003). Traditional gender roles help many men organize important aspects of their disease including conflicts between health and work, embarrassment regarding discussion of their disease, and family stress (Broom & Lenagh-Maguire, 2010). Despite identification of these barriers, men remain less likely than women to seek help in situations in which support is necessary and engage in more high-risk health behaviors (e.g., smoking, drinking and driving, foregoing health screenings, exercise, general awareness of medical conditions) (Courtenay, 2011).

Previous research demonstrated that psychological distress decreased diabetes regimen adherence and reduced glycemic control (Anderson, Freedland, Clouse, & Lustman, 2001). Psychological interventions such as cognitive-behavioral therapy (CBT) have demonstrated mixed results in efficacy for increasing diabetes self-management (Ismail, Winkley, & Rabe-

Hesketh, 2004). Consistent with the tenets of CBT, researchers in many of these studies attempted to teach patients to control diabetes-related thoughts and feelings in order to eliminate or reduce distress. Gregg, Callaghan, Hayes, & Glenn-Lawson (2007) argued that eliminating distress may not be a realistic possibility in this population. Self-management behaviors may evoke strong thoughts of illness and emotional reactions to the dangers of the disease, which become more distressing and worrisome if the patient believes they need to be stopped, altered, or reduced. Researchers posited that teaching acceptance and mindfulness techniques may provide patients a more realistic alternative (Gregg, 2004; Melton, 2016).

Variables that influence how men perceive their ability to control and monitor their physical health conditions ultimately influence how health care providers approach these sensitive topics. Top health concerns identified for men are erectile dysfunction, sexually transmitted diseases, benign hypertrophy of the prostate and prostatitis, cardiovascular disease, diabetes, prostate cancer, testicular cancer, lung cancer, and accidental trauma and injuries. Mental health and medical professional have limited training in men's psychosocial issues and have relatively no training in health-related issues, and often feel uncomfortable discussing the most relevant men's health-related concerns (Neukrug, Britton, & Crews, 2013).

Although health literature has historically used males as study subjects, and although attention has been paid to variables which impact men's health, little is known about why men engage in less-healthy behaviors and have poorer health outcomes (Courtenay, 2000). Levant and Wimer (2014) suggested a link between masculine ideology and health behaviors, mediated by specific mechanisms (e.g., self-efficacy, altruism, stoicism, and emotional stability), existed that warranted more research to guide the development of primary and secondary disease

prevention interventions. Continued study of variables that impact men's health is thus of considerable importance (Addis, Mansfield, & Syzdek, 2010).

Theoretical Framework

Men's gender role conflict theory. Western ideologies of masculinity posit that culturally salient norms and values are embedded and learned. Young boys are exposed to rigid standards of masculine behavior and observance of these standards is praised and deviations are punished (Bem, 1974, 1979; Levant, 1995). Early theories of masculinity were conceptualized as healthy, adaptive, functional, and normal. Only nonconformity or deviation from the masculine ideal led to problematic psychological strain and personal issues (Pleck, 1981). The extant literature within the psychology of men and masculinity is largely based on the Euro-American, Caucasian perspective of hegemonic masculinity - a culturally prescribed definition of "masculine ideal" under which men are expected to align their identities (Wester & Vogel, 2002). Hegemonic masculinity is further operationalized as the content of socially defined and acceptable masculine values associated with individual stoicism, strength, and independence (Connell & Messerschmidt, 2005).

Pleck's gender role strain model explains how gender role restriction can be detrimental to the psychological health of men (GRS; Pleck, 1981, 1995). Pleck's earlier model described specific gender role strain propositions that men often violate which may lead to negative evaluations from others (Pleck, 1981). The later model of male gender role strain was related to masculine ideology in that men have "beliefs about the importance of men adhering to culturally defined standards for male behavior" (Pleck, 1995, p.19). Deviations from the adherence to these culturally defined norms produce gender role dysfunctions (e.g., aggressive behaviors, overworking, and neglecting family responsibilities). The internalized rigid masculine ideologies

produce distorted gender role schemas and learned gender roles to which men inflexibly adhere (O'Neil, 2008, 2015).

GRC theory states gender role devaluations, restrictions, and violations have a direct negative impact on the lives of men regarding health outcomes, career success, and work and family relationships (O'Neil, 1981a, 1981b, 1982, 1990, 2008, 2015; O'Neil & Egan, 1992; O'Neil, Good, & Holmes, 1995; O'Neil & Nadeau, 1999) (see Appendix A for GRC Model). GRC is defined within the context of four psychological domains, numerous situational contexts, and three personal experiences.

The psychological domains of GRC imply problems caused by socialized gender roles learned in patriarchal societies impact cognitive, affective, unconscious, and behavioral functioning (O'Neil, 2015). The four psychological areas are operationally defined as: (a) cognitive - how we think about socialized gender roles, (b) affective – our feelings about our gender roles, (c) behavioral – how we act, interact, or respond to others and ourselves due to rigid gender roles, and (d) unconscious – gender role conflicts that arise due to processes outside of our immediate awareness (O'Neil, Helm, Gable, David, & Wrightsman, 1986).

The situational contexts of GRC are summarized in four categories: (a) conflicts caused by gender role transitions, (b) conflicts experienced intrapersonally, (c) conflicts expressed towards others interpersonally, and (d) conflicts experienced from others (O'Neil, 1990). Gender role transitions occur in a man's gender role development (e.g., gender role journey), when his gender role assumptions are challenged (e.g., school transitions, marriage, fatherhood, taking on a role as primary caretaker) (O'Neil & Egan, 1992; O'Neil et al., 1986). GRC in an intrapersonal context is defined as the negative emotional private experience men face when presented with a role restriction or violation. Conflicts expressed towards others are men's gender role problems

ending in the devaluation, violation, or restriction of someone else. Finally, conflicts from others is the devaluation (i.e., violation of masculine ideological gender norms resulting in negative critique from self or others), restriction (i.e., confining one's self or others to rigid gender role stereotypes), or violation (i.e., the act of victimization caused by masculine norms and ideology), of another person who deviates from the expected gender role norms (O'Neil, 2008, 2015).

The Gender Role Conflict Scale (GRCS; O'Neil et al., 1986) was developed as predictive measure of men's gender role conflict. The GRCS constructs are Success/Power/Competition (SPC), Restrictive Emotionality (RE), Restrictive Affectionate Behavior Between Men (RABBM), and Conflicts Between Work and Leisure - Family Relations (CBWLFR). In a comprehensive review of GRC literature, the four constructs of the GRCS have been empirically supported in over 200 studies to date (Hornigold, 2016a; O'Neil, 2015; O'Neil & Denke, 2015).

The prescribed programmatic line of GRC research is based on predictors, moderators, mediators, and outcome variables. Prediction studies are needed with contextual variables as part of the overall process of explaining what situational constructs moderate and mediate GRC (O'Neil, 2008). In the pilot study to this dissertation, Ringdahl and Heckman (manuscript in preparation) reported GRC significantly predicted poor diabetes self-management and poor glucose control in men with type 1 diabetes. It was found that variables such as anxiety and depression did not mediate this link. Further study of potential variables which mediate and moderate the relationship between GRC, and poor diabetes-specific outcomes are necessary to identify potential areas for intervention.

The proposed model for GRC mediation studies suggest seven contextual domains for exploring variables that facilitate the relationship between GRC predictor variables and outcome variables. For mediation studies, predictors need to be significantly related to outcome variables

(Frazier, Tix, & Barron, 2004). The factors of GRC (SPC, RE, RABBM, and CBWFR) have been significantly correlated with over 90 outcome variables as listed in the model (see Appendix B for GRC Variables in Context Model). Outcome variables relevant to the current study within the GRC model include physical health problems, physical strain, health risk taking, psychological well-being, and psychological distress. Researchers suggest that future quantitative studies use multiple regression analyses and structural equation modeling methods to assess mediating effects of GRC predictor variables on health outcomes in intrapersonal, situational, and therapeutic contexts (Frazier et al., 2004; O'Neil, 2008).

Positive psychology-positive masculinity theory. New perspectives as applied to the psychology of men and masculinity recognize the importance of socialized gender roles while also recognizing that masculinity is a contextual, fluid, and dynamic process (Addis & Mahalik, 2003). While learned gender roles are considered static behaviors, they are also adaptive and flexible in response to certain situational contexts. Competing masculine identities are continuously being created and contested. Men modify these identities to achieve specific goals within a given context (Addis & Cohane, 2005). Certain behaviors in one context may be functional, while unhelpful or harmful in another (Kiselica, Benton-Wright, & Englar-Carlson, 2016). For example, a man with a competitive and demanding career may find the expression of emotion nonfunctional within this context. When the situational demands change however, the stoic affect and emotional restriction becomes unhelpful in context of needing to develop intimacy with a partner. A healthy positive masculine identity would successfully differentiate these contrasting situations and respond appropriately in these contexts (Kiselica, 2011; Wester & Vogel, 2002).

Existing models and previous research attend to the negative characteristics and impacts that traditional masculinity have on men in Western societies (O'Neil, 2008, 2015). The long-term impact of early developmental male socialization research is extensive and focuses mainly on the negative consequences and outcomes on health, family, interpersonal relationships, restricted emotional affect, and power and work preoccupation (Smiler, 2004; O'Neil, 2008, 2012, 2015). Instead, it is suggested that researchers and clinicians attend to how difficulties related to men's emotion-related *values* affect their lives and acknowledge the adaptive utility of certain facets of men's emotional behavior (Englar-Carlson & Kiselica, 2013).

Positive masculinity conceptualizes the qualities of traditional masculine roles that are more positive, generative, strength-based, and used to improve the lives of men and those around them (Isacco, Talovic, Chromik, & Yallum, 2012). Consistent with a positive psychology perspective, the positive psychology-positive masculinity paradigm (PPPM) posits that studying male strengths and promoting positive aspects of traditional masculinity can enhance our understanding of, and clinical work with, boys and men (Kiselica, 2011; Kiselica, Englar-Carlson, Horne, & Fisher, 2008). Theorists have proposed that positive masculinity encompasses working with men on pre-existing strengths, potentials, skills, capacities, encouragement of possibilities, and a focus on who men are, rather than who they are not (Englar-Carlson & Kiselica, 2013). Researchers now challenge the field to consider healthy qualities men possess that enable many to enhance intimacy, group belonging, altruism, generativity, and community with self and others. Clinical applications for men and boys include shifting a client's attitude and outlook by encouraging hope, concentrating on positive contributions, and focusing on aspects of the client that are kind, creative, capable, and not limited by rigid societal stereotypes

(American Psychological Association, Boys and Men Guidelines Group, 2018; Kiselica et al., 2016; O'Neil & Denke, 2015).

Positive masculinity has been stringently criticized for focusing on male gender-specific interventions that potentially reinforce gender roles, stereotypes, and negate feminist ideals of gender deconstruction (Addis et al., 2010). Conversely, in agreement with social constructivism theory, positive masculinity states masculine identity is deeply embedded within cultural and contextual factors. The definitions, expressions, and displays of male strengths are complicated constructs which are viewed through contextual lenses of race, sexual orientation, socio-economic status, religion, ability, and other salient identities (Shields, 2008). Therefore, PPPM and strengths-based counseling approaches frame positive masculinity within the constructs of one's own cultural and contextual identity. Men develop qualities of positive masculinity in adaptive and prosocial ways by creating communities, role modeling, living authentically, enacting non-violent conflict resolution, appropriate emotional expression, and developing egalitarian relationships (Hernandez, 2002; Riggle & Rostosky, 2011; Rochlen, McKelley, & Whittaker, 2010; Rochlen, Suizzo, McKelley, & Scaringi, 2008).

Self-regulation resource model. The Self-Regulatory Resource Model (SRRM) posits that affect and self-efficacy are important self-regulatory factors for predicting one's health behavior and intentions (Sirois, 2015). According to the SRRM model, high levels of positive affect and low levels of negative affect are resources (i.e., tools or supports one draws upon in time of need) that increase one's ability to self-regulate and actively engage in health promoting behaviors. The conceptual model combines the Theory of Planned Behavior (TPB; Ajzen, 1991), literature and theory on self-compassion and health behaviors (Sirois et al., 2015; Terry & Leary,

2011), with current theory and research on emotions and self-regulation (Baumeister, Vohs, & Tice, 2007) (see Appendix C for Self-Regulation Resource Model).

Self-compassion is defined as taking a kind, non-judgmental stance towards oneself during times of failure or challenge (Neff, 2003b). Research suggests self-compassion may be an important quality in one's ability to self-regulate internal resources and foster positive health behaviors. Self-compassion is a quality that includes three dimensions – self-kindness (versus self-judgment), common humanity (versus isolation), and mindfulness (versus over identification) – which can help promote positive rather than negative affective responses to the inevitable challenges and setbacks encountered while attempting to engage in health promoting behaviors (Sirois et al., 2015).

From a self-regulation perspective, self-compassion works to "free up" resources which would otherwise be spent on ruminating over negative feelings about past and future challenges and generates the positive affect which can support healthy self-regulation (Sirois et al., 2015; Terry & Leary, 2011). This view is consistent with theory and research indicating that emotional distress is one of the key threats to effective self-regulation (Heatherton, Lopez, & Wagner, 2015), and that positive emotions can facilitate self-regulation (Baumeister et al., 2007).

The role of self-compassion in promoting positive health behaviors via healthy self-regulation was examined in a recent meta-analysis. With over 3000 participants across fifteen samples, self-compassion was significantly associated with greater practice of a range of positive health behaviors including healthy eating, regular physical activity, stress management, and positive sleep habits (Sirois et al., 2015). Importantly, high positive and low negative affect were found to jointly and partially mediate these effects in eight of the samples, suggesting that healthy emotions associated with self-compassion may promote positive health behaviors.

Self-efficacy is defined as an individual's judgement of how well they can perform a required course of action to handle a prospective situation (Bandura, 1982). Self-efficacy comprises generality – the range of activities individuals judge themselves as efficacious, strength – how determined an individual is to deal with a specific task, and magnitude – the actual difficulty of the task at hand (Bandura, 1977). Sirois (2015) suggests that affective emotions explaining health behaviors work in conjunction with social cognitive factors such as perceived control over health, as described by the Theory of Planned Behavior (SPB; Ajzen, 1991), to predict one's intentions to engage in positive health behaviors. Perceived control over health has also been directly linked to health behaviors such as physical exercise (Esposito et al., 2009; Esposito & Giugliano, 2011; Esposito, Maiorino, & Bellastella, 2014). Extending theory on self-efficacy, a construct closely related to perceived control, it is suggested that individuals who exhibit self-compassion and have engaged in health-promoting behavior should have greater positive feelings of competency and control for continuing these behaviors in the future (Bandura, 1977). In the Self-Regulation Resource Model (SRRM), higher self-efficacy (as a proxy for perceived control) along with lower negative affect and higher self-compassion are significant self-regulation resources that predict positive health-promoting behaviors (Sirois, 2015). Increasing self-compassion is thus an important strategy for increasing positive health-related outcomes.

Purpose of the Study

Few counseling and psychological interventions for men are designed specifically to reduce men's health risk behaviors (Courtenay, 2000, 2011). Evidence from the extant literature on GRC suggests that factors such as self-compassion, emotional stability, self-efficacy, and other variables within the positive psychology-positive masculinity paradigm have demonstrated

a link to health care outcomes which might explain health sex disparities. However, few studies have examined their role in mediating health behavior outcomes (Hornigold, 2016a).

Researchers have hypothesized that traditional masculine gender roles, while having negative attributes like restrictive emotionality and GRC, also have positive qualities including courage, autonomy, self-efficacy, endurance, resilience, stoicism, and emotional stability. Within a context of the PPPM paradigm, two constructs of positive masculinity theory were selected as potential mediators for the present study, self-compassion and self-efficacy. This study conceptually follows Levant and Wimer (2014), who tested a multiple mediator model in which general self-efficacy mediated the relationship between conformity to masculine norms (CMNI) and health behaviors (HBI-20). The researchers hypothesized that other constructs of positive masculinity (i.e. stoicism, self-compassion, and acceptance) may be associated with other masculinity scales (e.g., CMNI & GRCS) and health behaviors and are appropriate for further investigation.

Researchers hypothesize that self-compassion and self-efficacy play a significant role in health outcomes and promoting positive health behaviors (e.g., Sirois et al., 2015; Sirois, 2015), although few studies have examined the impact traditional masculine ideologies may have on these two constructs. Wester & Vogel (2002) discussed the impact of men's gender role conflict on male therapist self-efficacy, linking greater gender role conflict to a decrease in new counselor self-efficacy and difficulties within training programs.

Based on the SRMM (Sirois, 2015) and the above review of literatures, the present study sought to examine self-efficacy as a mediator which may explain how men's levels of gender role conflict potentially influence health outcome variables in a population of men with diabetes.

Existing literature suggests that individuals with higher levels of gender role conflict are likely to demonstrate lower self-efficacy (Wester & Vogel, 2002), lower positive affect, and greater negative affect (Watkins & Blazina, 1996; Good & Wood, 1995; Sharpe & Heppner, 1991), which may facilitate poorer health outcomes (Sirois et al., 2015; Terry & Leary, 2011). Men's gender role conflict and restrictive emotionality have been associated with poor diabetes self-care and poor glucose control (Ringdahl & Heckman, manuscript in preparation). This study conceptualized self-efficacy as a mediating variable in the relationships between men's GRC and diabetes self-management, diabetes distress, and glucose control using the GRCS (O'Neil et al., 1986). As a quality that is linked to positive health behaviors through a balance of healthy positive and negative emotions (Sirois et al., 2015), self-compassion is similarly linked to health behavior intentions according to SRRM. Although the link between traditional gender role ideology and self-compassion has not previously been established, theory on self-efficacy suggests that self-compassionate individuals who engage in positive health-related behaviors should have a greater sense of control and competence for continuing to engage in those positive behaviors (Bandura, 1977). In the current study, self-compassion was tested as a potential mediator with individuals exhibiting higher gender role conflict hypothesized to have lower levels of self-compassion, self-efficacy, and greater difficulties in diabetes-related health outcomes.

Eligibility criteria were established for differentiating variables used in mediation and moderation (Chmura Kraemer, Kiernan, Essex, & Kupfer, 2008). For mediation, the predictor must temporarily precede the mediator. The reverse is true for moderators (Fritz & Arthur, 2017). In this study, the predictor (men's gender role conflict) precedes the mediators (self-efficacy and self-compassion), since conflicts arising from men's gender roles are linked to

socialization processes which occur in childhood. Therefore, self-compassion and self-efficacy were hypothesized mediators of the relationships between the factors of GRC and diabetes self-care behaviors, diabetes distress, and glucose control for men with diabetes.

Research Questions and Hypotheses

The following primary and exploratory hypotheses were based on the findings of Ringdahl and Heckman (manuscript in preparation) and described in detail in the next chapter. Furthermore, the hypotheses were based on review of the Men's Gender Role Conflict Research Program (Hornigold, 2016b), which has compiled statistical norms from over 200 studies using the Gender Role Conflict Scale (O'Neil et al., 1986). This research study proposed the following research question and hypotheses following the causal steps approach (Baron & Kenny, 1986) and based on theoretical and empirical research.

Primary research question. To what extent does self-efficacy mediate the relationship between GRC and diabetes-related outcome variables?

***Hypothesis 1a*.** Gender role conflict will be negatively correlated to diabetes self-management, and positively correlated to diabetes distress, and glucose control.

***Hypothesis 1b*.** Gender role conflict will be negatively correlated to self-efficacy.

***Hypothesis 1c*.** Self-efficacy will be positively correlated to diabetes self-management and negatively correlated to diabetes distress and glucose control.

***Hypothesis 1d*.** Gender role conflict is a significant predictor of diabetes self-management, diabetes distress, and glucose control.

***Hypothesis 1e*.** Gender role conflict is a significant predictor of self-efficacy.

***Hypothesis 1f*.** Self-efficacy has a mediation effect on the relationship between GRC and diabetes self-management, diabetes distress, and glucose control.

Exploratory research question. To what extent does self-compassion mediate the relationship between GRC and diabetes-related outcome variables?

***Hypothesis 2a*.** Gender role conflict will be negatively correlated to self-compassion.

***Hypothesis 2b*.** Self-compassion will be positively correlated to diabetes self-management and negatively correlated to diabetes distress and glucose control.

***Hypothesis 2c*.** Gender role conflict is a significant predictor of self-compassion.

***Hypothesis 2d*.** Self-compassion has a mediation effect on the relationship between GRC and diabetes self-management, diabetes distress, and glucose control.

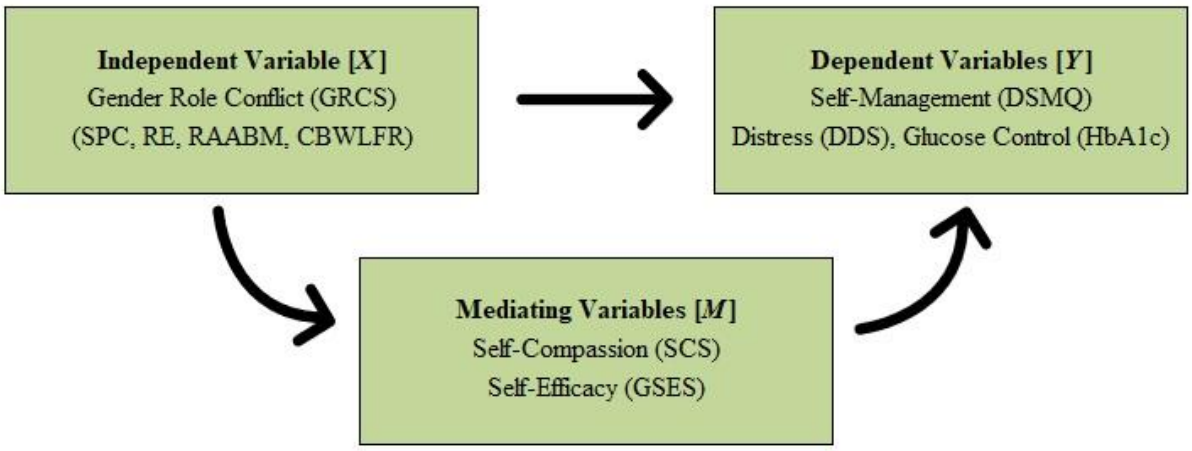

Figure 1. Simple mediation model to test the indirect effects of hypothesized relationships between independent, mediator, and dependent variables.

Definition of Terms

Type 1 diabetes. Type 1 diabetes is an unpreventable and incurable disease of the autoimmune system that causes one's own body to kill the insulin-producing beta cells of the pancreas. Type 1 diabetes is typically diagnosed during childhood or adolescence and symptoms include excessive thirst, frequent urination, blurred vision, nausea, and weight loss. Strategic management of this life-long disease requires strict adherence to blood glucose monitoring,

insulin injections (or insulin pump therapy), and maintenance of a strict diet and exercise regimen in order to avoid serious complications such as retinopathy, neuropathy, and heart disease (American Diabetes Association, 2019b).

Type 2 diabetes. Type 2 diabetes, otherwise known as adult onset diabetes or insulin-resistant diabetes, is a chronic condition that affects the way the body processes blood sugar (glucose). More than 3 million individuals are diagnosed with type 2 diabetes each year. With type 2 diabetes, the body either does not produce enough insulin, or has become insulin resistant. Type 2 diabetes is curable and requires changes in diet, exercise, oral medication, or insulin to treat (American Diabetes Association, 2019e).

Gender role conflict. Gender role conflict is a psychological state in which socialized gender roles have negative consequences for the person or others. GRC occurs when rigid, sexist, or restrictive gender roles result in devaluation, emotional restriction, or violation of others or self. GRC occurs within situational contexts when men experience a gender role transition or face difficult developmental tasks over the lifespan. Conflicts arise when men violate traditional gender role norms of masculine ideology or experience discrepancies between their real and ideal self-concepts (O'Neil, 2008).

Diabetes self-care. Diabetes self-care involves a range of activities involved in one's diabetes regimen including self-monitoring blood glucose, eating a healthy diet, exercising, medication adherence, and checking one's feet. Self-care is different from compliance or adherence in that for a given patient, there is not an unchanging standard against which behavior should be compared (Toobert, Hampson, & Glasgow, 2000).

Glycosylated hemoglobin A_{1c} (HbA_{1c}). HbA_{1c} reflects average plasma glucose over the previous eight to 12 weeks. It is the preferred test for assessing glycemic control in people with

diabetes, diagnosing diabetes, and screening for prediabetes. An HbA_{1c} of 6.5% (48 mmol/mol) is recommended as the cut point for diagnosing diabetes, and an HbA_{1c} of ≤ 7.0% (53 mmol/mol) is recommended as a treatment goal for individuals with diabetes. The use of HbA_{1c} can avoid day-to-day fluctuations and variable blood glucose values and does not require fasting (American Diabetes Association, 2019c; World Health Organization, 2011).

Positive psychology-positive masculinity. Positive psychology-positive masculinity (PPPM) is defined as a theory and counseling method that encompasses working with men on pre-existing strengths, potentials, skills, capacities, encouragement of possibilities, and a focus on who men are, rather than who they are not. Positive masculinity capitalizes on traditional masculine roles that are more strengths-based and potentially used to improve the lives of men and those around them (Englar-Carlson & Kiselica, 2013).

CHAPTER 2

REVIEW OF LITERATURE

The aim of Chapter 2 is to provide a review of literature relevant to the health of men with type 1 and type 2 diabetes, specific health barriers for men related to masculine ideologies, an overview of the positive masculinity framework, as well as an analysis and critique of extant literature relevant to the variables (background characteristics, predictors, mediators, moderators, and outcomes) considered in this study.

Literature of Men and Diabetes

Men and type 1 diabetes. Type 1 diabetes is an unpreventable and incurable disease of the autoimmune system that causes one's own body to kill the insulin-producing beta cells of the pancreas (Juvenile Diabetes Research Foundation, 2017). Strategic management of this life-long disease requires strict adherence to blood glucose monitoring, insulin injections (or insulin pump therapy), and maintenance of a strict diet and exercise regimen in order to avoid serious complications such as retinopathy, neuropathy, and heart disease (O'Hara, Gough, Seymour-Smith, & Watts, 2013). Despite the growing body of research on people living with type 1 diabetes, most research has been focused on finding a cure for the disease. Little research exists on the challenging struggles, both physical and emotional, of people maintaining type 1 diabetes in their daily lives.

Much of the existing and current psychosocial literature has examined how type 1 diabetes impacts adolescent well-being (e.g., Hilliard et al., 2017; Pate, Klemenčič, Battelino, & Bratina, 2019; Steinberg, Anderson, de Wit, & Hilliard, 2018). Other studies have examined the

development of illness perceptions across adolescence, and how diabetes interacts with intelligence, responsibility, and treatment outcomes (Fortenberry, et al., 2014; Hanna, Stupiansky, Weaver, Slaven, & Stump, 2014; Helgeson, Reynolds, Siminerio, Becker, & Escobar, 2014; Jaser, Patel, Rothman, Choi, & Whittemore, 2014).

Strandberg, Graue, Wentzel-Larsen, Peyrot, and Rokne (2014) examined how the relationships between diabetes-specific emotional distress, depression, anxiety, and overall well-being impacted the physical measurement of diabetic care, glycosylated hemoglobin, or HbA1c. The authors reviewed literature that states while much is known about the components and requirements of diabetic care, little is known about how emotional components of the patient confound or complicated diabetes self-management. Primary care physicians who screen patients with diabetes for depression, may be missing qualities of diabetes-specific emotional distress which can be manifested differently than clinical depression. Research has looked at depression and diabetes-specific emotional distress in patients with Type 2 diabetes and confirmed these are two different constructs (Spencer et al., 2006).

One study examined the role of blood glucose control, diabetes management, diabetes care responsibility, independent living, and time since high school graduation in predicting diabetes-related quality of life (Hanna, Weaver, Slaven, Fortenberry, & DiMeglio, 2014). The authors presuppose that the burdens and demands of type 1 diabetics are particularly challenging during this milestone time of life when one becomes primarily responsible for their diabetes care. The results of this study indicate that new adults with type 1 diabetes have relatively good diabetes-related quality of life despite being in a critical transition period and crucial period of diabetes care self-management. Implications for future research concerning treatment adherence

and variables affecting diabetic quality across the lifespan is a growing and important area of inquiry.

Another study attempted to further explore this gap in knowledge. Researchers conducted 15 semi-structured interviews with men living with type 1 diabetes. From this information, the authors were able to generate several inter-related themes which were then formulated into a theory of life for men who live with type 1 diabetes. As a general conclusion, this study proposed that men reduce the seriousness of diabetes by defining it in ways other than a serious illness. In doing so, men typically will make personal goals a priority over management of their physical health and diabetes regimen. The reason for this "prioritization" is to find the best fit for diabetes in their lives which will allow goals to be met and further developed. As goals throughout life change, so does the relationship with diabetes (O'Hara et al., 2013). By reducing the seriousness of diabetes, men were typically free to stray away from the recommendations of care to pursue other goals. Furthermore, individuals were often forced to contemplate the trade-off between personally held goals and diabetes-related goals. The researchers asserted that diabetic males exhibit strong desires to be like their non-diabetic counterparts within work and social situations. Working theory posited that men may push boundaries of medical compliance to "reach an equal standard of masculinity with their peers" (O'Hara et al., p. 1240, 2013).

While depression and anxiety contribute to poor diabetes self-management, these highly comorbid conditions do not explain the significant and robust gender differences observed between men and women on self-care and adherence behaviors. High levels of gender role conflict (GRC) in men are related to negative attitudes and poor intentions to seek help for health difficulties. A pilot study conducted by Ringdahl and Heckman (manuscript in preparation) examined the influence of gender role conflict on adherence to diabetes management in men with

type 1 diabetes. Sixty-five men greater than 17 years of age diagnosed with type 1 diabetes for over 6 months completed the Gender Role Conflict Scale (GRCS; O'Neil et al., 1986), the Diabetes Self-Management Questionnaire (DSMQ; Schmitt et al., 2013), the Spielberger State-Trait Anxiety Inventory (STAI-Y; Spielberger, Gorsuch, & Lushene, 1970), the Beck Depression Inventory – II (BDI-II; Beck, Steer, & Brown, 1996) and a measure of HbA1C. Most participants (M age=35.6 years) were White (88%) and heterosexual (80%). Multiple linear regression analysis found that gender role conflict significantly predicted poor diabetes self-care and poor glucose control. "Restrictive Emotionality" (e.g., difficulty expressing feelings) was related to poorer diabetes self-care, accounting for 33% of the variation in the model. Results indicated men with type 1 diabetes who have high levels of gender role conflict appear less able to self-manage their diabetes.

Specific to diabetes, men's perspectives on diabetes-related health issues, specific barriers to medication adherence and self-care activities, and specific psychosocial concerns about diabetes management have been poorly addressed, or unaddressed (Leonard, 2004). Psychosocial literature in the area of type 1 diabetes has primarily focused on developmental phases and transitions of adolescence into adulthood, with few studies examining the impact of how adults with type 1 diabetes cope with chronic illness. Qualitative literature on the topic suggests that men with type 1 diabetes conceptualize and cope with their illness in differing and often maladaptive ways. The specific mechanisms by which men's traditional gender roles impact successful self-management of type 1 diabetes are important areas for future research to guide more effective interventions.

Men and type 2 diabetes. Type 2 diabetes, otherwise known as "adult onset diabetes," is a chronic condition that affects the way the body processes blood sugar (glucose). More than 3

million individuals are diagnosed with type 2 diabetes each year. With type 2 diabetes, the body either does not produce enough insulin, or has become insulin resistant. Type 2 diabetes is curable and requires changes in diet, exercise, oral medication, or insulin to treat (American Diabetes Association, 2019e). Due to the nature of type 2 diabetes and the typical later age of disease onset, developmental differences are expected between type 1 and type 2 diabetes. However, few studies have explored developmental, age, or gender differences among individuals with type 2 diabetes.

A study by Gucciardi, Wang, DeMelo, Amaral, and Stewart (2008) aimed to examine gender differences in psychosocial, behavioral, and clinical characteristics in men and women diagnosed with type 2 diabetes, specifically at the time of their initial visit to a diabetes education center. The study yielded several salient findings, including that men are more likely to receive and rely on family support in nutritional management than women, probably due to traditional gender roles. Men were also less likely to seek out education on diabetes and have lower expectations about how self-management may benefit their health. The authors concluded that diabetes prevention, care, and education needs to be targeted accordingly, with primary care providers emphasizing self-management education and the benefits of self-care when treating men.

Similar findings were evidenced in a study by Kacerovsky-Bielesz, et al. (2009). The purpose of the study was to explore sex-specific differences in glucometabolic control, as well as in social and psychological factors. Men with type 2 diabetes were again found to be lacking in the area of knowledge-based diabetes management. Along with being more poorly informed, they also employed less strategies for coping, specifically in terms of religion, active coping, and

distraction. The results of the study led to the same general conclusion that men would benefit more from knowledge-based diabetes management.

Liburd, Namageyo-Funa, and Jack (2007) focused on studying the concept of "masculinity" within the population of African American men diagnosed with type 2 diabetes. The study examines the results of 16 in-depth interviews, and while it mainly discusses issues in the context of African American men, several of its findings are potentially generalizable across race and culture. An example could lie in the purported effects receiving any diagnosis of ill health can have on a man's self-image. The study discusses the jarring effects of moving from perceived "health" to "sickness", especially as it threatens ideas traditionally associated with manhood, like autonomy and non-dependence. Men were also found to be particularly opposed to being "policed" by loved ones, showing an important need to maintain a perception of control. Younger men also seemed to be more dismissive of their diagnosis, engaging in behaviors which undermined good diabetes management, especially healthy eating. Gender-roles may be responsible here as well, as meal planning and preparation is traditionally considered a womanly responsibility. Lastly, it was suggested that when working with diabetic men an important factor to consider related to the construct of masculinity is erectile dysfunction.

Cherrington, Wallston, and Rothman (2010) aimed to examine relationships between diabetes, self-efficacy, depressive symptoms, and glycemic control. More specifically, a cross-sectional study was conducted in order to investigate self-efficacy and to see how it affects the relationship between depression and glycemic control. Results pointed towards there being significant association between depressive symptoms and glycemic control, with self-efficacy being a mediating factor for men with type 2 diabetes, which was not the case for women participants. The authors thus drew the conclusion that men with type 2 diabetes and comorbid

depression may need interventions specifically geared towards increasing self-efficacy in order to increase better glycemic control.

Despite a growing body of literature which demonstrates men show greater difficulties in the self-management, self-regulation, and psychological coping of type 2 diabetes, interventions focused on psychoeducation of self-management techniques for type 2 diabetes have demonstrated only modest results. Although research acknowledges traditional gender roles, and gender role conflict plays a significant role in barriers for men's abilities to self-manage their illness, few attempts have been made to address these salient topics with men in a health or counseling context.

Differences between men with type 1 diabetes and type 2 diabetes. Some research examines differences in psychosocial functioning (e.g., social support & social network contacts) between individuals with type 2 diabetes and the general population (Hempler, Ekholm, & Willaing, 2013), however little attention has been paid to important psychosocial and psychological differences between individuals with type 1 diabetes and type 2 diabetes.

Type 1 diabetes and type 2 diabetes differ drastically in terms of pathogenesis, symptoms, cause, onset, condition, treatment, complications, and prognosis. A diabetes diagnosis requires major changes in daily life and affects an individual's social and emotional life in different ways. As type 2 diabetes occurs later in life, management regarding changing health behaviors may be different for adults with type 2 diabetes compared to individuals with type 1 diabetes, where health maintenance routines were introduced and established at a younger age (Hempler, Joensen, & Willaing, 2016).

Cross-sectional analysis of 3,500 individuals with diabetes (type 1 diabetes; N = 2,419 and type 2 diabetes; N = 1,081) revealed that men with type 2 diabetes had less contact with

family and friends, were more likely to eat a less healthy diet, and were less physically active than men with type 1 diabetes (Hempler et al., 2016). Another study found that men with type 2 diabetes were more likely to be single/unmarried and have less contact with friends and social supports than men with type 1 diabetes (Aalto, Uutela, & Kangas, 1996).

Because diabetes mellitus is a stressful condition that generates emotional reactions that manifest as bodily sensations, the difficulties brought about by managing diabetes can often cause persistent mood disorders. Individuals with type 1 diabetes exhibited greater alexithymia than controls even though those with type 2 diabetics performed better on cognitive tasks than control subjects. Higher average fasting blood sugar was linked to alexithymia with type 1 diabetes, and erectile dysfunction was associated with difficulties in identifying feelings for men with type 1 diabetes. The study found that the presence of depression was a predictor of alexithymia in type 1 diabetes ($\beta = 1.78$, $p = 0.04$), and the presence of psychiatric history was indicative of the presence of alexithymia in those with type 2 diabetes ($\beta = 2.09$, $p = 0.042$). Screening for both depression and alexithymia early on is thus of considerable importance given the impact of alexithymia on both diabetes types (Mnif et al., 2014).

Diabetes distress. Diabetes-related distress is the feeling of emotional burden in response to medical treatment regimens, interpersonal relationship stressors, and physician care (Polonsky et al., 1995; Welch, Jacobson, & Polonsky, 1997). Prevalence rate estimates suggest it affects approximately 1:3 individuals with type 2 diabetes and is persistent over time (Oftedal, Bru, & Karlsen, 2011; Snoek et al., 2011, 2012). Moderate distress is indicated with item values ≥ 2.0, and high distress ≥ 3.0, and diabetes distress has been associated with elevated A_{1c} in cross-sectional studies (Fisher, 2010; Franks et al., 2012). Regarding self-care behaviors, diabetes distress predicted decreased dietary and exercise adherence (Fisher et al., 2008; Fisher, 2010),

lowered social support from family and physicians (Franks et al., 2012; Oftedal et al., 2011), and diet and medication adherence (Fisher, 2010). Diabetes education interventions showed meaningful reductions in diabetes distress for type 1 diabetes (Hopkins et al., 2012), and type 2 diabetes mellitus (Leyva, Zagarins, Allen, & Welch, 2011; Welch, Zagarins, Feinberg, & Garb, 2011).

Diabetes depression. Individuals with diabetes have a 200% higher risk for major depressive disorder and depressive symptomology than without diabetes (de Groot et al., 2010; Garrison, Katon, & Richardson, 2005; Grey, Whittemore, & Tamborlane, 2002; Katon et al., 2008; Lustman et al., 2000; Stewart, Rao, & White, 2005), and one in four adults with diabetes will develop depression in their lifetime (Anderson et al., 2001). A comparison study of adolescents with either type 1 diabetes or type 2 diabetes reported that teens with type 2 diabetes were twice as likely to experience symptoms of depression than teens with type 1 diabetes, and males and females were equally represented among those who reported depression symptomology (Silverstein et al., 2015). The negative impact of co-occurring depression and diabetes on adherence (Ciechanowski, Katon, & Russo, 2000; Eakin et al., 2010), diabetes-related complications (de Groot, Anderson, Freedland, Clouse, & Lustman, 2001), glucose control (Lustman et al., 2000), premature death (Katon et al., 2008; Zhang et al., 2005), and disability (Egede, 2007), has been well supported. Poverty and low levels of education and income further increase risk (de Groot et al., 2007). The tricyclic antidepressants (e.g., Nortriptyline, 20-50 mg/daily) have been associated with hyperglycemic effects in patients but have shown efficacy in treating depression and neuropathic pain simultaneously (Lustman, Griffith, Freedland, & Clouse, 1997). Lustman et al. (1997) reported an observed decrease of .7% in A_{1c} utilizing CBT for diabetes depression, and significant effects (.58% reduction) were

achieved by integrating mediation management with CBT psychotherapy compared to Problem-Solving Therapy alone. A recent large-scale study examining depression in men with type 1 diabetes and type 2 diabetes found that men with type 2 diabetes have about a 3.4-fold higher risk of moderate to severe depression than males with type 1 diabetes (Lawrence, 2006). Furthermore, clinically significant depressive symptoms have associated with higher markers of insulin resistance in older men (Ford et al., 2015). Depression risk may be associated with the amount of time lived with diabetes. One study suggested that effectively decreasing diabetes-related complications may contribute to a decreased risk of depression among older men (Almeida et al., 2016).

Overall, research indicates that individuals with both type 1 diabetes and type 2 diabetes experience social, emotional, and physical differences in the experience of their disease. Men with type 2 diabetes appear to have great difficulties establishing and maintaining social and familial support, as well as engage in health-promoting behaviors such as a healthy diet and exercise. Furthermore, men with type 2 diabetes may experience greater rates of depression than their type 1 diabetes counterparts. It is important to draw attention to health behaviors, social relations, and emotional well-being between these groups to inform diabetes care and support initiatives.

Literature on Men's Gender Role Conflict

Decades of research about the saliency of men's gender role conflict (GRC) imply that it is an important variable that affects both men's and women's health. Dr. Jim O'Neil's historic issue of *The Counseling Psychologist* (2008) described how men's psychological problems are related to masculine gender role conflicts. It was further hypothesized that men are oppressed by rigid gender role socialization processes that limit them from being fully functioning human

beings (O'Neil, 1981a). Gender role conflict is defined as "a psychological state in which socialized gender roles have negative consequences for the person or others. GRC occurs when rigid, sexist, or restrictive gender roles result in restriction, devaluation, or violation of others or self" (O'Neil, 2008). The outcome of this conflict is a restriction of one's potential or the restriction of another person's potential (O'Neil, et al., 1995). Gender role conflict occurs within situational contexts when men experience a gender role transition or face difficult developmental tasks over the lifespan (O'Neil & Egan, 1992). Conflict can also arise when men "deviate from or violate gender role norms of masculinity ideology [or] experience discrepancies between their real self-concepts and their ideal self-concepts, based on gender role stereotypes and masculinity ideology" (Garnets & Pleck, 1979; Liu, Rochlen, & Mohr, 2005).

More than 230 studies have been completed using the Gender Role Conflict Scale (GRCS; O'Neil et al., 1986). As more attention is being directed to men and the so-called "crisis" in men's health (Gough, 2006), study in the field of men's gender roles has examined the more "toxic" or harmful consequences for men (e.g., depression, anxiety, violence, suicide, poor health care, homophobia, academic failure, bullying, racial and ethnic oppression, and dysfunctional relations with women, men, and children (O'Neil, 2008). The overall results of these studies indicate that GRC is significantly correlated with numerous psychological problems for men including depression, anxiety, low self-esteem, stress, and many other psychological experiences that can have a negative impact on men's lives.

GRC is significantly correlated with depression and low self-esteem across diverse racial, sexual orientation, and cross-cultural samples (O'Neil, 2008). This could suggest that depression, self-esteem, and GRC are experienced in a similar way across these diverse groups. However, it is unclear how contextual factors like racial and ethnic identity, age, sexual orientation, and the

situational demands of being a man affect how GRC interacts with psychological and physical health outcomes for men. Review of the GRC literature indicates no studies to date have been conducted in populations of men experiencing chronic health conditions like diabetes.

Reviews of gender role conflict studies propose that future variables of the research paradigm focus on 1) demographic and classification variables, 2) personality or attitudinal variables, 3) counseling process and outcome variables, and 4) psychological or physical health variables. Over 70 variables (e.g., physical health problems, physical strain, health risk taking, psychological well-being, and psychological distress) have been identified for potential testing within these four empirically derived patterns of men's gender role conflict (O'Neil, 2008).

Mediator studies conducted using the gender role conflict paradigm examined relationship between greater GRC and negative outcome variables **(**Blashill & Vander Wal, 2009; Breiding, 2004; Groeschel, Wester, & Sedivy, 2010; Houle, Mishara, & Chagnon, 2009; Szymanski & Ikizler, 2012). Shepherd and Rickard (2012) specified that men with higher gender role conflict tended to exhibit a variety of body image concerns, including a drive for muscularity. Results demonstrated that GRC mediates the relationship between drive for muscularity and intentions to help-seek, explaining why men with body image concerns may be less likely to utilize or seek out treatment services and recommendations. Other studies have been able to link gender role conflict to moderator and mediator variables that influence men's attitudes toward seeking psychological help (Levant et al., 2013).

Liu et al. (2005) investigated the relationship between real and ideal gender role conflict and the impact on psychological distress. This study endorsed that some men may not fully embrace the rigid gender-role ideals to which they are socialized, and the differences between real and perceived ideals of GRC may be related to feelings of conflict and distress. The results

were positively related, in that men who experience GRC in their real life were likely to also hold these values in their ideal life. The highest levels of distress were correlated with high levels of GRC in both the real life and ideal life situations. For those participants who were consistent in their real and ideal GRC, it may be that they envision fewer alternatives to them with regard to GRC.

A body of literature examines coping mechanisms for men and the impact of gender role conflict on coping strategies. One study investigated differences in coping strategies between college males with high and low GRC. The study found no significant interactions of coping styles with gender role conflict, suggesting GRC does not influence the selection of coping strategies for college males (Bergen, 1997). Conversely, Jones (1999) found strong relationships between restrictive emotionality, emotion-oriented coping, and psychological distress in a sample of gay men, suggesting that gender role conflict can influence coping mechanisms for men. Another study that examined male gender role strain, coping, and college adjustment found avoidant coping processes mediated the emotional restriction aspect of Male Gender Role Strain and adjustment to college. Results showed that males with higher levels of gender role conflict and restricted emotionality demonstrated poorer coping including more avoidant strategies (Stanzione, 2005).

In a correlational study, a sample of men (N = 150; n = 50 college, n = 50 gay, n = 50 violent) were investigated to examine the role of gender role conflict on chronic self-destructiveness (CSD). Gay men's CSD levels were significantly lower than either college or violent men. Furthermore, restrictive emotionality accounted for a significant amount of the variance in levels of CSD. Restrictive emotionality was also found to be a significant predictor of CSD for both college and violent men (Naranjo, 2001).

An important focus of future research in GRC is what third variables affect the degree of GRC in men's lives. O'Neil (2008) calls for explanation of how GRC interacts with untested variables such as self-compassion and self-efficacy in determining problems such as poor health outcomes, psychological distress, and difficulties in self-management and self-regulation of chronic health conditions like type 1 diabetes and type 2 diabetes. Answers to these kinds of questions could aid in significant ways and help create more effective preventive interventions for boys and men.

Literature on Masculinity and Men's Health

The psychology of men emerged as an important area for scientific inquiry and clinical intervention over 30 years ago (Addis & Mahalik, 2003; Blazina, 2003; Brooks & Good, 2001; Cochran & Rabinowitz, 2000; O'Neil, 2015), and has helped further explain how socialized identity processes contribute to relational, psychological, and behavioral health outcomes for boys and men in both negative and positive ways (e.g., Arellano-Morales, Liang, Ruiz, & Rios-Oropeza, 2016; Kiselica et al., 2016; O'Neil, 2008). Recently, calls to action for the inclusion of courses about the psychology of men and masculinity in training programs have been met with resistance. White males have been the traditional dominant reference group for biased and exclusionary research until the 1970's (O'Neil & Renzulli, 2013). Men themselves are rarely classified as a marginalized group and consequently, the psychology of men is traditionally associated with male patriarchy, privilege, aggression, dominance, sexism, and the devaluation of women. The new psychology of men and masculinity aligns closely with pro-feminist values of activism, an equal balance of power, reduced sexism and dominance, and a restructure of masculinity itself (Englar-Carlson & Kiselica, 2013).

Literature in the study of men and masculinity suggests that an array of norms, ideologies, and gender roles play a part in discouraging men's help-seeking and health behaviors

(Addis & Mahalik, 2003). For the most part, these are intrapersonal differences shaped by different cultural norms and ideologies specific to the individual. Gilmore (1990) counter argues that "macho" styles of masculine expressions benefit society and are a necessary function of humanity's perceived need for protection against aggressors. Ideological claims that masculinity is bad for men's health can be traced to Harrison's (1978) influential paper, "Warning: The male sex role may be dangerous to your health." While there is a steady growth in the men's health literature, little is known about how men experience life with chronic illness (O'Hara, et al., 2013).

Jack, Toston, Jack, & Sims (2008) considered experiences of Black men and discussed three important factors that may help explain diabetes-related disparities. These factors included absence of consistent sources of health care, lack of health insurance, and the absence of a masculinity perspective in diabetes education and management research. The researchers implemented a gender-centered ecological model in their approach to treatment intervention.

Recently, public health campaigns have been criticized for leveraging societal norms of masculinity in hopes of increasing awareness and education. The "Man Up" campaign drew on appeals of increased masculinity to bolster positive actions (i.e. HIV testing). While well intended, the campaign reinforced narrow and constraining norms of hegemonic masculinity (Fleming, Lee, & Dworkin, 2014). Previous research has found that men who adhere to the norms of hegemonic masculinity have worse mental health (Sharpe & Heppner, 1991) and general well-being (O'Neil, 2015) than do other men. They are more likely to have high degrees of control over their partners (Mahalik, Talmadge, Locke, & Scott, 2005), engage in more sexual risk taking (Santana, Raj, Decker, La Marche, & Silverman, 2006), avoid health care clinics

(Falnes et al., 2011), and enact more physical and sexual violence with their partners (Currie & Wiesenberg, 2003).

Literature on Men and Diabetes Self-Efficacy

Self-efficacy is an important component for successful self-management of diabetes (King et al., 2010). Approximately 30% of individuals with diabetes in a free clinic population reported depression and lower levels of self-efficacy (Bowser, Utz, Glick, Harmon, & Rovnyak, 2009). Poor self-efficacy has been associated with poor glycemic control and increased depressive symptoms and may explain the relationship between the two (Penninx, 1998; Sacco et al., 2005; Sousa, Zauszniewski, Musil, Lea, & Davis, 2005; Talbot, Nouwen, Gingras, Gosselin, & Audet, 1997).

Talbot et al. (1997) found that higher depression scores as measured by the Beck Depression Inventory were associated with lower self-efficacy scores for several diabetes self-management activities (e.g., diet, weight control, exercise). Sacco et al. (2005) found similar results in a sample of individuals with type 2 diabetes. Lower self-efficacy scores were associated with higher levels of depression on the Patient Health Questionnaire – 9 (PHQ-9).

Research on gender differences and diabetes-related self-efficacy is mixed. Some authors suggest gender differences exist concerning the role self-efficacy plays for individuals managing chronic illnesses and their associated health outcomes (Buchanan & Selmon, 2008). One cross-sectional study examining associations between depressive symptoms, self-efficacy, and glycemic control among men (n = 64) and women (n = 98) with type 2 diabetes found a significant association between depressive symptoms and glycemic control for men but not for women. Path analysis suggested that, among men, self-efficacy mediated the relationship between depressive symptoms and glycemic control (Cherrington et al., 2010).

Understanding the personal, family and community contexts of living with diabetes was studied in development of an intervention that provided support and coping strategies for self-management among socio-economically disadvantaged men with type 2 diabetes (Researchers found that increased coping skills were an important factor in increasing self-efficacy for diabetes in this population (Bowser et al., 2009). Other studies with ethnically diverse men examine the extent to which the social context of diabetes self-management varies dependent upon gender and acculturation (Mansyur, Rustveld, Nash, & Jibaja-Weiss, 2016). For Hispanic men with diabetes, creative ways of involving the family may help create healthier social norms that foster an individual's self-efficacy.

Overall, literature supports the role of self-efficacy for men as an important construct to target interventions for an individual's perceived control over health and future intentions to engage in health-promoting behaviors (Ajzen, 1991).

Literature on Counseling Models for Men

Men face unique psychosocial and interpersonal challenges associated with masculine socialization experiences and cultural expectations (Good, Thomson, & Brathwaite, 2005). Researchers increasingly recognize a varied and complicated conception of masculinity as it relates to the lives of men. Masculinity and masculine-related constructs are associated with both clinically relevant issues as well as men's reluctance to seek psychological services. As theoretical and conceptual definitions of masculinity change, so must our clinical understanding of best practices in work with male clients.

Given all that has been written regarding the importance of the therapeutic relationship (e.g., Messer & Wampold, 2002; Wampold, 2000), it seems natural that the foundation of counseling men is based on establishing a solid therapeutic alliance. Good, Gilbert, & Scher

(1990) note that men and women do not enter therapy on an equal footing. Men's natural alignment towards stoicism, interpersonal dominance, and self-reliance are often barrier for men leaving one ashamed and resistant to being vulnerable and intimate in relationships (Addis & Mahalik, 2003; Wagstaff, & Rowledge, 1995).

Engaging Men in the Counseling Process. Suggestions for addressing how to attract men and keep them engaged in counseling, as well as how to effectively communicate with health care professionals include: 1) reframe the counseling service to conceptualize it as a learning process of how to deal with and manage chronic illness, 2) use a male-friendly counseling model which validates a man's understanding of his gender identity, 3) have men talk with men and promote group activities and social support structures, and 4) help men navigate the health care system in hopes of easing frustration, worry and fear of help seeking behaviors (Neukrug et al., 2013).

The Integrity Model. Clinical psychologists working with men in various counseling settings lack a sound theoretical basis for exploring the ways men address and communicate issues of intimacy, belonging, and sense of self (Nahon & Lander, 2016). A number of voices throughout psychological literature suggest phrases such as "fear of intimacy," "restrictive emotionality," and "low emotional intelligence" foster a sense of defectiveness in men's ability for emotionality and inaccurately depict intimate experiences of men by attempting to feminize their nature (Heesacker & Prichard, 1992). Nahon & Lander (2013) adapted the Integrity model of psychotherapy from Mowrer's Integrity Therapy Group Approach (Mowrer, 1953) and developed it as a values-based wellness approach to therapy with men. The Integrity model is existential in nature and encompasses four basic components: (1) men's clarification of their values and value clashes, (2) mindfulness of the three pillars of Integrity (e.g., honesty,

responsibility, & emotional closure), (3) a concept of the "I-Thou" relationship (e.g., a deep and meaningful relationship between therapist and client), and (4) "movement towards, away from, or against others" in conflict resolution. Through this framework, clinicians are challenged to consider that men do have capacity to build meaningful relational experiences, emotional faculties, and ability to focus on reflection, value clarification, integrity, and intimacy through existential therapy.

Generational Strength-Based Positive Masculinity. Generational approaches to positive psychology and positive masculinity (PPPM) promote counseling that focuses on identifying, affirming, and developing male strengths that are passed down across generations (Kiselica & Englar-Carlson, 2010). Counseling techniques that focus on strength-based positive masculinity include: exploration of male heroes, integrating male humor, positive companionship though male humanitarian organizations, capitalizing on male group orientation, being sensitive to the cultural expectation of the "worker-provider" tradition, fostering healthy male self-reliance and problem-solving, recognizing and promoting the ways in which male clients care for others, conducting sessions while participating in action-oriented activities, and affirming generative fatherhood and positive parenthood experiences. Strength-based therapy, in addition to other interventions can reframe negative, stereotypical, oppressive, and dysfunctional attitudes and behaviors of men and replace them with honorable and principled notions of masculinity and prosocial behaviors that facilitate growth and wellness (Englar-Carlson & Kiselica, 2013).

Literature on Men, Positive Psychology, and Positive Masculinity

Positive-psychology is a growing field for research and clinical work in counseling and has flourished over the past decade (Englar-Carlson & Kiselica, 2013). Both counseling and positive psychology share a mutual admiration for growth, development, excellence, and

authentic goodness. Researchers have explored the intersection of positive psychology in counseling, school psychology, and rehabilitation and physical medicine (Chapin & Boykin, 2010; Harris, Thoresen, & Lopez, 2007; Park & Peterson, 2008). Positive psychology theory and literature adheres to the traditional tenants of counseling, focusing on the remediation of suffering and alleviation of symptoms while enhancing positivity and building upon strengths and values (Seligman, 2008; Seligman, Rashid, & Parks, 2006).

Enhancing prosocial behaviors in men is not without challenges. One study examined gender differences on prosocial behavior in economic games and found social framing tends to increase prosocial behavior in women but not men, and encouragement of reflection decreases the prosocial behavior of males (Espinosa & Kovářík, 2015). These findings suggest prosocial behaviors are malleable, but males and females respond to different aspects of the social context. Traditional counseling interventions that focus on classical counseling skills may be insufficient for working with men in the context of enhancing prosocial behaviors and adopting a framework of positive masculinity.

For instance, masculinity is strongly associated with family and an important value for what it means to be a man in Latino and African American culture (Hurtado & Sinha, 2008; Hammond & Mattis, 2005), however this dimension of masculinity is not as salient for other groups. New conceptualizations of theoretical and clinical models indicate men are receptive to psychotherapy and can encompass a positive view of wellness and prosocial behaviors (Nahon & Lander, 2016).

The interplay between gender and chronic disease states is intricate and subtle (Broom & Lenagh-Maguire, 2010). The various roles of gender affect how people living with these conditions experience and manage their conditions. For many counselors, the idea of capitalizing

on male strengths and positive masculinity may negate the impact of negative masculinity and support historical patriarchal ideals. Literature affirms that positive masculinity approaches involving strengths-based interventions are necessary to counsel and intervene men experiencing health concerns (Englar-Carlson & Kiselica, 2013). A defined knowledge gap remains, however, surrounding the identification of how negative mental health variables specifically impact men, and how health service professionals can help to promote men's health and well-being.

Literature on Men and Self-Compassion

Self-compassion is defined as being kind toward oneself when facing difficulties, inadequacies, and failures (Neff, 2003a; Neff, Rude, & Kirkpatrick, 2007). Self-compassion has been associated with life satisfaction (Wei, Liao, Ku, & Shaffer, 2011), well-being (Neely, Schallert, Mohammed, Roberts, & Chen, 2009), and inversely associated with depression (Raes, 2011) and anxiety (Neff, Hsieh, & Dejitterat, 2005). Self-compassion has also been associated with increased motivation, positive health behavior, positive body image, and resilient coping (Albertson, Neff, & Dill-Shackleford, 2014; Allen, Goldwasser, & Leary, 2012; Breines & Chen, 2012; Sbarra, Smith, & Mehl, 2012).

Research findings on gender differences in self-compassion have been varied. Women have demonstrated lower levels of self-compassion in several studies (Neff, 2003a; Neff & Mcgehee, 2010; Yarnell & Neff, 2013), while other studies have found no significant differences in self-compassion between women and men (Iskender, 2009; Neff & Pommier, 2013; Raque-Bogdan, Ericson, Jackson, Martin, & Bryan, 2011).

Regarding men, research suggests that adherence to masculine gender norms is associated with lower levels of self-compassion (Reilly, Rochlen, & Awad, 2014). Because early male

socialization patterns reward stoicism and emotional restrictiveness (Levant, 2011; Riggs, 2008), self-compassion may be less accessible to men than women.

One meta-analysis to date has examined gender differences in self-compassion across 88 journal articles and dissertations, reporting a small effect size for gender on self-compassion, with males exhibiting slightly higher levels of self-compassion than females (d = .18). Gender effects were larger among more ethnically diverse samples (Yarnell et al., 2015). The researchers attributed this difference based in previous literature associating higher levels of self-criticism and increased negative self-talk for women, potentially resulting in decreased self-compassion (DeVore, 2013; Leadbeater, Kuperminc, Blatt, & Hertzog, 1999). Men may be reluctant to adopt or endorse an attitude of self-compassion due to societal pressures, social norms, and masculine socialization processes. Further examination of gender and group differences is needed to identify other mechanisms that facilitate how self-compassion is expressed by men in real-world social and situational contexts (O'Neil, 2015; Yarnell et al., 2015).

CHAPTER 3

METHODOLOGY

Chapter 3 describes the methodology of the current study including the research questions and hypotheses, the study purpose and research design, participant recruitment efforts, instrumentation, study procedures, and statistical analysis information. The following primary and exploratory research questions and hypotheses were based on findings of a pilot study by Ringdahl and Heckman (manuscript in preparation), as outlined in the previous chapter, and based on theoretical and empirical research.

Research Questions and Hypotheses

Primary research question. To what extent does self-efficacy mediate the relationship between gender role conflict and diabetes-related outcome variables?

***Hypothesis 1a*.** Gender role conflict will be negatively correlated to diabetes self-management, and positively correlated to diabetes distress, and glucose control.

***Hypothesis 1b*.** Gender role conflict will be negatively correlated to self-efficacy.

***Hypothesis 1c*.** Self-efficacy will be positively correlated to diabetes self-management and negatively correlated to diabetes distress and glucose control.

***Hypothesis 1d*.** Gender role conflict is a significant predictor of diabetes self-management, diabetes distress, and glucose control.

***Hypothesis 1e*.** Gender role conflict is a significant predictor of self-efficacy.

***Hypothesis 1f*.** Self-efficacy has a mediation effect on the relationship between gender role conflict and diabetes self-management, diabetes distress, and glucose control.

Exploratory research question. To what extent does self-compassion mediate the relationship between gender role conflict and diabetes-related outcome variables?

***Hypothesis 2a*.** Gender role conflict will be negatively correlated to self-compassion.

***Hypothesis 2b*.** Self-compassion will be positively correlated to diabetes self-management and negatively correlated to diabetes distress and glucose control.

***Hypothesis 2c*.** Gender role conflict is a significant predictor of self-compassion.

***Hypothesis 2d*.** Self-compassion has a mediation effect on the relationship between gender role conflict and diabetes self-management, diabetes distress, and glucose control.

Research Purpose and Design

This study utilized a quantitative, cross-sectional, survey-based research design. Therefore, correlations and mediations were examined at a single time point (Campbell, Machin, & Walters, 2007; David & Sava, 2015; Shadish, Cook, & Campbell, 2002). No single study can meet all prescriptive requirements for considering a specific mediator as a causal mechanism, and experimental designs have been deemed more appropriate for studying mediation effects. However, theoretical approaches to establish causal mediation are appropriate when complemented by a conceptual analysis through well-supported theory (David & Sava, 2015). Mediator variables are variables that lie between the cause and effect in a causal chain and are the mechanism through which change in one variable is partially or fully the cause of change in a subsequent variable. Three variables are identified in a simple, single-mediator model: an antecedent variable, a mediator, and a consequent variable (Fritz & Lester, 2016). Following data collection, mediation analyses were used to independently assess the roles of self-efficacy and self-compassion in the relationships between men's gender role conflict and that of diabetes self-

management, diabetes distress, and glucose control among men with either type 1 or type 2 diabetes.

In this study, the predictor (men's gender role conflict) preceded the mediators (self-efficacy and self-compassion) because conflicts arising from men's gender roles have been linked to early socialization processes occurring in childhood. Therefore, self-compassion and self-efficacy were hypothesized mediators rather than moderators (Aiken & West, 1991; Hayes, 2009). The independent variable for this study was men's gender role conflict (measured by the GRCS; O'Neil et al., 1986). The dependent variables were diabetes self-management (measured by the DSMQ; Schmitt, et al., 2013), diabetes distress (measured by the DDS; Polonsky et al., 2005), and glucose control (measured by self-reported HbA_{1c}). The mediating variables were self-efficacy (measured by the GSES; Schwarzer & Jerusalem, 1995a) and self-compassion (measured by the SCS; Neff, 2003b).

Participants

Study participants satisfied the following eligibility requirements: (1) ≥ 18 years of age; (2) self-identified as "male"; (3) self-reported diagnosis of either type 1 or type 2 diabetes for ≥ six months; and (4) written informed consent. Participant recruitment occurred through three methods: 1) participants were identified through Mercy Clinic, a health resource clinic for uninsured and low-income individuals in Athens, GA, 2) direct messages and emails through Facebook and diabetes-related social networking websites, blogs, and organizations, and 3) in-person at local diabetes fundraising events in Athens, GA and Atlanta, GA.

Sample Size Determination

Several authors have provided detailed reviews for sample size determination in mediation analysis, yet debate exists within the literature regarding methodological approaches

(Gunzler, Chen, Wu, & Zhang, 2013; Hayes, 2009, 2018; MacKinnon, Cheong, & Pirlott, 2012; Preacher, 2015; Rucker, Preacher, Tormala, & Petty, 2011). Research suggests that the causal steps approach (Baron & Kenny, 1986), while still popular in research, is low in power to detect mediation (Mackinnon, Lockwood, Hoffman, West, & Sheets, 2002), and is no longer considered best practice (Hayes, 2013).

Determining appropriate power or sample size to detect the indirect effect in a mediation model is not straightforward. Fritz and MacKinnon (2007) offer recommendations for six common tests of mediation using differing parameters; however, for only a limited range of models and analytic conditions. In this method, sample size is determined for each model component (e.g., paths *a* and *b*) of an indirect effect, with the largest sample size selected for analysis. Traditional approaches to determine sample size for *a* and *b* (e.g., *G*Power*; Faul, Erdfelder, Buchner, & Lang, 2009) underestimate the needed *N* necessary to test the indirect effect and does not generalize to more complex mediation models (Schoemann, Boulton, & Short, 2017). Power analyses based on the Sobel test for simple mediation models assume the product of *ab* is also normally distributed, which may not be the case in smaller sample sizes where tests of the indirect effect are preferred (Bollen & Stine, 1990). Literature suggests that a Monte Carlo power analysis simulation (Muthén, 2002; Muthén & Muthén, 2002; Thoemmes, Mackinnon, & Reiser, 2010) is the preferred method for assessing power and sample size in mediation analysis and testing the indirect effect with a bias-corrected bootstrapped confidence interval (Hayes, 2018; Schoemann et al., 2017). A web-based application, written for the R statistical package (Urbanek & Plummer, 2019), was used to conduct a Monte Carlo power analysis for a simple mediation model. The free application was accessed at https://schoemanna.shinyapps.io/mc_power_med/.

As each mediator variable was studied independent of the other, sample size was computed for using a trivariate "one mediator" model. The analysis used a varying sample size approach to achieve a specific power level of .80. The number of replications was set at 10,000 to ensure stable sample size estimates as recommended by empirical support in Mundform, et al. (2011). The number of times each target coefficient is sampled from its sampling distribution, referred to as the number of "Monte Carlo Draws per Rep," was set to 20,000 samples (Selig, Preacher, & Little, 2012). The confidence interval width was set to 95%. A positive integer (default: 1,234), was selected to seed a random number generator and ensure potential study replication (Schoemann et al., 2017).

Finally, the program required input of population parameters for the model, similar to selecting a desired effect size in a traditional power analysis. Different quantities meet this criterion, including model parameter estimates (Zhang, 2014) and measures of variance explained (Thoemmes et al., 2010). The default program option was to enter a correlation matrix and the standard deviations of the variables, which were used to generate a covariance matrix. The Monte Carlo power analysis required hypothesized *a* and *b* coefficients, and coefficient standard errors for each proposed mediation model in this study.

A literature review was conducted to identify hypothesized *a* and *b* path sizes, as well as direct path *c* sizes for study variables. For *a* paths, gender role conflict correlated with self-compassion by $r = -.48$ (Lennon, Hevey, & Kinsella, 2018) and self-efficacy by $r = -.32$ (Schwartz, Waldo, & Daniel, 2005). For *b* paths, self-compassion correlated with diabetes distress by $r = -.58$ (Friis, Consedine, & Johnson, 2015), and diabetes self-management by $r = .36$ and glucose control by $r = -.23$ (Ferrari, Cin, & Steele, 2017). Self-efficacy correlated with diabetes distress by $r = -.37$ (Gonzalez, Shreck, Psaros, & Safren, 2015), and diabetes self-

management by r = .61 and glucose control by r = -.24 (Sousa, Zauszniewski, Musil, Mcdonald, & Milligan, 2004). For the direct path *c*, gender role conflict correlated with psychological distress at r = .38 (Lennon et al., 2018), and diabetes self-management at r = .53 and glucose control at r = -.32 (Ringdahl & Heckman, manuscript in preparation).

Using the continuously varying sample size Monte Carlo approach for bias corrected bootstrapping mediation, six sample size power analyses models were conducted using hypothesized study variable parameters. Results of the most conservative model indicated approximately 134 individuals were required to ensure statistical power is at least 80% for detecting the hypothesized indirect effect.

Procedures

Survey construction. The study survey was constructed in Qualtrics, an online software platform that generated a traceable user web link for participants to complete online questionnaires via their web browser.

Survey flow. The study survey consisted of a total of 25 pages, including the eligibility screening, informed consent, demographics questionnaire, variable measures, and debriefing. Research in survey-design methodology suggests strategies for lower participant attrition and higher start rates when the survey is intentionally kept brief (Sinkowitz-Cochran, 2013). The study survey took participants approximately 20 minutes to complete (M = 21m: 25s, SD = 19.343). The number of items per page ranged from one to nine.

After clicking a hyperlink included within recruitment emails and direct social media messages (see Appendices D, E, and F for study recruitment materials), respondents were redirected to the study questionnaire via a Qualtrics server. An informed consent document (see Appendix G for informed consent) was presented to all participants for review prior to

completing the eligibility screening or study measures. The informed consent page consisted of a statement regarding participant rights, principle investigator contact information, a statement regarding the study purpose, a statement regarding study procedures, a statement of perceived risks and benefits, details regarding incentives for participation, a statement regarding privacy/confidentiality and limits to confidentiality, and a statement of voluntary participation. Participants were given the opportunity to discuss the nature of the research and ask any questions about the study. Participants were instructed that they were free to discontinue their participation at any time and withdraw their data from the study if they wished to do so. After reviewing the informed consent page, respondents were asked to either accept or decline continued participation and data submission.

Participants provided informed consent and were screened for eligibility to participate in the study (see Appendix H for eligibility screener). In addition to verifying age (≥ 18 years), respondents were asked to affirm that he identified as "male." Lastly, respondents were required to affirm a current diagnosis of either type 1 or type 2 diabetes for a period ≥ six months. If the participant answered "no" to any screening question, they were directed to the survey termination page. Following successful completion of the informed consent and the four screening questions, respondents were asked to complete the study measures.

The sequence of pages within the Qualtrics survey were as follows: an informed consent page; eligibility screening pages; a page that requested voluntary email address submission; sociodemographic questionnaire; diabetes-specific questionnaire; the Gender Role Conflict Scale (GRCS); the Self-Compassion Scale (SCS); the General Self-Efficacy Scale (GSES); the Beck Depression Inventory-II (BDI-II); the Diabetes Distress Scale (DDS); the Diabetes Self-

Management Questionnaire (DSMQ); and a debriefing page with mental health referral resources.

After completion of all study measures, participants were directed to a debriefing page (see Appendix J for debriefing form). The debriefing page outlined the intended purpose of the study and provided contact information for the researcher and IRB. Psychological distress was managed through the informed consent process and providing referrals for support if needed. These included the National Suicide Prevention Lifeline, www.allianceforhope.org, University of Georgia – Center for Counseling and Personal Evaluation (CCPE), University of Georgia – Counseling and Psychiatric Services (CAPS), the research investigator, or direction to visit their local emergency room for immediate care. Participants were provided the option to either submit or discard their responses to complete the informed consent process following the debriefing. After choosing to submit their responses, respondents were directed to the survey termination page.

Data collection. The research proposal was submitted to the UGA IRB for initial review and approval (IRB number: STUDY00004313; see Appendix K for IRB Approval). Convenience and snowballing sampling strategies were used to recruit qualified participants (Goodman, 1961). This study recruited participants through Mercy Clinic in Athens, GA. Mercy Clinic is a Christian health resource center offering medical, specialty, dental, pharmacy, counseling, and pastoral services to low-income and uninsured individuals (Mercy Health Center, 2012). Flyers were placed throughout Mercy Health Center (see Appendix D for Study Recruitment Flyer) for all persons who were both eligible and interested in participating. Participants were identified by Mercy Clinic staff and the study PI, who worked in collaboration with Mercy Clinic to recruit eligible participants. The study was advertised through the researcher's existing Facebook

network and via targeted websites, blogs, list-serves, and social media sites. Email messages were sent to various diabetes-related group moderators and targeted to individuals identified to be a group member. Recruitment materials (e.g., flyers, emails, and messages) included basic study details and web link to the online questionnaire which requested that the recruitment information be circulated to other qualified participants, other known diabetes-related groups, and mailing lists.

The researcher attended fundraising and awareness events for type 1 and type 2 diabetes in the Athens, GA and Atlanta, GA area (e.g., Rock the Cure, Tour de Cure, Atlanta EXPO, JDRF One Walk, World Diabetes Day, and Kudzu Bowl). Study information was distributed at these events and data were collected from individuals who were qualified and interested.

Measures

Participants completed a demographic characteristics questionnaire (see Appendix I for Demographic Characteristics Questionnaire) and six assessment measures. Measures included: the Gender Role Conflict Scale (GRCS; O'Neil et al., 1986), the Beck Depression Inventory-II (BDI-II; Beck et al., 1996), the Self Compassion Scale (SCS; Neff, 2003a), the General Self-Efficacy Scale (GSES; Schwarzer & Jerusalem, 1995a), the Diabetes Self-Management Questionnaire (DSMQ, Schmitt et al., 2013), and the Diabetes Distress Scale (DDS; Polonsky et al., 2005).

Demographic questionnaire. Nine questions assessed age, race/ethnicity, relationship status, sexual orientation, highest degree completed, employment status, comorbid medical conditions, age of diabetes diagnosis, and self-reported HbA_{1C}.

Gender role conflict. The 37-item Gender Role Conflict Scale (GRCS; O'Neil et al., 1986) used a 6-point scale (1 = strongly disagree; 6 = strongly agree) to assess patterns of gender

role behavior. GRCS assessed four personal dimensions of gender role conflict: (1) Success, Power, and Competition (SPC) (i.e., "I worry about failing and how it affects my doing well as a man"); (2) Restrictive Emotionality (RE) (i.e., "I have difficulty expressing my tender feelings"); (3) Restrictive Affectionate Behavior between Men (RABBM) (i.e., "Affection with other men makes me tense"); and (4) Conflict between Work and Leisure - Family Relations (CBWLFR) (i.e., "My work or school often disrupts other parts of my life: home, health, or leisure"). GRCS is theoretically related to GRC psychological domains (interpersonal, intrapersonal, and therapeutic), and is one of the most commonly used measures in masculinity studies (Magovcevic & Addis, 2008).

Confirmatory factor analyses supported the construct validity of the GRCS and subscales (Braverman, 1990; Good et al., 1995; Hammer, McDermott, Levant, & McKelvey, 2018; Moradi, Tokar, Schaub, Jome, & Serna, 2000; Norwalk, Vandiver, White, & Englar-Carlson, 2011; O'Neil et al., 1986; Wester, Vogel, O'Neil, & Danforth, 2012), and it demonstrated good convergent validity with similar measures (Brannon & Juni, 1984; Eisler & Skidmore, 1987; Thompson & Pleck, 1986; Wade & Gelso, 1998). The GRCS total score was used in this study's primary and secondary hypotheses and analyses due to limited hypotheses in previous research on GRC subscales (O'Neil, 2015). Cronbach's Alpha in this study were as follows: GRCS total, $\alpha = .95$; RE and SPC, $\alpha = .92$; RAABM, $\alpha = .90$; and CWLFR, $\alpha = .91$.

Depression. The self-administered 21-item Beck Depression Inventory – II (BDI-II; Beck et al., 1996) assessed the presence and severity of depressive symptoms. Respondents rated each item on a 4-point scale from 0 to 3. Summated scores, ranging from 0 to 63, reflect depression severity (sample items: '0- I am not particularly discouraged about the future.'; 3- 'I

feel the future is hopeless and that things cannot improve.'. Internal consistency for this study was α = .87.

Self-compassion. The Self-Compassion Scale (SCS; Neff, 2003a) measured 26 self-administered items on a 5-point Likert scale (1 = Almost Never; 5 = Almost Always), to form a unitary scale as well as the positive subscales of self-kindness, common humanity and mindfulness, and negative subscales of self-judgement, isolation and overidentification. For example, the item 'when times are really difficult, I tend to be tough on myself', tested self-kindness versus self-criticism. The item, 'I try to see my failings as part of the human condition', tested the capacity to understand life's difficulties as part of being human, versus the tendency to isolate (reverse scored). And the item, 'When something upsets me, I try to keep my emotions in balance' tested the capacity for mindfulness versus over-identification with negative feelings (reverse scored). A total self-compassion score was computed by calculating a grand mean of all six subscale means (after reverse-coding negative items). Higher scores indicate greater levels of experienced self-compassion. The SCS demonstrated concurrent validity, convergent validity, discriminate validity, test-retest reliability, and good internal consistency (α = .92; Neff, 2003a). The reliability coefficient estimate in the present study was α = .77.

Self-efficacy. The 10-item self-administered General Self-Efficacy Scale (GSES; Schwarzer, & Jerusalem, 1995a) assessed a perceived broad and stable sense of personal competence regarding coping and adaptation abilities in daily activities and isolated stressful situations. Each item used a four-point Likert-type scale (1 = *Not at all true*; 4 = *Exactly True*) to statements such as 'I can usually handle whatever comes my way.' Summated items yielded a final composite score, ranging from 10 to 40. Higher scores indicated greater general self-efficacy. Confirmatory factor analyses found the scale to be unidimensional, and positive

relationships were found with measures of favorable emotions, dispositional optimism, and work satisfaction. Negative coefficients were found with measures of depression, anxiety, stress, burnout, and health complaints (Schwarzer & Jerusalem, 1995b). Cronbach's alpha for this study was $\alpha = .92$.

Diabetes distress. Emotional distress related to the burdens of diabetes and its treatment was evaluated with the Diabetes Distress Scale-17 (DDS-17; Polonsky et al., 2005). The 17-item DDS used a Likert-type scale (1 = *Not a problem* to 6 = *A very serious problem*) to assess the experience of diabetes-related psychological distress over the past month across four subscales: emotional burden (5 items), physician-related distress (4 items), regimen distress (5 items) and diabetes-related interpersonal distress (3 items). Responses are totaled and divided by the number of items in each scale. A higher score indicates greater distress. Clinical validation of the DDS suggested that the following thresholds of severity be applied when interpreting scores: little or no distress < 2.0, moderate distress = 2.0–2.9, and high distress > 3.0 (Fisher, Hessler, Polonsky, & Mullan, 2012). The internal consistency reliability coefficient in this study was $\alpha = 0.94$.

Diabetes self-management. The 16-item self-administered Diabetes Self-Management Questionnaire (DSMQ; Schmitt et al., 2013) assessed perceived skills in overall diabetes management across four subscale domains: (a) glucose management, (b) dietary control, (c) physical activity, and (d) health care use. Respondents rated the extent to which each statement applied to their personal self-management with regard to the previous eight weeks. The rating scale was designed as a four-point Likert scale (in order to avoid a neutral response option and force a specific response) with the response options as follows: (1) 'applies to me very much' (three points), (2) 'applies to me a considerable degree' (two points), (3) 'applies to me some

degree' (one point), and (4) 'does not apply to me' (zero points). Negatively worded items were reverse scored and transformed into a "Sum Scale" total such that higher scores were indicative of more effective self-care. Its validation study supported the DSMQ's reliability and validity (Schmitt et al., 2013; Schmitt et al., 2016). Ringdahl and Heckman (manuscript in preparation) reported internal consistency subscale values from $\alpha = .74$ to $\alpha = .88$. Cronbach's alpha for this study was $\alpha = .79$.

Glycemic management. Glycemic control, defined as glycosylated hemoglobin A_{1c} (HbA_1c) less than 7.0% (53 mmol/mol) by the American Diabetes Association (2019c), was measured by self-report and assessed a respondent's average glycemia over approximately 3 months. It is suggested HbA_{1c} be checked every 3 months, and twice a year in patients with type 2 diabetes with good glycemic control (American Diabetes Association, 2019c). The National Glycohemoglobin Standardization Program (NGSP) online converter was utilized to convert HbA_{1c} percentage to mmol/mol (Bergenstal, Fahrbach, Iorga, Fan, & Foster, 2012; NGSP, 2010). Men's ability to reliably self-report HbA_{1c} in accordance with their medical record has been supported, with correlations ranging from .88 to .91 in one study (Kumpatla, Medempudi, & Viswanathan, 2010; Undén et al., 2008).

Covariates. Several covariates were controlled for in the mediation analyses. These included age in years, age of diabetes diagnosis in years, type of diabetes, race/ethnicity (dummy coded with non-White as the reference category), relationship status (dummy coded with non-married as the reference category), sexual orientation (dummy coded with non-heterosexual as the reference category), highest degree completed (dummy coded with ≥ 2-year degree completed as the reference category), and employment status (dummy coded with other than full-time as the reference category).

Statistical Analysis

Data collected from study participants were exported from the Qualtrics platform and analyzed using the latest version of International Business Machine Corporation (IBM) Statistical Package for the Social Sciences (SPSS; IBM Corp., 2016).

Survey start and completion rates. Non-response and attrition rates were analyzed by calculating start and completion rates for the Qualtrics survey. The start rate included the percentage of the gross total respondents who entered the Qualtrics survey and responded to the informed consent. The completion rate included the number of respondents who submitted the survey following the debriefing page compared to the number of respondents who consented to participate. Furthermore, progression through the Qualtrics survey was recorded and reported as the number of respondents who: (1) did not provide consent; (2) did not meet eligibility requirements; and (3) failed to continue responding to survey items midway through the survey. Response analyses were conducted to determine the number of participants who fully completed the survey (Dolowitz, Buckler, & Sweeney, 2008; Eysenbach & Wyatt, 2002).

Data verification and screening. Prior to mediation analysis, the data were cleaned utilizing the procedures and recommendations outlined by Hayes (2013). Univariate descriptive statistics and frequencies were calculated to inspect data accuracy and plausibility. Once the data-verification process was complete, the data were screened to assess for any missing data. Missing data points were imputed by taking the average of the response provided by the individual directly before and after the missing data entry.

Assumptions testing. Before running the analysis, study variables were examined to determine if mediation analysis was appropriate. The assumptions testing requirements for mediation using bias corrected bootstrap analysis specified that only one continuous dependent

variable be used for each regression model. All study variables whether independent, mediating, or dependent were measured on a Likert-type scale at the ordinal/continuous level, which is required for multiple regression. The nonparametric bootstrap analysis allows for estimation of the sampling distribution of a statistic empirically without making assumptions about the sampling population, and without deriving the sampling distribution explicitly. Therefore, bias-corrected bootstrap analysis does not require study variables to be normally distributed, especially with smaller sample sizes (Fox, 2002).

Linearity. After the data were cleaned and missing data were computed, the data were screened for linearity. The relationship between *X* and *Y* should be linear in regression analysis to minimize error (Hayes, 2013). Although no guidelines propose a way to assess overall mediation model linearity, the mediation can be broken down into simple and multiple regressions in which each need to fulfill the assumption of linearity (Kane & Ashbaugh, 2017). From the bivariate analyses, it was found that gender role conflict had a linear relationship to self-compassion, self-efficacy (RE subscale), diabetes self-management, diabetes distress, and HbA_{1c}. Self-compassion was found to have a linear relationship to diabetes self-management, diabetes distress, and HbA_{1c}. Glucose control (HbA_{1c}) did not have a linear relationship to self-efficacy. Self-efficacy did not have a linear relationship to any of the outcome variables.

Homoscedasticity. Variations in estimation error, or heteroscedasticity, may affect the standard error of the regression coefficients in mediation analysis (Hayes, 2013). Scatterplots were utilized to examine equal variation of estimation error across all predicted *Y* values. Data showed consistency in vertical range across the *X* axis for all study variables and met the assumptions of homogeneity of variance.

Normality of estimation error. Estimation error should be normally distributed (Hayes, 2013). Normal Q-Q plots were created to examine this assumption using standardized and observed regression residuals. Most data fit adequately with the diagonal line, indicating normality. The results of the analysis should not be affected by minor violations to this assumption unless sample size is very small. Regressions, 'Predicted DSM=a*GRC + constant', 'Predicted SC=a*GRC + constant', and 'Predicted DSM=a*GRC + b*SC + constant', were approximately normally distributed based on the normal Q-Q plots (see Appendix L for Normal Q-Q Plots).

Independence of observations. The error for one case, or data point, should be independent from the error of all other cases (Hayes, 2013). Independence of observations for the regressions were assessed by checking the Durbin-Watson statistic. Values that were approximately close to 2.0 indicated independence of errors for the regressions performed (Hayes, 2013). All regressions passed the assumption test for independence of observations (see Appendix M for Durbin-Watson statistics).

Description of the sample. Descriptive statistics and frequencies were calculated to describe the study sample. Frequencies and percentiles were generated for race and/or ethnicity, highest degree completed, employment status, relationship status, sexual orientation, and comorbid chronic health conditions. Means, standard deviations, and ranges were calculated for age, age of diabetes diagnosis, and HbA_{1c} result. While initially continuous in nature, HbA_{1c} values were also converted into three categorical variables related to the respondent's degree of glycemia control (e.g., ≤ 6.9%, = 7.0%-7.9%, and ≥ 8.0%; ≤ 59 mmol/mol, = 53-63 mmol/mol, and ≥ 64 mmol/mol).

Bivariate analyses. Pearson's correlation coefficients were utilized to assess linear relationships between study variables. It was predicted that increases in GRC would correlate with self-efficacy and self-compassion; and self-efficacy and self-compassion correlate with diabetes self-management, diabetes distress, and glucose control. Bivariate correlation analyses were used to estimate the amount of variance between the independent variable and the mediating variables (i.e., self-compassion and self-efficacy) and outcome variables (i.e., diabetes distress, diabetes self-management, and glucose control). These analyses revealed whether a statistically significant relationship existed between GRC and the mediating variables and outcome variables (Field, 2018; Hayes, 2018). Pearson correlation coefficients were utilized to determine the existence of relationships between variables, as well as the nature (strong or weak) of the relationship. Bivariate analyses provided preliminary data for appropriateness of the mediation analyses. The significance level for all analyses were fixed at $\alpha = .05$.

Mediation analyses. Figure 2 illustrates the conceptual model this study followed to guide regression analyses. Mediation analyses theoretically followed the causal steps approach (Baron & Kenny, 1986). In all the mediation models, the indirect effect was tested using a bootstrap estimation approach with 10,000 resamples. Confidence intervals excluding zero were considered statistically significant at the $p < .05$ level (Efron & Tibshirani, 1986; Fox, 2002; Hayes, 2013). The causal steps approach to mediation analysis required four conditions be met for a variable to be considered a mediator (Baron & Kenny, 1986). First, the independent variable must predict the dependent variable (path *c* or Total Effect). The independent variable must then predict the mediating variable (path *a*), and the mediating variable must predict the dependent variable (path *b*). Finally, the independent variable must either no longer predict the dependent variable or it must reduce its predictive power for the dependent variable when the

predictor path is controlled for by the mediator (path *c´* or direct path). If the mediator completely accounts for the association between the dependent and independent variables (path *c*), this is known as complete mediation. If it does not completely account for the association, it is partial mediation (Mackinnon & Fairchild, 2009; Mackinnon, Fairchild, & Fritz, 2007).

Bias-corrected bootstrapping estimation values were generated from a hypothesized fitted model and assumed that the sampling distribution was close to population parameters. The simulation then replicated data which it treated as novel cases to form a sampling distribution (Fox, 2002; Hesterberg, 2011). For tests of indirect effect, bias-corrected bootstrapping estimation is a preferred method for smaller sample sizes (Hayes, 2013). The PROCESS macro for SPSS was downloaded from http://processmacro.org/download.html and installed directly to SPSS. PROCESS is a conditional process modeling program that utilizes an ordinary least squares-based path analytical framework to test for both direct and indirect effects (Hayes, 2013). To examine each regression pathway, four regression analyses were performed for each potential mediation model. All relative indirect effects were subjected to follow-up bootstrap analyses with 10,000 iterations and a 95% confidence interval estimate (Hayes & Matthes, 2009; Preacher & Hayes, 2008).

The first regression model used GRC as the independent variable with a dependent variable (e.g. diabetes self-management), resulting in the equation DSM = a*GRC + constant, where (*c*) is the Total Effect of [X] predicting [Y]. A second regression model used GRC as the independent variable with a dependent variable, self-efficacy, resulting in the equation SE = b*GRC + constant, where (*a*) is the regression coefficient of self-efficacy. A third regression model used self-efficacy as an independent variable with a dependent variable (e.g., diabetes self-management), resulting in the equation DSM = b*SE + constant, where *(b*) is the regression

coefficient of [M] predicting [Y]. The final model entered both [X] and [M] simultaneously to predict [Y] (e.g., DSM = a*GRC + b*SE + constant), resulting in the model's Direct Effect (*c´*). This procedure was replicated for each of the dependent variables (i.e. diabetes self-management; diabetes distress; and glucose control). The same process was repeated for self-compassion as a potential mediating variable.

Additional mediational analyses were conducted with each of the four GRCS subscales (SPC, RE, RAABM, and CBWLFR) as independent variables. All models were tested for potentially significant indirect effects. As described by Hayes (2013), a significant indirect effect of mediation may be found even if [X] does not predict [Y]. Therefore, all GRCS subscales were entered as independent variables for each outcome variable models.

Potential effects of confounding variables were examined. Each mediation model was repeated, controlling for age, age of diagnosis, diabetes type, race/ethnicity, sexual orientation, highest degree earned, relationship status, and employment status. The PROCESS command required that all control variables be measured with two levels as it cannot analyze potential categorical confounders with more than two levels (Hayes, 2013). Sociodemographic variables were collapsed into dichotomous categories, (e.g., type 1 and type 2; white and other race/ethnicities; heterosexual and other sexual orientations; married and other relationship status; employed full-time and other employment, and ≥ 2-year degree and < 2-year degree).

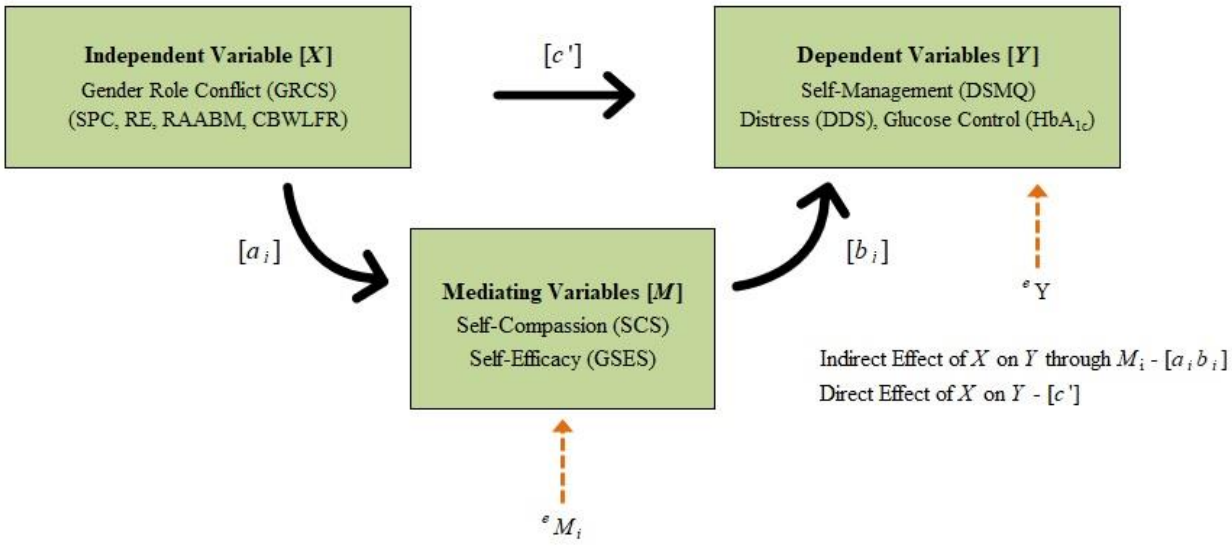

Figure 2. Conceptual and statistical diagram of a simple mediation model to test the indirect effect with directional relationships between study variables.

CHAPTER 4

RESULTS

Description of the Sample

Prior to data analysis, 164 respondent submissions were downloaded from Qualtrics and examined using SPSS Version 24 for accuracy, plausibility of values, and missing data (SPSS; IBM Corp., 2016; Preacher & Hayes, 2004). Utilizing SPSS Descriptives, values for minimum, maximum, means, and standard deviations of all variables were examined for plausibility. No cases were deleted for questionable plausibility. Utilizing SPSS Frequencies, 4.8% (n = 7) of participants provided study consent but were directed to the study termination page and not eligible to participate. Two respondents (1.3%) identified as "female", two respondents (1.3%) were < 18 years of age, and one respondent (0.6%) failed to affirm a current diagnosis of diabetes for > six months. As such, these cases were deleted. An additional 7% (n = 11) of participants completed only partial demographic information and no study measures. Their cases were deleted due to missing data. While 164 participants accessed the Qualtrics survey and provided consent, a total of 146 responses (94.8% of the 164 original submissions) remained eligible for continued analysis following the 18 case deletions.

The mean age of the sample was 54.69 years [standard deviation (SD) = 14.158], ranging from 19 to 84 years (Table 2). Most participants were White (65.8%, n = 96). Other participants identified as Black/African American (14.4%, n = 21), Hispanic/Latino (10.3%, n = 15), Asian or Pacific Islander (6.8%, n = 10), American Indian/Native American (1.4%, n = 2), Biracial (0.7%, n = 1), and Other (0.7%, n = 1). For relationship status, most respondents were married

(59.3%), single (25.5%), or divorced (7.6%). Overall, 41.1% (*n* = 60) of participants were employed full-time and 29.5% (*n* = 43) were retired. A valid percent of 83.3 (*n* = 120) of responders identified as heterosexual, 11.8% (*n* = 17) identified as gay, 3.4% (*n* = 5) identified as bisexual, and 1.4% (*n* = 2) as other. In terms of education level, 37.7% of participants had at least a bachelor's degree, 18.1% had an associate degree, 28.5% had some college but did not finish, 13.2% completed high school and 2.1% had some high school. Table 1 shows the frequency and percentage of relevant participant sociodemographic characteristics.

Table 1

Characteristics of the Sample, N = 146

Sociodemographic Variables			
Mean age		54.69 (SD = 14.2)	
Number of years with diabetes		12.40 (SD = 11.1)	
		Frequency	Percent
Ethnicity			
	Hispanic or Latino	15	10.3
	American Indian or Native American	2	1.4
	Black or African American	21	14.4
	Asian or Pacific Islander	10	6.8
	Biracial	1	0.7
	White	96	65.8
	Other	1	0.7
Education			
	Some high school, no diploma	3	2.1
	High school graduate, diploma or (GED)	19	13.0
	Some college credit, no degree	41	28.1
	Associate degree	26	17.8
	Bachelor's degree	36	24.7
	Some graduate credit, no degree	7	4.8
	Master's or professional degree	10	6.8
	Doctorate degree	2	1.4
Employment Status			
	Employed or self-employed	69	47.3
	Unemployed or looking for work	7	4.8
	Student	3	2.1
	Unable to work	2	1.4
	Retired	43	29.5
	SSI/SSD/Disability	2	1.4

Relationship Status			
	Single, never married	37	25.3
	Married or domestic partnership	86	58.9
	Living with partner	6	4.1
	Widowed	4	2.7
	Divorced	11	7.5
	Separated	1	0.7
Sexual Orientation			
	Heterosexual	120	82.2
	Gay	4	2.7
	Bisexual	5	3.4
	Prefer not to say	2	1.4
Age of Diagnosis			
	After 40	92	63.0
	Between 30 and 39	19	13.0
	Between 20 and 29	16	11.0
	Before 20	19	13.0

All participants affirmed diagnosis of either type 1 or type 2 diabetes for greater than six months. A valid percent of 85.6 (*n* = 125) respondents reported a diagnosis of type 2 diabetes and 14.4% (*n* = 21) reported a current diagnosis of type 1 diabetes. Type 2 diabetes remains the most common type of diabetes diagnosed in American adults who have the disease. A recent population-based study reported that among Americans who are diagnosed with diabetes, approximately 91.2% have type 2 diabetes and 5.6% have type 1 diabetes (Xu, G., et al., 2018). Hypertension was the most common reported comorbid chronic illness among participants (50.7%, *n* = 74). Table 2 shows the frequencies and valid percentages of comorbid chronic medical conditions that were self-reported by participants.

Table 2

Participant Self-Report of Chronic Medical Conditions, N = 146

Chronic Condition	**Frequency**	**Percent (%)**
Type 1 diabetes	21	14.4
Type 2 diabetes	125	85.6

Hyperlipidemia	63	43.2
Hypertension	74	50.7
Heart disease	13	8.9
Lung disease	3	2.1
Other chronic illness	21	14.4

The mean age of diabetes diagnosis for individuals with type 1 diabetes was 13.84 years [standard deviation (SD) = 7.018], ranging from diagnosis at 1 to 29 years. For those with type 2 diabetes, the mean age of diagnosis was 46.62 years [standard deviation (SD) = 12.527] ranging from age 20 to 71 years. Table 3 shows descriptive statistics for participant age, age of diabetes diagnosis, and glucose control (as measured by self-reported HbA_{1c}). Frequencies and percentages were reported for HbA_{1c} and related to level of glycemic control categories (e.g., good, fair, & poor). While HbA_{1c} goals vary by individual depending factors such as current health status and existence of co-occurring conditions, an $HbA_{1c} \leq 7.0\%$ (53 mmol/mol) is recommended for healthy individual with diabetes, or ≤ 8.0% (64 mmol/mol) when more complex health issues and complications are present. In this sample, 73% (*n* = 106) reported an HbA_{1c} > ADA recommendation, 7.0% (53 mmol/mol), and approximately 37% (*n* = 54) reported a percentage ≥ 8.0% (64 mmol/mol), considered as poor control. It is estimated that nationally, 33%-49% of individuals with diabetes fall within the category of poor control (American Diabetes Association, 2019b). Similar cross-sectional analyses reported mean HbA_{1c} results > 8.0% (64 mmol/mol) with (Aljuaid, Almutairi, Assiri, Almalki, & Alswat, 2018; Baird, Webb, Martin, & Sirois, 2019).

Descriptive statistics of the independent variable (GRC) and its subscales (SPC, RE, RABBM, and CBWLFR), mediating variables (GSES and SCS), and dependent variables (DDS, DSM, and HbA_{1c}) are provided (Table 4). For GRC and its subscales, a higher score indicated

greater gender role conflict. The Gender Role Conflict Research Web Page (www.jimoneil.uconn.edu) compiled normative data on White adult men (N= 8), adult and college age African American men (N= 5), Asian men (N= 3), Hispanic/Latino men (N= 2), gay men (N= 4), and older retired men (N= 2). Independent one-sample t-tests revealed that scores on subscales RE (M = 3.58, SD = 1.07), and CBWLFR (M = 3.99, SD = 1.26) were statistically significantly higher when compared to normative data of men from other GRC research, [RE, $t(145) = 3.95$, $p < .001$), CBWLFR, $t(145) = 4.07$, $p < .001$)], (Hornigold, 2016b).

For DDS, a higher score indicated more diabetes distress. A valid percent of 47.9 (n = 70) of respondents expressed a clinically significant level of diabetes distress, (M item score > 3.0; Fisher et al., 2012), nearly twice the estimated diabetes population prevalence rate of 18% to 22% (Fisher et al., 2008). Compared to the scale validation study which utilized four diverse sampling sites (M = 38.5; Polonsky et al., 2005), diabetes distress scores (M = 49.6, SD = 20.2) were statistically significantly higher; $t(145) = 6.65$, $p < .001$. Men with clinically significant levels of high diabetes distress, ($M > 3.0$), were also associated with significantly higher scores of GRC; $t(144) = -6.40$, $p < .001$, lower self-compassion; $t(144) = 8.62$, $p < .001$), poorer self-care; $t(144) = 11.08$, $p < .001$), and higher HbA_{1c}; $t(144) = -6.18$, < .001). For DSMQ, a higher score revealed more positive self-care behaviors, a lower score indicated poorer self-care. For SC, a higher score indicated greater self-compassion towards oneself. Self-Compassion Scale scores, (M = 2.65, SD = 0.84), were statistically significantly lower; $t(145) = -7.34$, $p < .001$, compared to a community sample of 352 men (M = 3.16, SD = 0.78; Yarnell et al., 2015).

Table 3

Univariate Statistics for Study Scales and Subscales

		Total (N = 146)		**T1D** (n = 21)		**T2D** (n = 125)	
Scale	α	*M*	SD	*M*	SD	*M*	SD
Gender Role Conflict Scale (GRCS)							
Total Score	.95	132.46	31.25	119.05	27.82	134.68	31.53
SPC	.92	3.42	1.00	2.95	0.83	3.50	1.01
RE	.92	3.58	1.06	3.28	0.89	3.63	1.09
RAABM	.90	3.33	1.20	3.52	1.08	3.29	1.22
CBWLFR	.91	3.99	1.26	3.12	1.03	4.14	1.24
Self-Compassion Scale (SCS)							
	.77	2.65	0.84	2.75	0.83	2.63	0.84
General Self-Efficacy Scale (GSES)							
	.92	21.26	4.86	20.67	1.03	21.36	1.24
Diabetes Self-Management Questionnaire (DSMQ)							
Sum scale (SS)	.79	3.25	1.54	2.86	8.62	3.31	7.16
Glucose management	.73	2.84	2.31	2.10	2.50	2.97	2.26
Dietary control	.59	4.70	2.09	4.76	2.52	4.69	2.02
Physical activity	.66	3.85	2.50	3.07	1.98	3.98	2.56
Health-care use	.63	1.87	2.19	1.69	2.01	1.90	2.23
Diabetes Distress Scale (DDS)							
Total Score	.94	49.61	20.17	51.51	23.19	49.57	19.78
Little or no distress, < 2.0				33.3%		8.0%	
Moderate distress, 2.0-2.9				14.3%		3.2%	
High distress, ≥ 3.0				47.6%		88.8%	
Depression (BDI-II)							
Total score	.87	12.18	8.99	14.33	10.15	11.82	8.77
Minimal (0-13)				66.7%		60.8%	
Mild (14-19)				4.8%		20.8%	
Moderate (20-28)				9.5%		13.6%	
Severe (29-63)				19.0%		4.8%	
HbA_{1c}							
M % (mmol/mol)		7.63% (60)		8.04% (64)		7.55% (59)	
≤ 6.9% (≤ 52 mmol/mol)				19.0%		28.8%	
7.0%-7.9% (53-63 mmol/mol)				38.1%		35.2%	
≥ 8.0% (≥ 64 mmol/mol)				42.9%		36.0%	

Bivariate Analyses

A series of Pearson's product-moment correlation analyses were conducted to assess the inter-correlations among the independent variables (GRC, SPC, RE, RABBM, and CBWLFR), mediating variables (GSES and SCS), and dependent variables (DDS, DSM, and HbA_{1c}).

Hypothesis 1a: Gender role conflict will be negatively correlated with diabetes self-management, and positively correlated to diabetes distress and glucose control. A correlation was found between gender role conflict and diabetes self-management (r = -.40, p < .001), supporting Hypothesis 1a that gender role conflict has a negative relationship with diabetes self-management. There was a correlation between gender role conflict and diabetes distress (r = .54, p < .001). The hypothesis that gender role conflict has a positive relationship with diabetes distress was supported. Glycosylated hemoglobin (HbA_{1c}) was also significantly associated with GRC (r = .29, p < .001)

Gender role conflict subscales. The four subscales of the GRCS, SPC (r = -.29, p = .006), RE (r = -0.40, p < .001), RABBM (r = -.26, p = .001), and CBWLFR (r = -.27, p = .001), showed negative correlations with diabetes self-management. The following subscales of the GRCS showed positive correlations with diabetes distress: SPC (r = 0.32, p < .001), RE (r = .48, p < .001), RAABM (r = 0.44, p < .001) and CBWLFR (r = .33, p < .001). HbA_{1c} was also positively correlated with GRCS subscales; SPC (r = .24, p = .004), RE (r = .20, p = .015), and RAABM (r = .24, p = .004).

Hypothesis 2a: Gender role conflict will be negatively correlated with self-compassion. There was a negative correlation between gender role conflict total score and self-compassion, (r = -0.54, p < .001), supporting Hypothesis 2a that gender role conflict had a negative relationship with self-compassion.

Gender role conflict subscales. All subscales of GRCS showed negative associations with self-compassion. Higher scores on the subscales SPC (r = -0.37, p < .001), RE (r = -0.48 p < .001), RABBM (r = -0.46, p < .001), and CBWLFR (r = -0.40, p < .001) related to lower levels of self-compassion.

Hypothesis 2b: Self-compassion will be positively correlated with diabetes self-management and negatively correlated to diabetes distress and glucose control. Self-compassion positively correlated with diabetes self-management (r =, p < .001) and negatively correlated with diabetes distress (r = -0.62, p < .001), and HbA_{1c} (r = -.39, p < .001). Hypothesis 2b stating that self-compassion would be positively correlated with diabetes distress and negatively correlated with diabetes self-management and glucose control was supported.

Hypothesis 1b: Gender role conflict will be negatively correlated with self-efficacy. Gender role conflict showed no linear relationship with self-efficacy (p = 0.45).

Gender role conflict subscales. A low but significant correlation was found between the gender role conflict subscale of restrictive emotionality (r = 0.21, p = .011) and self-efficacy. Hypothesis 1b was supported in that the GRCS subscale RE related negatively to self-efficacy and is appropriate for mediation analysis.

Hypothesis 1c: Self-efficacy will be positively correlated with diabetes self-management and negatively correlated with diabetes distress and glucose control. Self-efficacy did not evidence a linear relationship with diabetes self-management, diabetes distress, or glucose control. Mediation analysis was not appropriate for GRCS as predictor of the study's outcome variables using self-efficacy as the mediator. Hypothesis 1c that self-efficacy was correlated with diabetes-related dependent variables was not supported. Results of the Pearson's product-moment correlation analyses are shown in Table 5.

Table 4

Means, Standard Deviations, Cronbach Alpha Coefficients, and Scale Intercorrelations for all Study Variables

Scale	*M*	*SD*	α	1	2	3	4	5	6	7	8	9	10
1. GRC	3.57	0.85	.95	-									
2. SPC	3.42	1.00	.92	.768**	-								
3. RE	3.58	1.15	.92	.783**	.421**	-							
4. RABBM	3.33	1.43	.90	.677**	.348**	.590**	-						
5. CBWLFR	3.99	1.26	.91	.689**	.610**	.444**	.249**	-					
6. SCS	2.65	0.84	.77	-.543**	-.373**	-.482**	-.461**	-.396**	-				
7. GSES	21.26	4.86	.92	.063	-.106	.210*	.087	.040	-.024	-			
8. DSMQ	3.25	1.54	.79	-.399**	-.228**	-.401**	-.262**	-.274**	.621**	-.139	-		
9. DDS	2.92	1.89	.94	.537**	.320**	.475**	.437**	.328**	-.620**	.081	-.696**	-	
10. H_bA1_c	7.67	1.19	--	.286**	.238**	.202**	.236**	.106	-.389**	.070	-.496**	.481**	
11. BDI-II	12.18	9.00	.87	-.192*	-.123	-.327**	-.158	-.148	.290**	-.525**	.248**	-.158	-.068

Note. N = 146. GRC = Gender Role Conflict Scale Total, scores range from 1 to 6 with higher scores indicating more gender role conflict; RE = Restrictive Emotionality, scores range from 1 to 6 with higher scores indicating more restrictive emotionality; RABBM = Restrictive Affective Behavior Between Men, scores range from 1 to 6 with higher scores indicating more restrictive affective behavior; CBWLFR = Conflict Between Work and Leisure - Family Relations, scores range from 1 to 6 with higher scores indicating more work-life and family relation conflicts; SCS = Self-Compassion Scale, scores range from 1 to 5, with higher scores indicating greater self-compassion; GSES = General Self-Efficacy Scale, scores range from 10 to 40, with higher scores indicating more self-efficacy; DSMQ = Diabetes Self-Management Questionnaire, scores range from 0 to 48, with higher scores indicating better diabetes self-care; DDS = Diabetes Distress Scale, scores range from 1 to 5, with higher scores indicating greater distress; H_bA_{1c} = Hemoglobin A_{1c}, scores ranged from 5.0% to 11.0% (31 to 97 mmol/mol), higher values indicate poorer glucose control.
*$p < .05$. **$p < .01$.

Mediation Analyses

The study posited that self-compassion and self-efficacy play a mediating role in the relationship between gender role conflict and diabetes self-care and diabetes distress. Mediation analyses tested these hypotheses following the causal steps approach (Baron & Kenny, 1986), and was tested using bootstrapping resamples and bias corrected 95% confidence intervals (Hayes, 2013). The causal steps approach was utilized to determine whether assumptions for mediation had been sufficiently met. Variables that had a linear relationship and satisfied all assumptions for mediation were entered using the PROCESS command for SPSS (Hayes, 2013). Newer literature on Bayesian resampling approaches to mediation suggest a significant indirect effect may be detected, even if [X] fails to directly predict [Y]; therefore, all variables were entered for each possible model to test for a significant indirect effect (Hayes, 2013). The three primary mediation models tested GRC as independent variable using self-compassion as mediator between (1) diabetes self-management, (2) diabetes distress, and (3) glucose control.

Bias-corrected bootstrapping methods were utilized to conduct null hypothesis testing to estimate the size of the mediating indirect effects (*ab*) and whether they were statistically significant from zero using a 95% confidence interval. Bootstrap mediation required that assumptions be satisfied for ordinary least squares regression. Variable residuals were tested for normal distribution and for any significant influential data points (Hayes, 2013). Assumptions regarding homogeneity of variance and collinearity do not apply for bootstrapping analysis (Hayes, 2013). Because bootstrap estimation is a resampling method, it does not assume *ab* is normally distributed and therefore preferred, as the shape of the indirect effect's distribution in the population cannot be hypothesized (Kane & Ashbaugh, 2017). Variables in the current study had an approximate normal symmetrical distribution as evidenced by standardized regression

residual scatterplots (see Appendix L for Scatterplots) and Q-Q normal plots (see Appendix M for Q-Q Plots). Cook's distance was calculated to identify any significant data points (Cook, 1977). No significant influential data points were identified.

Although mediation has become a popular method in social science research, there have been no guidelines set for a preferred effect-size estimate for the indirect effect in Bayesian statistics (Miočević, O'Rourke, MacKinnon, & Brown, 2017), and many journals have required researchers to report effect-sizes in their article submissions. Wen and Fan (2015) suggest using the proportion of the total effect mediated. The proportion effect size may detect a relatively large effect size if given a small indirect effect when compared to the total or direct effects. The formula for calculating the proportion effect size is: $ab/(ab + c')$ (Miočević et al., 2017). Newer theory suggests that an adjusted version of the estimator, v (the completely standardized indirect effect, squared), is effective at recovering the true value it estimates with stable bias estimations (Lachowicz, Preacher, & Kelley, 2018).

Mediating Effect of Self-Compassion and Self-Efficacy in Simple Mediator Models

Given the high correlation between the mediating variables, they were tested one at a time. Overlapping constructs in multiple mediator models may compromise the significance of indirect effects due to collinearity when tested simultaneously (Preacher & Hayes, 2008). The unstandardized coefficient (B) and standard error (SE) for each regression equation are reported to indicate the predicted change in the dependent variable given a one-unit change in the independent variable, while controlling for the mediator in the equation.

Hypothesis 1d: Gender role conflict is a significant predictor of diabetes self-management, diabetes distress, and glucose control (path *c*). Results from three mediation analyses indicated that higher reported levels of gender role conflict predicted lower scores on

measures of diabetes self-management (B = -0.73 p = .001) and glucose control (B = 0.75, p < .001), and higher diabetes distress (B = 0.40, p = .001). All unstandardized coefficients for total effects of [*X*] on [*Y*], (path *c*), are found in Appendix P.

Gender role conflict subscales. Additional independent mediation analyses for correlated GRCS subscales as predictors of diabetes self-management established that the subscales of SPC (B = -0.35, p = .006), RE (B = -0.58, p < .001), RABBM (B = -0.34, p = .001), and CBWLFR (B = -0.34, p < .001) significantly statistically predicted diabetes self-management behaviors. Coefficient estimates for GRCS subscale factors revealed the following GRCS subscales statistically predicted diabetes distress: SPC (B = 0.38, p <.001), RE (B = .53, p < .001), RAABM (B = .43, p <.001) and CBWLFR (B = .31, p < .001). Finally, three GRCS subscales significantly predicted glucose control: SPC (B = .28, p = .004), RE (b = .22, p = .015), and RAABM (B = .23, p = .004).

Hypothesis 2c: Gender role conflict is a significant predictor of self-compassion (path *a*). The mediation analysis revealed a significant inverse association between gender role conflict and self-compassion measure, (B = -.54, p < .001). Hypothesis 2c stating that GRC is a significant predictor of self-compassion was supported.

Gender role conflict subscales. Additional independent mediation analyses established a negative association between higher scores on GRCS subscales and lower scores on the measure of self-compassion, (SPC; B = -.31, p <.001), RE (B = -.38, p < .001), RAABM (B = -.32, p < .001), and CBWLFR (B = -.26, p < .001).

Hypothesis 2d: Self-compassion mediates the relationship between gender role conflict and diabetes self-management, diabetes distress, and glucose control (path *c'*). Results from the simple mediation analyses indicated that self-compassion had a unique effect on

diabetes self-management (B = 1.05, *t* (143) = 7.38, *p* < .001). A 95% bias-corrected confidence interval based on 10,000 bootstrap samples confirmed a significant indirect effect of gender role conflict [*X*] on diabetes self-care [*Y*] through self-compassion [*M*], B = -0.58, Boot*SE* = 0.10, 95% CI [-0.769 to -0.374]. In other words, greater endorsement of gender role conflict was related to lower self-compassion, which was associated with less effectively diabetes management. In addition, results indicated that the direct effect of gender role conflict on diabetes self-management became non-significant (B = −0.16, *t* (143) = −1.13, *p* = 0.26) when controlling for self-compassion. This indicated that self-compassion mediated the relationship between GRC and diabetes self-management.

Regression coefficient estimates and bias-corrected 95% confidence intervals for the indirect effect of self-compassion on the relationship between GRC and diabetes distress are presented in Figure 3. Results indicated that self-compassion also had a unique effect on diabetes distress, (B = -0.66, *t* (143) = -6.26, *p* < 0.001). Mediation analysis results confirmed that self-compassion was a significant mediator in the relationship from gender role conflict to diabetes distress (indirect effect = 0.35, Boot*SE* = 0.06, 95 % CI [0.24 to 0.49). This result suggests that gender role conflict was negatively related to self-compassion, which was subsequently associated with lower diabetes distress. In addition, the direct effect of GRC on diabetes distress remained significant (B = .40, t (143) = 3.82, *p* < .001) when controlling for self-compassion and sociodemographic variables. Such result showed that self-compassion did not fully mediate the relationship between GRC and diabetes distress.

Bias-corrected 95% confidence intervals for the indirect effect of self-compassion on the relationship between GRC and glucose control (HbA_{1c}) are presented in Figure 3. Results indicated that self-compassion (B = -0.47, t (143) = -3.63, *p* < .001) had a significant effect on

glucose control. Results of the mediation analyses confirmed the mediating role of self-compassion on the relationship between GRC and HbA_{1c}, (indirect effect = 0.25; Boot*SE* = 0.08; 95% CI, 0.08 to 0.42). Thus, GRC was negatively related to self-compassion, which was subsequently negatively related to glucose control. Results also indicated that the direct effect of GRC on glucose control became non-significant (B = 0.15, t (143) = 1.15, p = 0.25) when controlling for self-compassion and sociodemographic variables, suggesting that self-compassion mediated the relationship between GRC and glucose control among men with diabetes. Table 6 and Figure 3 show the indirect effects of self-compassion on the relationships between GRC and diabetes self-management, diabetes distress, and glucose control.

Gender role conflict subscales. Results of regression and mediation analyses showed that self-compassion mediated the relationships between each of the GRCS subscales and the three dependent variables (see Appendix O for tables of indirect effects).

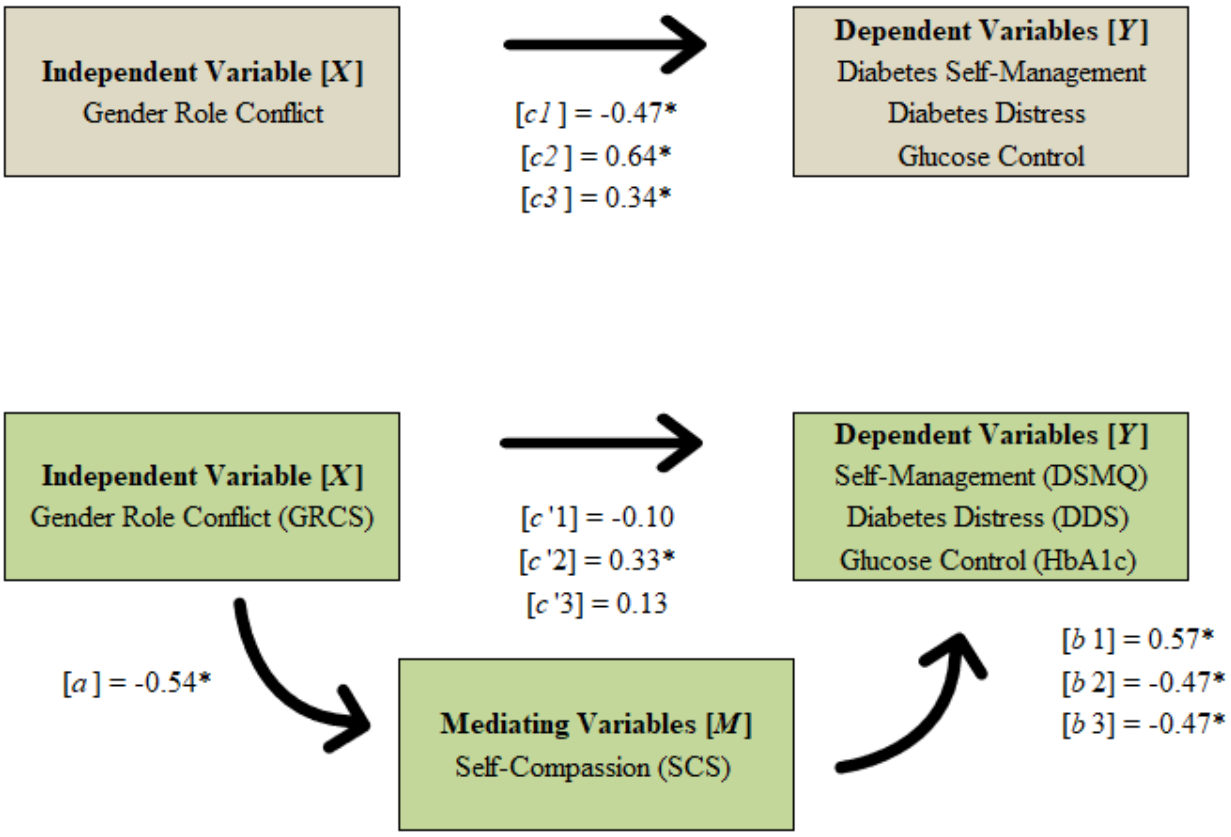

Figure 3. Indirect effects of self-compassion on the relationships between gender role conflict, diabetes self-management, diabetes distress, and glucose control as mediated by self-compassion. Notes: $N = 146$. *$p < .01$; *a* is effect of gender role conflict on self-compassion, *b* is effect of self-compassion on diabetes self-management, diabetes distress, and glucose control; *c'* is direct effect of gender role conflict [X] on dependent variables [Y]; *c* is total effect of gender role conflict [X] on dependent variables [Y]; All presented effects are standardized.

Hypothesis 1e: Gender role conflict is a significant predictor of self-efficacy (path *a*). Mediation analyses confirmed that whereas GRC had a significant effect on self-compassion (B = -0.54; *t* (143) = -7.75; *p* = <.001), it was not a significant predictor of self-efficacy (B = .36; *t* (143) = 0.76; 95% CI, -0.58 to 1.31). Results indicated that the GRCS total score was not significantly related to scores on the General Self-Efficacy Scale, therefore no analyses were performed using the GRCS total score and GSES as a mediating variable.

Gender role conflict subscales. Regression analysis indicated that the GRC subscale, restricted emotionality (RE), significantly predicted general self-efficacy, (B = 0.95; *t* (143) = 2.58; 95% CI, 0.22 to 1.68). These results indicated that higher endorsement of emotional restriction was associated with respondent's sense of general self-efficacy and perceived mastery of handling both the acute and chronic aspects of diabetes health.

Hypothesis 1f: Self-efficacy mediates the relationship between GRC and diabetes self-management, diabetes distress, and glucose control (path *c*). Self-efficacy did not evidence a linear relationship with diabetes self-management, diabetes distress, or glucose control. As a significant total indirect effect is not a prerequisite for investigating specific indirect effects (Preacher & Hayes, 2008), a 95% bias-corrected confidence interval based on 10,000 bootstrap samples indicated that gender role conflict had no mediating indirect effect on diabetes distress (B = 0.004; 95% CI, -0.02 to 0.04), diabetes self-management (B = -0.06; 95% CI, -0.33 to 0.13), or glucose control (B = 0.005; CI, -0.23, 0.03). Therefore, results indicated that self-efficacy had no mediating effect on the relationship between GRC and the dependent variables.

Gender role conflict subscales. A multiple regression analysis was run to predict diabetes self-management from the gender role conflict subscale, restricted emotionality (RE), as

the independent variable and self-efficacy as the mediating variable. Bias-corrected 95% confidence intervals for the indirect effect of self-efficacy on the relationship between GRC and diabetes self-management indicated that restricted emotionality was a significant predictor (B = 0.53; *t* = 6.48; 95% CI, 0.37 to 0.69); however, when self-efficacy was added to the model, no indirect effect for self-efficacy mediating the relationship between GRC and diabetes self-management was found (B = -0.005; CI, -0.05, 0.03). Results of the mediation analysis found insufficient evidence that self-efficacy mediated the relationships between GRC and outcome variables (diabetes distress, diabetes self-care behavior, and glucose control) in this sample of men living with diabetes.

CHAPTER 5

DISCUSSION

Men are often encouraged to adopt ideologies of masculinity through early socialization processes that have previously been associated with health disparities and health-risk behaviors (McDermott, Schwartz, & Rislin, 2016; O'Neil, 2008, 2015; O'Neil & Denke, 2015) such as poor cardiovascular health (Eisler, 1995), negative attitudes toward mental and physical health services (Addis & Mahalik, 2003), substance abuse problems (de Visser & Smith, 2007; Peralta, 2007), and less utilization of preventative health-care services (Courtenay, 2011). Furthermore, research suggests that men have fewer social supports, higher risk-taking behaviors, poorer behavioral responses to stress, and less engagement in health-promoting behaviors (Courtenay, 2011). Despite identification of problems within this growing health epidemic, few counseling and psychological interventions have been designed specifically to reduce men's health risk behaviors (Courtenay, 2002, 2011).

The extant literature on GRC indicates that it significantly relates to psychological problems in several intrapersonal domains, with over 400 studies examining these relationships (O'Neil, 2015). Empirical support associates GRC with various processes in affective domains (e.g., anxiety, depression, low self-esteem), cognitive processes (e.g., stereotyping, attitudes towards women, and homophobia), and behavioral difficulties (e.g., hostility, sexually aggressive behavior toward women, and health-risk behaviors) (O'Neil, Wester, Heesacker, & Snowden, 2017). Research on GRC theory also suggests that positive factors of masculinity (e.g., self-efficacy, emotional stability, vulnerability, pro-social behavior, generativity, courage, autonomy,

endurance, and resilience) demonstrate a link to gender-socialized patterns of behavior and their relationships to health sex disparities (Bonhomme, 2007). However, only a handful of studies have examined their role in mediating health behavior outcomes (Hornigold, 2016a).

The present study conceptually followed a tested multiple mediator model in which general self-efficacy mediated the relationship between conformity to masculine norms (CMNI) and health behaviors (HBI-20). The researchers encouraged tests of other positive masculinity constructs (i.e. stoicism, self-compassion, and acceptance) and their association with the masculinity scales (e.g., CMNI & GRCS) and health outcomes (Levant & Wimer, 2014).

This study investigated whether self-efficacy and self-compassion, based on the Self-Regulation Resource Model (SRRM; Sirois, 2015), mediated the relationship between GRC and diabetes self-management, diabetes distress, and glucose control in a population of men diagnosed with either type 1 or type 2 diabetes. The study conceptualized self-efficacy as a quality that is linked to positive health behaviors through a balance of healthy positive and negative emotions (Sirois et al., 2015). Self-compassion was similarly thought to be linked to health behavior intentions according to SRRM. Although the link between traditional gender role ideology and self-compassion had not been previously established, current theory on self-efficacy suggested that self-compassionate individuals who engaged in positive health-related behaviors should have a greater sense of control and competence for continued engagement with those positive behaviors (Bandura, 1977; Sirois et al., 2015).

The primary study hypothesis, based on the Self-Regulation Resource Model linking self-compassion to health behavior intentions through resources of positive and negative affect and health self-efficacy (SRRM; Sirois, 2015), was that self-efficacy would mediate this relationship. The exploratory hypothesis for the study was that self-compassion potentially mediated this

relationship as well, with individuals exhibiting higher gender role conflict hypothesized to have lower levels of self-compassion and poorer diabetes-related health outcomes.

The main results supported the secondary hypothesis, but not the primary hypothesis. Self-efficacy was found to have neither a mediating effect in the relationship between GRC and diabetes-related outcome variables, nor was self-efficacy a significant predictor of the outcome measures. Self-compassion was found to be a mediator between GRC and diabetes self-management and glucose control, and partially mediated the relationship between GRC and diabetes distress. Additional analyses supported a mediation effect for individual subscales of the GRCS when self-compassion was entered as a mediator, and mediation still occurred after controlling for sociodemographic factors.

Interpretation

Taken together, these results lend to several interpretations and add to the developing conversation regarding psychological work with men and boys. Research suggests there is something unique about men's gender role conflict which predicts undesirable health-related behaviors compared to other masculinity scales (Levant, Wimer, Williams, Smalley, & Noronha, 2009; Levant & Wimer, 2014). Associations between independent variables, dependent variables, and mediators of GRC have found significant relationships in approximately 37 studies, and non-significant relationships in four studies.

Self-compassion and self-efficacy were selected for examination for their association with the theory of positive psychology-positive masculinity, and because they play a significant role in ability to predict health outcomes and positive health behaviors (e.g., Sirois et al., 2015; Sirois, 2015). Both constructs are important areas to research and develop for their potential clinical utility as unlike men's gender role conflict, they are skills which may be intervened upon

more easily. There is limited examination and support for the impact traditional masculine ideologies may have on these two specific constructs.

Gender role conflict and self-efficacy. It was hypothesized that higher levels of gender role conflict were likely to associate with lower levels of self-efficacy (Wester & Vogel, 2002), lower positive affect, and greater negative affect (Watkins & Blazina, 1996; Good & Wood, 1995; Sharpe & Heppner, 1991), which in turn might have associated with poorer health outcomes (Sirois et al., 2015; Terry & Leary, 2011).

While increased levels of gender role conflict significantly predicted poorer scores on outcome measures, it failed to significantly predict self-efficacy. When explored using mediation analyses, only the GRCS subscale of RE significantly predicted self-efficacy; however, when self-efficacy was added to the full model with RE as the predictor variable, it failed to mediate the relationship between GRC and diabetes-related outcomes. This finding is interesting, as the relationship between self-efficacy and GRC was inversely related to the study hypotheses. A possible interpretation may be construed that men with greater restriction of emotional affect could over-report confidence in ability while under-reporting symptom severity or difficulty in disease management.

Research has not established an association between gender role conflict and general self-efficacy. One study found moderate negative correlations between GRC and a measure of self-esteem (Schwartz et al., 2005). However, while measures of self-esteem and self-efficacy have demonstrated strong convergent validity, they do not measure the same underlying characteristics (Sherer et al., 1982). Self-esteem failed to significantly associate with GRC in previous mediational research (Liu & Iwamoto, 2006). Furthermore, self-efficacy did not significantly correlate to any of the diabetes outcome variables. This finding is inconsistent with

prior research which indicated a link between self-efficacy and measures of diabetes distress and a similar measure of treatment adherence. In one study, self-efficacy correlated with diabetes distress, medication adherence, and HbA_{1c} (Gonzalez et al., 2015). A direct effect of the relationship between self-efficacy and diabetes self-care was evidences in cross-sectional analyses supported by findings from Hurley (1988), Ludlow (1993), and Skelly, Marshall, Haughey, Davis, and Dunford (1995). Individuals with higher self-efficacy engage in more positive health-related behaviors directed toward achieving a specific desired outcome (Sousa et al., 2004). The addition of a measure for masculine gender role ideology to this model strengthens the interpretation that gender role conflicts may result in an inflation of perceived control and over-estimation of ability in the domain of self-care activities, while potentially denying, minimizing, or misinterpreting the impacts of disease symptomology and maintenance.

Self-efficacy is a necessary component to cope with and manage chronic illness. In order to cope effectively, individuals must possess the belief that they can manage their diabetes. In general, men have been found to have higher overall levels of self-efficacy, possibly due to masculine socialization in which problem-solving and courageousness is valued. Furthermore, some research suggested men report greater physical self-efficacy and task-specific self-efficacy than women (Jackson, Iezzi, Gunderson, Nagasaka, & Fritch, 2002). In the current study, participants may have overestimated overall global self-efficacy. Scale questions the GSES were not diabetes specific. Respondents were asked to consider items in relationship to the disease of diabetes, but the instrument may have been sensitive to confounding variables. A reexamination of the study using a diabetes-related self-efficacy measure may result in significant mediational relationships between GRC and the diabetes outcome measures.

Gender role conflict and self-compassion. When explored using mediational analyses, higher gender role conflict was a significant predictor of poorer diabetes self-management, increased HbA_{1c}, and increased diabetes distress. These findings converge with prior GRCS research which found relationships between endorsement of traditional masculine gender roles and health-risk behaviors using different outcome measures (McConville, 2004; McCreary & Courtenay, 2003).

Results of this study were relatively consistent with other similar studies. Gender role conflict has previously associated with self-compassion (Lennon et al., 2018). Correlations and sample were similar in this study by comparison. The same study found a positive correlation between gender role conflict and psychological distress, and results indicated that self-compassion negatively associated with psychological distress. The respective correlations in this study were stronger by comparison. This difference may have been related to the disease-specific distress measure administered in this study. The DASS-21 has three scales related to depression, anxiety, and overall distress. Differences in diagnoses, treatments, and location (U.S. versus Ireland) may have been reflected in these differences.

Another study found that self-compassion was associated with diabetes distress (Friis et al., 2015). The study explored the possibility that self-compassion may moderate the negative effects of diabetes distress on glycaemic control. Results indicated that self-compassion buffered patients from the negative effects of distress on HbA_{1c}. This 'buffering' effect is consistent with recent research in which social support (i.e., kindness from peers) reduced distress-related to the burden of diabetes self-management (Baek, 2012; Ferrari et al., 2017; Friis et al., 2015).

Several studies examined GRC and restrictive emotionality, suggesting that inhibition of emotion resulted in a greater risk for self-destructive behaviors, poorer diabetes-specific self-care

behaviors, and poorer glucose control (Naranjo, 2001; Ringdahl & Heckman, manuscript in preparation). Researchers contended that men who were less able to cope with psychological distress, physical pain, and depressive symptoms exhibited more self-destructive and impulsive behaviors, and were less likely to seek help or support from friends, family, or mental health professionals (Carpenter & Addis, 2000; Naranjo, 2001). Another relevant study found that men, to maintain traditional gender norms, generally preferred self-care remedies rather than professional psychological treatment. Men in the study were more likely to integrate shame and blame into their perception of a situation (Pattyn, Verhaeghe, & Bracke, 2015). A recent dissertation study found that shame partially mediated the relationship between gender role conflict and psychological distress (Lee, 2018), and self-compassion training has been suggested as an intervention for individuals who experience a high degree of shame and self-criticism. Research suggests shame may affect expression of psychological and physical symptoms, ability to reveal personal information, avoidance (e.g., dissociation and denial), and difficulties in help seeking (Gilbert & Procter, 2006). Given the reciprocal nature between shame and self-compassion, further exploration of these overlapping constructs is warranted in the study of health behavior.

Strengths of the Study

The current study demonstrated several notable strengths. The study successfully accessed a population of men with either type 1 or type 2 diabetes primarily through Facebook, diabetes listservs, blogs, diabetes support organizations, and through other online and social media outlets, a historically challenging method of participant recruitment (Sinkowitz-Cochran, 2013).

An a priori power analysis was conducted and projected a sample size needed for adequate effect size. After case deletion and data screening procedures, the study obtained a sample size considered large enough to sustain a mediation analysis of acceptable power (Fritz & Mackinnon, 2007; Schoemann, et al., 2017; Thoemmes et al., 2010). Improvements were shown in response and completion rates compared to the preliminary study. Specifically, improvements in study methodology and survey construction may have attributed to higher completion rates, in addition to increased circulation within the diabetes community and addition of type 2 participants. This study utilized online data collection methods that incorporated personalized recruitment and follow-up reminder emails through Qualtrics to respondents who had not entered the survey, and individualized links that aided an increase in survey respondent participation from a diverse population of individuals.

A significant strength of the study was successful recruitment of an ethnically, culturally, and educationally diverse sample of men. The sample mirrored the general population in terms of ethnic diversity. Of particular relevance, the study recruited a sample of men with diabetes diagnoses representative of the general population. Approximately 90.0%-95.0% of individuals diagnosed with diabetes have type 2 diabetes (Xu, et al., 2018). Approximately eighty-five percent of the sample in this study reported a diagnosis of type 2 diabetes.

Limitations of the Study

The present study contained several limitations. Previous critiques of GRC research emphasized a lack of developmental perspective and a continued need to examine how specific developmental tasks interact with men's physical and psychological problems and socialization processes (Heppner, 1995; Rochlen & Mahalik, 2004; Smiler, 2004). Due to the cross-sectional

research design of this study, the development and maintenance of GRC in the context of the lives of study participants cannot be fully understood.

The GRCS has been described as a trait-based assessment with limited scope of ability to assess GRC in situational or contextual research (Addis et al., 2010; Jones & Heesacker, 2012). Furthermore, the GRCS measured a limited number of behavioral domains and failed to assess areas of health-related difficulties germane to the current study.

As a result of collecting data in an online survey format, the data were not randomized. This may have resulted in a reduction of variation in the sampling. Due to the surveying platform, a barrier to this mode of data collection is tapping into a population of individuals who may already have access to care and support (e.g., insulin pumps, CGMs, support groups, health insurance, etc…). The data presented may be skewed to represent individuals with higher quality of care and more access to important self-management tools.

The data collected from participants were self-report and may have been subject to recall bias (e.g. inaccuracy of memories or recollections retrieved by study participants regarding evens or experiences from the past), inaccuracy due to social desirability bias, or under-reporting of clinical symptomology (e.g. Hemoglobin A_{1C}). Reports indicate that men often hide psychological and physical problems and are reluctant to report symptoms (Lee & Owens, 2002; O'Brien, Hunt, & Hart, 2005). Additionally, speed checks were implemented in Qualtrics for quality assurance to assure that participants were completing the survey in adequate time. However, it is not possible to assess whether participants were responding conscientiously to each item.

While the online survey had the potential to increase ease of response within a target population, some members of the target population may have not participated because of their

discomfort with online interactions. It was difficult to determine exactly who participated. Survey pre-screening aided to disqualify participants; however, it is not known whether participants were truthful. Despite these difficulties with distribution and sampling, an adequate sample size was obtained for data analysis and interpretation.

The mediation model for this study contained statistical limitations. The completely standardized indirect effect was used to measure the mediation effect following recommendations from Wen & Fan, 2015. However, there are no measure of mediation effect size that are not without flaws (Wen & Fan, 2015). This includes the total percent mediated, which has been critiqued as having large sample variances (Mackinnon, Warsi, & Dwyer, 1995).

The sample of men recruited with type 1 diabetes was too small to generate enough power to draw meaningful comparisons. Although the data met assumptions of normality, no differences between groups were evidenced. Mediation analyses conducted with sociodemographic variables as control may not have been meaningful. The control variables had dichotomous levels, each group consisting of a majority and a minority (e.g., white and other minorities, heterosexual and other sexual orientations, married and other relationship statuses). However, the minority group often contained heterogeneous groups. Regrettably, dichotomizing sociodemographic variables was unavoidable with the use of the PROCESS command in SPSS (Hayes, 2013).

Implications for Practice

The recent dissemination of the *APA Guidelines for Psychological Practice with Boys and Men* (2018) has stirred debate among many in the field. APA's position states that the development of guidelines for psychological practice with boys and men may help attend to barriers that historically, research has demonstrated, lead to disparities outlined in previous

theoretical and background sections of this dissertation. The American Psychological Association (APA) has released guidelines for psychologists working with specific populations such as gay/lesbian/bisexual clients (APA, 2012), racial and ethnic minority clients (APA, 2017), older adults (APA, 2014), transgender and gender-non-conforming persons (APA, 2015a), and girls and women (APA, 2007). Additional guidelines have been released in healthcare delivery systems (APA, 2013a), professional practice (APA, 2015b), and specialty areas of forensic psychology (APA, 2013b) and psychological evaluations in child protection matters (APA, 2013c). The stated purpose for these guidelines is to (a) improve service delivery, (b) stimulate public policy initiatives, and (c) provide professional guidance based on advances in the field (APA, Boys and Men Guidelines Group, 2018).

Opponents of the guidelines have been vocal, stating the guidelines lack a broader scientific base, fail to report biological contributors to gender identity, and include stereotyped terms such as "traditional masculinity" that are conceptually ill-defined and socio-political in nature rather than based in scientific theory (Ferguson, 2019). Other critics have staunchly rejected the notion of "toxic masculinity" stating, "It is harmful to all members of our society and dangerous to our national security. Masculine qualities like rugged individualism, courage, stoicism, ambition, and a willingness to protect and sacrifice for others helped secure the freedom and prosperity that so many now take for granted (Frueh, 2019)."

Many men hold expectations of the need to be independent, stoic, and self-determined, which are presumed biologically helpful tools. A recent column in *The Washington Post* responded to the APA guidelines, cited that "troubles may arise when rugged individualistic characteristics men hold are the only tools they believe they have, when help is needed and [men] are afraid to ask for it, or when [men] experience emotions they can't even name, much

less express (Hesse, 2019).” Hesse continued that when men ultimately blame themselves for being unable to make those insufficient tools work, the results are negative consequences in physical, psychological, and interpersonal domains.

Within the context of positive masculinity, traditional masculinity is not seen as the problem; instead, it can be part of a solution to the problems that plague many modern boys and men. Guidance from positive male role models, institutions that instill a purpose-providing moral system which gives men a code to live by, traditional masculinity can play a vital role in developing healthy men as well as building and preserving safe and prosperous societies. For example, martial arts training involves a dose of traditional masculinity—aggression, stoicism, confidence, and competitiveness, and the traditional military-style teaching methods. Training takes advantage of traditional masculinity philosophy to build positive characteristics such as dignity, restraint, personal responsibility, and a sense of duty to others (Routledge, 2019).

Kiselica et al. (2016) define positive masculinity as “prosocial attitudes, beliefs, and behaviors of boys and men that produce positive consequences for self and others (p. 126).” Positive characteristics are not necessarily inherent; rather, they are learned traits which are internalized through socialization processes in which boys and men develop masculine beliefs and attitudes, promoting healthy development and fostering a sense of duty to others and the greater society. The positive psychology-positive masculinity paradigm is a shift in the psychology of men and masculinity from focus on male pathology and identifying men’s deficits while overlooking the qualities of masculine strengths, adaptive and evolutionary behaviors, and positive aspects of being a man (Kiselica, Englar-Carlson, & Fisher, 2006; Kiselica et al., 2008). The wide body of research on gender role strain and its emphasis on restrictive masculinity and gender-linked problems for men has contributed to a lack of awareness of positive characteristics

of masculinity, shared through intergenerational history, that benefit men, their partners, and society (Kiselica, 2011).

Clinical application of PPPM promoting 11 healthy and adaptive characteristics of masculinity that may enhance a clinician's understanding of and facilitate clinical work with boys and men. The characteristics include understanding of male relational styles, male ways of caring, generative fatherhood, forms of male self-reliance, the worker-provider tradition, respect for women, courage-daring-and risk-taking, styles of group orientation, male forms of service, men's use of humor, and male heroism (see Kiselica et al., 2016 for full review). A critical component of PPPM requires the ability to be flexible in the enactment of male strengths and the knowledge to recognize when a strength is adaptive or problematic (Kiselica & Englar-Carlson, 2010).

Health disparities represent a complex interplay between biological, psychological, sociological, and environmental factors. Interdisciplinary collaboration is necessary to accomplish health-related goals for boys and men, combining input from medical teams, public health representatives, and allied health professionals (Jones et al., 2012). Accordingly, health psychologists are encouraged to increase psychoeducation about restricting masculine ideologies and how they relate to health-risk behaviors. Additionally, psychologists are emboldened to help men build health-promoting behaviors such as resisting social pressures, engaging in self-acceptance, fostering a positive identity, engaging in preventative health-related services, and developing positive habits of healthy diet, sleep, and exercise (APA, 2018).

Acceptance and commitment therapy (ACT) is a unique empirically-based psychological intervention that utilizes mindfulness strategies and acceptance practice along with commitment and behavior change strategies, to increase psychological flexibility (Hayes, Strosahl, & Wilson,

2003). ACT may offer several advantages in comparison to other interventions in health settings. Most psychological studies involving the application of cognitive-behavior therapy (CBT) have focused on decreasing, changing, or stopping negative thoughts related to diabetes. However, the strategy of ACT is increased acceptance of distressing or negative thoughts to identify, emphasize, and modify a patient's values and personal goals (Gregg et al., 2007). Patients with diabetes are constantly required to cope with facts and events that are part of the very nature of the disease. ACT has demonstrated successful short-term outcomes in the treatment of diabetes with emphasis on present-moment awareness and acceptance, therefore increasing opportunities for behavioral change (Brown, 1990; Niemeier, Leahey, Reed, Brown, & Wing, 2012; Shayeghian, Hassanabadi, Aguilar-Vafaie, Amiri, & Besharat, 2016). ACT for diabetes self-management has been studied in populations of individuals with type 1 diabetes (Amsberg et al., 2018) and type 2 diabetes (Gregg et al., 2007; Nes, van Dulmen, Brembo, & Eide, 2018).

Improvements in delivery systems for mental health services in integrated health care settings have increased access for patients to direct (often same day) referrals for both individual and group psychosocial interventions. Group therapies for diabetes focus on coping strategies, social skills, problem-solving, goal setting, adherence to anti-depressants/anxiolytic medications, group sharing, and mind-body health. Mind-body work draws attention to the intimate connection between physical and psychological symptoms of diabetes, relaxation training, yoga, emotional processing of physical and psychological symptoms (Parks, 2017). A recent study examined mindfulness, meditation, personality characteristics, and frequency of engagement with mindfulness practice. The study reported that men spent more days in meditation practice during the intervention. Researchers hypothesized that men may not feel that the practice of meditation challenges their explicitly or implicitly held beliefs about masculinity. Additionally,

mindfulness practice may be viewed as a solitary practice, as opposed to a social engagement like psychotherapy. Mindfulness may also provide men an effective release from shame and blame that has historically impeded men's likelihood of seeking psychotherapy (Blizzard & Heckman, 2018).

There has been a growing focus on applying strengths-based approaches to counseling and psychotherapy (Chapin & Boykin, 2010; Kosine, Steger, & Duncan, 2008; Smith, 2008). The APA guidelines (2018) suggest that psychologists should make every effort to recognize the influence of masculine gender role socialization on some men's reluctance to seek help. Although certain psychological diagnoses are more common among women (e.g., depression, anxiety), these discrepancies may be due to gender role socialization (Addis, 2008), which impacts men's help-seeking behaviors and how they may present physical and psychological distress (Cochran & Rabinowitz, 2000). Clincians who capitalize on strengths throughout their work with men communicate to their clients a sense of hope about the clients' potential and future. Furthermore, a focus on positive masculinity may increase the utility and appeal of therapy and health-related services for more therapy-resistant men (Hammer & Good, 2010; Kiselica et al., 2016).

From a social justice perspective, health psychologists are situated to help men obtain the necessary knowledge, attitudes, and behaviors to use their own social influence to promote positive health behaviors in other boys and men (American Diabetes Association, 2019d). Furthermore, health psychologists are encouraged to promote information to reshape attitudes about men and mental health. Public information campaigns highlighting depression as a normative problem for men are needed to reduce continued mental health stigma among men

(Lynch & Kilmartin, 2013; National Institute of Mental Health, 2017; Rabinowitz & Cochran, 2008; Rochlen, Whilde, & Hoyer, 2005).

Implications for Training

Counseling psychologists in training who have an emphasis in health psychology can use the results of the present study in several ways. As noted in previous sections related to theory and research, it would be important for trainees to understand the complex ways in which gender role conflicts and gender role transitions, work life, restricted emotionality, father-son/friend-friend affectionate communication, and family dynamics such as conflict, attachment and support are related to health outcomes (Courtenay, 2011; McDermott et al., 2016; Wong, Owen, & Shea, 2012).

The importance of diversity in counseling psychology programs is well-documented (American Psychological Association, 2017; Campbell et al., 2012; Fouad et al., 2009; Fuertes, Spokane, & Holloway, 2013; Mintz & Bieschke, 2009; Packard, 2009; SPSMM, 2019). This study's findings regarding the role of gender in the context of intersecting multiracial identities as they related to health disparities and health outcomes are critical. Given that the psychology of men is rarely taught at either undergraduate or graduate levels (O'Neil & Renzulli, 2013), including multicultural counseling courses (Liu, 2005), research suggests that attaining adequate knowledge of men's gender role socialization processes, and acquiring skill in clinical work with males, have important implications for psychological practice with boys (Bruchmüller, Margraf, & Schneider, 2012) and men (Mahalik, Good, Tager, Levant, & Mackowiak, 2012). The implications for practice and research that have been noted are of importance to counseling psychology trainees as they enter practicum, internship, and careers as early psychologists.

Future Directions

GRC research has undergone stringent criticism over the past 30 years (O'Beaglaoich, Sarma, & Morrison, 2013; O'Neil, 2008, 2015). Further empirical support for GRC in specific contexts is needed to understand situational contingencies and real-life contexts that impact men's lives have been neglected (Addis et al., 2010; Jones & Heesacker, 2012; O'Neil, 2008; O'Neil & Denke, 2015; Smiler, 2004). To establish an empirical and theoretical rationale for situational research, O'Neil & Denke (2015) outlined six correlational research questions, including: Do situational and contextual correlates mediate men's GRC and their psychological problems (p. 59)? The question is then, how and why do psychological problems occur as a result of GRC and what variable mediate the relationships between GRC and those problems?

Based on recommendations from recent critiques (Addis et al., 2010; Jones & Heesacker, 2012), O'Neil & Denke (2015) outlined a new agenda for understanding GRC theory by expanding its assumptions to include research that is contextual, microcontextual, and situational to assess factors that affect men's behavior. Previous GRC research models (O'Neil, 1981a, 1982, 2008; O'Neil et al., 1986, 1995), were relevant to situational research, but do not provide structured guidance on action-oriented or heuristic-based frameworks to explain how GRC develops in actual situations. By expanding research to "real-world" scenarios, situational research can test how men "do gender" by identifying environmental triggers that explain how and when traditional masculine values and behaviors are expressed or changed (O'Neil & Denke, 2015). To continue exploring the results of this study, a possible controlled intervention study might involve having men participate in an ACT group for diabetes versus a CBT and psychoeducation group. Reactions to random glucose checks throughout the intervention might be recorded, with integration of masculinity scales to assess potential change over time. This

study might also be replicated using GRC as both a mediator and outcome variable, assessing self-compassion as a gender-specific socialized construct. Further research can help support this study's model by implementing experimental designs, use of SEM's, replicating the study using diverse samples of men. Qualitative approaches may help explore the relationship between self-compassion and GRC in greater depth. The present study's findings may be useful in developing divergent types of psychological and behavioral health treatments for men with diabetes who present with difficulties in treatment adherence and psychological distress. The model suggests that targeting self-compassion in men through a lens of positive psychology and positive masculinity, in addition to the use of ACT and mindfulness approaches to deconstruct rigid thought processes associated with traditional masculine ideology may be useful treatment options. In addition, systematic evaluation of new and existing public health campaigns may help deconstruct unhelpful ideas of masculinity and promote more helpful social norms for future generations of boys and men.

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APPENDICIES

Appendix A

Gender Role Conflict Model: Patterns of Men's Gender Role Conflict (GRC)

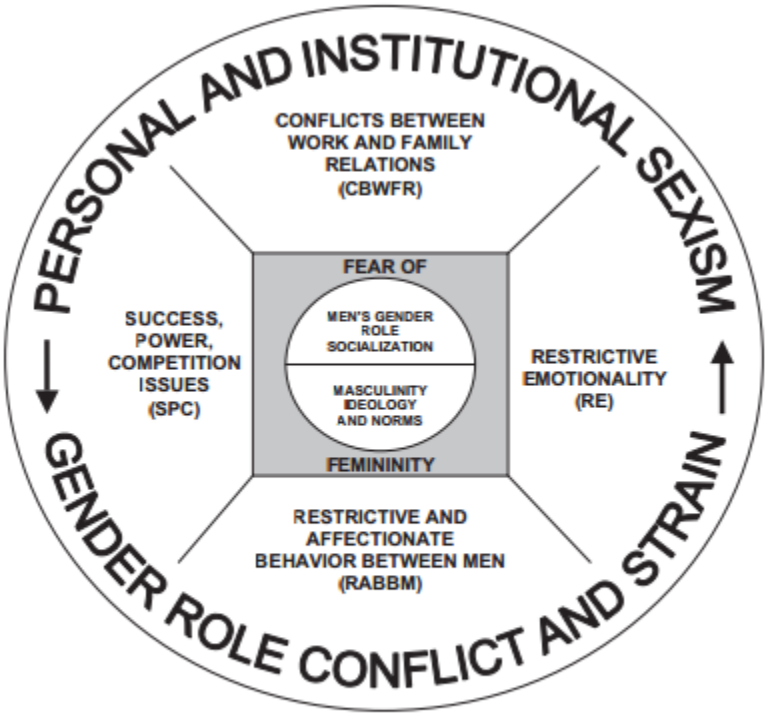

FIGURE 1 Gender Role Conflict Model: Patterns of Men's Gender Role Conflict
SOURCE: Modified from O'Neil, Good, and Holmes (1995).

Appendix B

GRC as Predictor, Seven Mediators of GRC, and Outcome Variables in Three Contexts

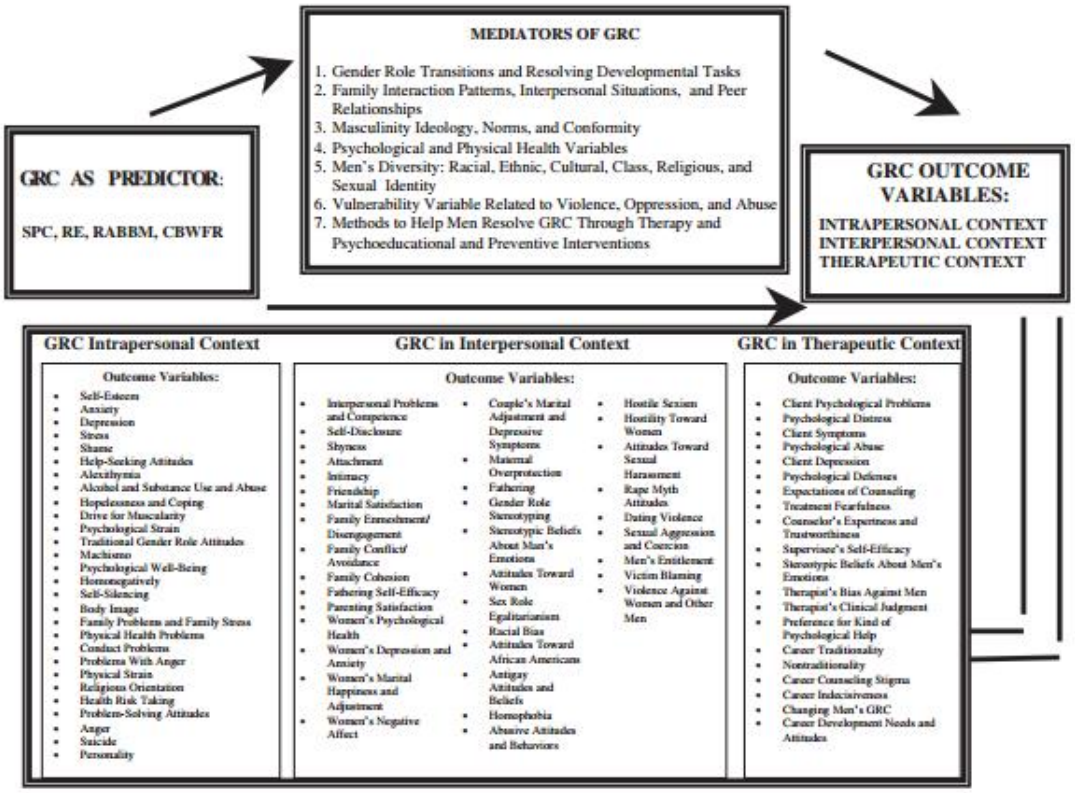

FIGURE 3 Gender Role Conflict (GRC) as Predictor, Seven Mediators of GRC, and Outcome Variables in Three Contexts

NOTE: SPC = Success, Power, and Competition; RE = Restrictive Emotionality; RABBM = Restrictive Affectionate Behavior Between Men; CBWFR = Conflict Between Work and Family Relations.

Appendix C

Self-Regulation Resource Model (SRRM)

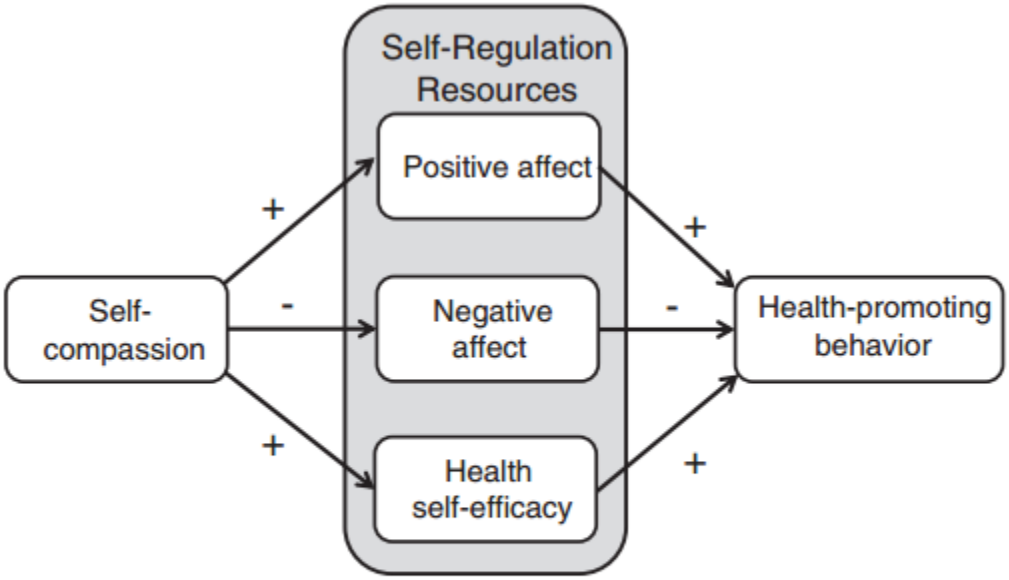

Fig. 1. Proposed self-regulation resource model linking self-compassion to health behavior intentions. The low levels of negative affect, high levels of positive affect, and high levels of self-efficacy associated with self-compassion are posited to serve as self-regulation resources that bolster self-regulation capacity and therefore the practice of health behavior.

Appendix D

Study Recruitment Flyer

University of Georgia – Diabetes Study 2016

Diabetes Study

A NEW STUDY FOR MEN WITH DIABETES – FALL 2016

TO QUALIFY:

- You must be living with type 1 or type 2 diabetes for at least 6 months
- You must identify as a male
- You must be at least 18 years old

** If you meet the above criteria, you may qualify to participate in the study.

THE STUDY INVOLVES:

- A brief screening for eligibility
- A 25-30 minute surveys online which will ask you questions about your life with diabetes
- All participants will have the opportunity to register for $50 gift cards for your time

For more information call Bret Ringdahl at:

770.765.6368| bret.ringdahl@uga.edu

University of Georgia
Department of Counseling and Human Development Services
402 Aderhold Hall
Athens, GA 30602

DIABETES STUDY
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Appendix E

Study Recruitment Script for Investigator Initiated In-Person Contact

"Excuse me, sir, do you have a minute? My name is Bret Ringdahl. I am a doctoral student at The University of Georgia and am working on a research study about diabetes with Dr. Bernadette Heckman.

Having diabetes can be very difficult and affect your work, family, and social life. Little is known about how your gender (being male) relates to things like depression, anxiety, violence, suicide, poor health care, homophobia, academic failure, bullying, and racial and ethnic issues. Sometimes, people living with diabetes also have poor blood sugar control and difficulty adhering to their medications. The purpose of the current study is to examine the relationship between how the issues men face impact their diabetes self-care and control of blood sugar.

I'd like to know if you are interested in hearing more about our study. Is it OK for me to continue?"

- If individual says "no, not interested" = stop, say thank you but do not continue.
- If he says yes, then continue or make plans to revisit at a more convenient time.

Variation for In-Person Contact at Mercy Clinic:

"I am approaching you because you are affiliate with Mercy Clinic, and we are looking for men over the age of 18 who have either type 1 or type 2 diabetes. This research is totally separate the care you are receiving from your doctor and whether you decide to hear more about the research won't affect your care. If you chose to participate, you will be asked to complete a survey that will take approximately 30 minutes to complete.

So, are you interested in hearing some details about the research study?"

- If not interested, thank the individual for his/ her time.
- If interested, then move to the consent form.

Appendix F

Recruitment Email and Facebook Message Content

Good afternoon,

You are receiving this email because of your affiliation with XXXXXX. Please consider participating in this research study and distributing it widely. The following advertisement is approved by the University of Georgia's IRB:

We are seeking men with either type 1 or type 2 diabetes! We are interested in how gender and gender roles are related to your diabetes, especially in men. If you are at least 18 years old and would like more information about this research study please visit: SURVEY LINK

If you volunteer to participate, the survey will take approximately 30 minutes in total to complete.

Please help us by passing this information along! By completing the research survey, you will have the opportunity to register for one of two $50 gift cards. If you do not wish to participate in this research study but would like to enter into the drawing, please contact me at bret.ringdahl@uga.edu.

The person in charge of this study is Bret Ringdahl, M.A., of University of Georgia Department of Counseling and Human Development Services. Bret is a doctoral candidate in counseling psychology and is being supervised in this project by Bernadette Heckman, Ph.D. For more information on them and their research programs, please email bret.ringdahl@uga.edu.

Appendix G

Study Consent Form

UNIVERSITY OF GEORGIA
CONSENT FORM
Diabetes Study

Researcher's Statement
We are asking you to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being conducted and what it will involve. This form will give you the information about the study so you can decide whether to be in the study or not. Please take the time to read the following information carefully. Please ask the researcher for an explanation if there is anything that is unclear or if you need more information. When all your questions have been answered, you can decide if you want to be in the study or not. This process is called "informed consent." A copy of this form will be given to you.

Principal Investigator Bernadette Heckman, PH.D.
Counseling and Human Development Services
706-542-4792

Purpose of the Study
Having type 1 or type 2 diabetes can be very difficult and affect your work, family, and social life. Little is known about how your gender (being male) relates to things like depression, anxiety, violence, suicide, poor health care, homophobia, academic failure, bullying, and racial and ethnic issues. Sometimes, men living with diabetes also have poor blood sugar control and difficulties with treatment adherence. The purpose of the current study is to examine the relationship between how the issues men face impact their ability to manage diabetes and control their blood sugar.

Study Procedures
If you agree to participate, you will be asked to undergo and agree to the following procedures:

1. Complete a brief eligibility screening interview that will be administered via phone or in-person by research staff. The eligibility screen will enable us to determine your eligibility for the study.
2. If you are eligible, you will be asked to complete surveys, which will take approximately 30 minutes to complete, asking you about your experiences with diabetes, how diabetes affects your life, how you cope with your diabetes, and treatments you are currently receiving for diabetes and other health problems.
3. Your participation in this study will not affect the support or treatment you are receiving from Mercy Health Center or your physician. For completing the surveys you will have the opportunity to enter a drawing to receive one of two $50 gift cards for your time and effort. If you do not wish to participate in this research study but would like to enter into the drawing, please contact me at bret.ringdahl@uga.edu.

Risks and Discomforts

- You might experience some stress or discomfort related to discussions around diabetes; sadness, guilt, or anxiety; and loss of self-esteem.
- Risks can also include breach of confidentiality that may result in embarrassment or stigmatization within one's business or social group: To reduce such risks, we will do the following: (i) we will not include any of your personal information on any of your surveys; all surveys will be assigned a unique ID number; Your unique ID number will be linked to your name on a separate master form and that form will be stored in a locked file cabinet in a locked research office at the University of Georgia. (ii) all electronic surveys will also be password protected on a computer and stored in a locked file cabinet in our locked research office at University of Georgia, and (iii) referrals for counseling can also be provided if distress from completing the surveys persist. A list of referrals will be provided to all individuals as part of the participation in the screening and/or intervention.

Benefits

There are no direct benefits to you, but the information shared with us through the study will be used to benefit society, science, and most importantly those suffering from diabetes and concerns related to their disease. Our hope is that this research will lead to more effective psychological treatments for those affected by diabetes and other mental health concerns.

Incentives for Participation

Participants in the study will have the opportunity to register for a drawing for one of two $50 gift cards to Walmart after participating in the 30-minute survey. If you do not wish to participate in this research study but would like to enter into the drawing, please contact me at bret.ringdahl@uga.edu.

Privacy/Confidentiality

Any information obtained from this investigation will be identified using an identification code. No name, address, email information, etc. will be indicated on any of the assessments that are collected for the study. Only research staff will have access to the non-identified data, and all data will be stored in a clocked file cabinet located in the research office at University of Georgia. Upon completion of the project, the non-identified data will be entered into a password-protected project database, and all forms will be destroyed within one year of completing data collection. Scientific data or medical information not identifiable with participants resulting from the study may be presented at meetings and published so that the information can be useful to others. Even though the investigator will emphasize to all participants that comments made during the group session should be kept confidential, it is possible that participants may repeat comments outside of the group at some time in the future.

If you report threats of self-harm or harm to others, the study team will inform the Study PI (Bernadette Heckman, Clinical Psychologist) immediately and she will attempt to arrange or provide emergency support services (e.g. police department, paramedics). These emergency services may be implemented by members of the research team or appropriate individuals in my geographic vicinity.

If you are injured by this research, the researchers will exercise all reasonable care to protect you from harm as a result of your participation. If any research-related activities result in an injury,

the sole responsibility of the researchers will be to arrange for your transportation to an appropriate health care facility. If you think that you have suffered a research-related injury, you should seek immediate medical attention and then contact *Bernadette Heckman* right away at *706-542-4792*. In the event that you suffer a research-related injury, your medical expenses will be your responsibility or that of your third-party payer, although you are not precluded from seeking to collect compensation for injury related to malpractice, fault, or blame on the part of those involved in the research.

Taking Part in the Study Is Voluntary

Your involvement in the study is voluntary and you may choose not to participate or to stop at any time without penalty or loss of benefits to which you are otherwise entitled. Your decision to take part or not take part in the research study will have no effect on your access to services at Mercy Clinic.

If you Have Questions

The main researcher conducting this study is Dr. Bernadette Heckman, a professor; and Bret Ringdahl, a graduate student, at the University of Georgia. Please ask any questions you have now. If you have questions later, you may contact Dr. Bernadette Heckman at bheckman@uga.edu or at 706-542-4792. If you have any questions or concerns regarding your rights as a research participant in this study, you may contact the Institutional Review Board (IRB) Chairperson at 706-542-3199 or irb@uga.edu.

Research Subject's Consent to Participate in Research

To voluntarily agree to take part in this study, you must sign on the line below. Your signature below indicates that you have read or have had read to you this entire consent form and that you have had all your questions answered.

_____	_____	_____
Name of Researcher	Signature	Date
_____	_____	_____
Name of Participant	Signature	Date

Please sign both copies, keep one and return one to the researcher.

Appendix H

Eligibility Screening Questionnaire

Before you begin the survey, we need to make sure that you are eligible to participate. Please affirm the following statements:

Q1. I have type 1 or type 2 diabetes

- ❍ Yes
- ❍ No

Q2. I have had type 1 or type 2 diabetes for at least 6 months.

- ❍ Yes
- ❍ No

Q3. I identify as male:

- ❍ Yes
- ❍ No

Q4. I am at least 18 years old.

- ❍ Yes
- ❍ No

Appendix I

Demographic Characteristics Questionnaire

Q1. Age:

Q2. Would you describe yourself as?

- ❍ American Indian/Native American
- ❍ Asian
- ❍ Black/African American
- ❍ Hispanic/Latino
- ❍ White/Caucasian
- ❍ Pacific Islander
- ❍ Biracial
- ❍ Other _____

Q3. Highest Education Level:

- ❍ No schooling completed
- ❍ Elementary school only (Kindergarten - 8th grade)
- ❍ Some high school, but did not finish
- ❍ Completed high school or the equivalent (GED)
- ❍ Some college, but did not finish
- ❍ Two-year college degree (A.A./A.S.)
- ❍ Four-year college degree (B.A./B.S.)
- ❍ Some graduate work
- ❍ Completed Masters or professional degree
- ❍ Advanced Graduate work or PhD

Q4. Employment Status:

- ❍ Employed full time
- ❍ Employed part time
- ❍ Unemployed/Looking for work
- ❍ Student
- ❍ Homemaker
- ❍ Retired
- ❍ Unable to work
- ❍ SSI/SSD/Disability

Q5. Relationship Status:

- ❍ Single, never married
- ❍ Married
- ❍ Divorced
- ❍ Separated
- ❍ Widowed
- ❍ Living with partner

Q8. Sexual orientation:

- ❍ Heterosexual
- ❍ Gay
- ❍ Bisexual
- ❍ Questioning
- ❍ Prefer not to say

Q9. Please indicate which chronic conditions you currently have:

- ❑ Type 1 Diabetes
- ❑ Type 2 Diabetes
- ❑ High Cholesterol
- ❑ High Blood Pressure
- ❑ Heart Disease
- ❑ Lung Disease
- ❑ Other chronic condition (please specify): _____

Q10. What is your current, or most recent A1C (HbA1c) result?

Q11. At what age were you diagnosed with type 1 or type 2 diabetes?

Q12. How often do you check your blood sugar?

- ❍ Multiple (or, I use a CGM sensor)
- ❍ 2-3 times daily
- ❍ One time daily
- ❍ I don’t check every day, or I forget to check some days

Appendix J

Debriefing Form

Study Title
Man your meter: The mediating roles of self-compassion and self-efficacy in the relationship between men's gender role conflict and diabetes self-care, diabetes distress, and glucose control in men with type 1 and type 2 diabetes

Purpose of the Study
Having diabetes can be very difficult and affect your work, family, and social life. Little is known about how your gender (being male) relates to things like depression, anxiety, violence, suicide, poor health care, homophobia, academic failure, bullying, and racial and ethnic issues. Sometimes, people living with diabetes also have poor blood sugar control and difficulty adhering to their medications. The purpose of the current study is to examine how things like self-compassion and self-efficacy can impact how you manage your diabetes. Please do not disclose the purpose of this research to anyone who might participate in this research study in the future, as disclosure of the study's purpose could unintentionally affect the results of the study.

Right to Withdraw Data
You may choose to withdraw the data that you provided prior to debriefing, without penalty or loss of benefits to which you are otherwise entitled. Whether you agree or do not agree to have your data used for this study, you will still be directed to the incentives drawing (for one of two $50 gift cards) by clicking on the CONTINUE button located at the bottom of the page. Please indicate below if you do, or do not, give permission to have your data included in the study:

__I give permission for the data collected from or about me to be included in the study.
__I DO NOT give permission for the data collected from or about me to be included in the study.

If You Have Questions
The main researcher conducting this study is Bret Ringdahl, a graduate student at the University of Georgia's Department of Counseling and Human Development Services.

If you have any questions about this research project, please feel free to send an email to Bret Ringdahl at bret.ringdahl@uga.edu or to Dr. Bernadette Heckman at bheckman@uga.edu. If you have any questions or concerns regarding your rights as a research participant in this study, you may contact the Institutional Review Board (IRB) Chairperson at 706.542.3199 or irb@uga.edu.

APPENDIX K

IRB Approval of Study Protocol

Phone 706-542-3199

The University of Georgia

Office of the Vice President for Research
Institutional Review Board

APPROVAL OF PROTOCOL

February 16, 2017

Dear Bernadette Heckman:

On 2/16/2017, the IRB reviewed the following submission:

Type of Review:	Initial Study
Title of Study:	A Self-Compassion Model for Understanding the Influence of Men's Gender Role Conflict on Diabetes Self-Care in Men with Type 1 and Type 2 Diabetes
Investigator:	Bernadette Heckman
IRB ID:	STUDY00004313
Funding:	None
Documents Reviewed:	Protocol, Recruitment Materials, Consent Form, Data Collection Materials, Site Authorization
Review Category:	Exempt 2

The IRB approved the protocol from 2/16/2017 to 2/15/2022.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103).

Sincerely,

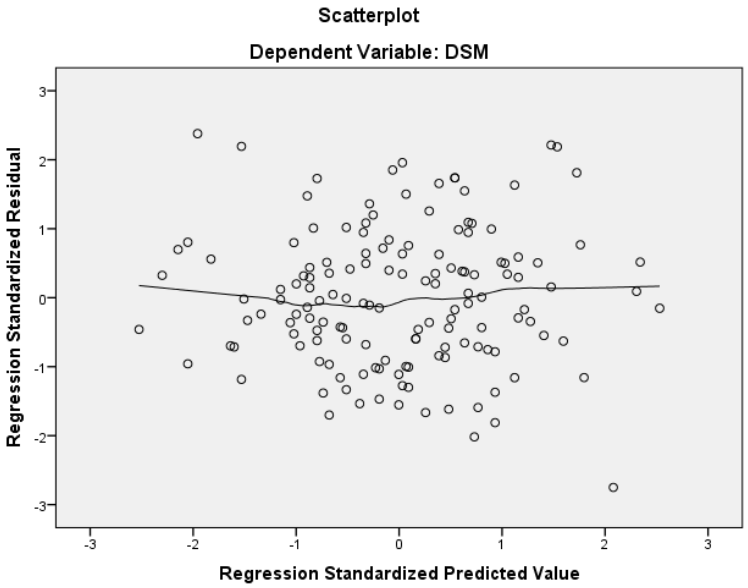
Dr. Gerald E. Crites, MD, MEd
University of Georgia
Institutional Review Board Chairperson

APPENDIX L

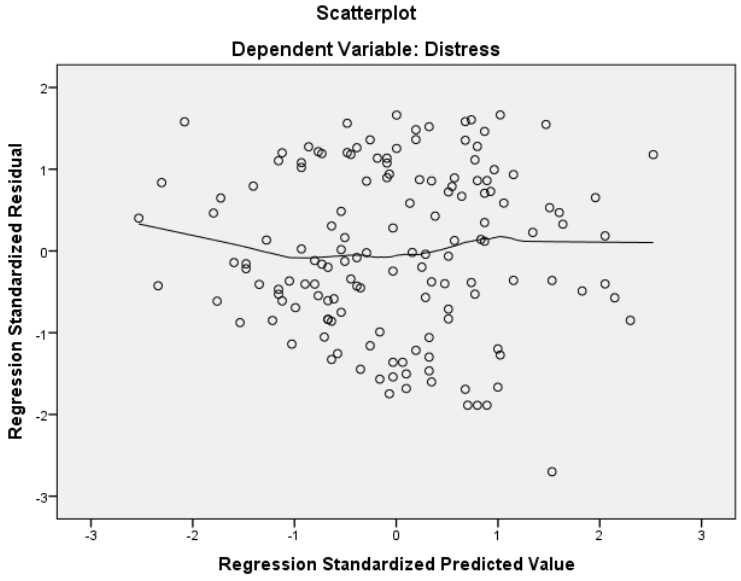
Regression Standardized and Predicted Residual Value Scatterplots

Total Path (*c*)

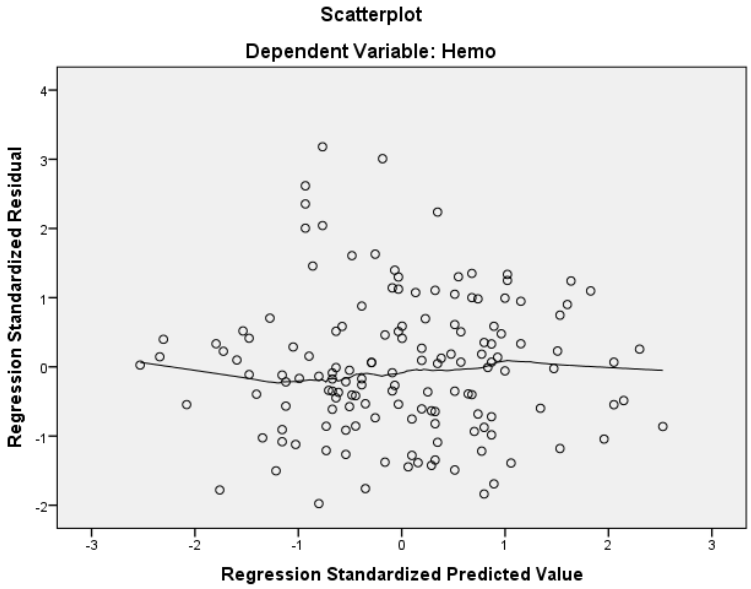
Predicted DSM=a*GRC + constant



Predicted DDS=a*GRC + constant

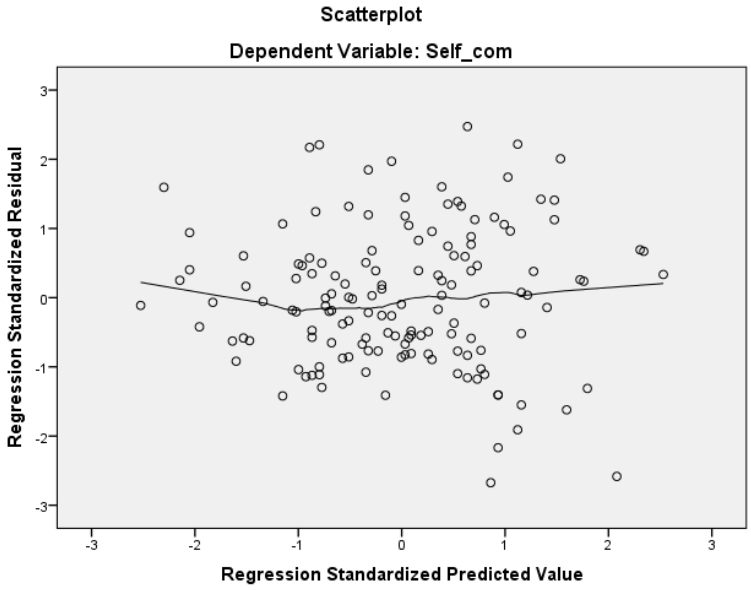


Predicted HbA_{1c}=a*GRC + constant



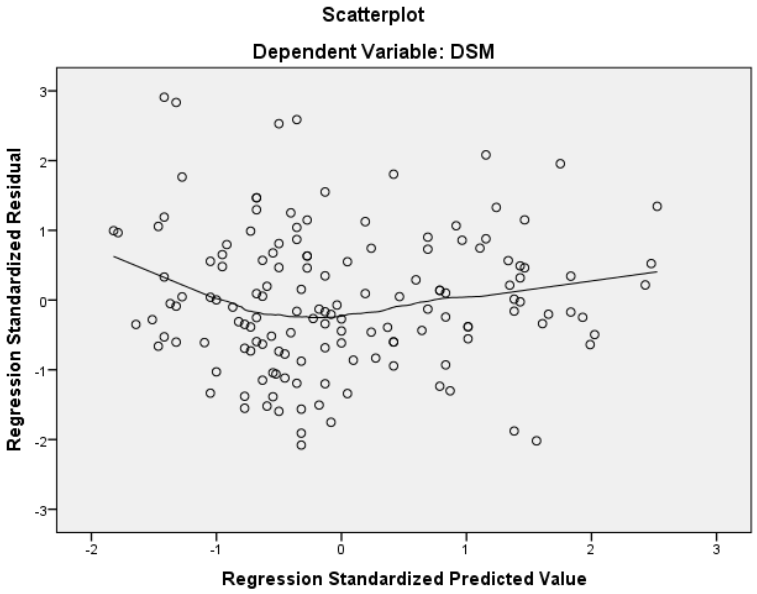
Path (*a*)

Predicted SC=a*GRC + constant

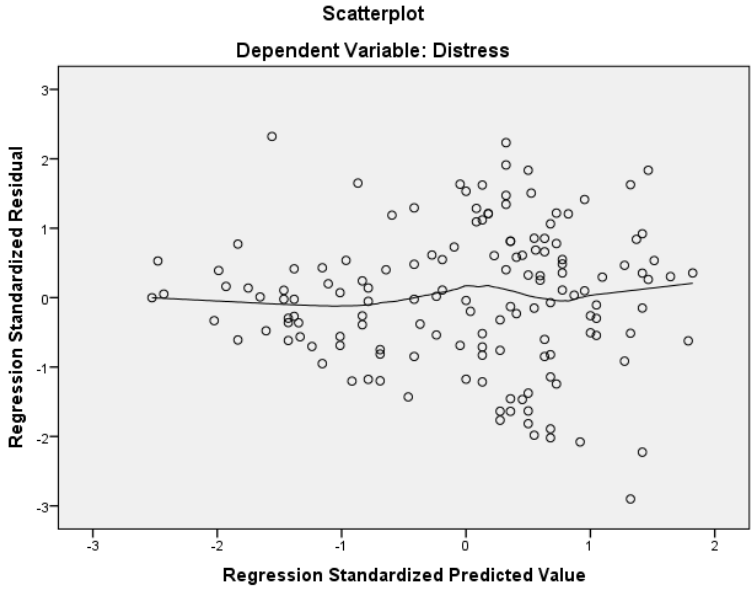


Path (*b*)

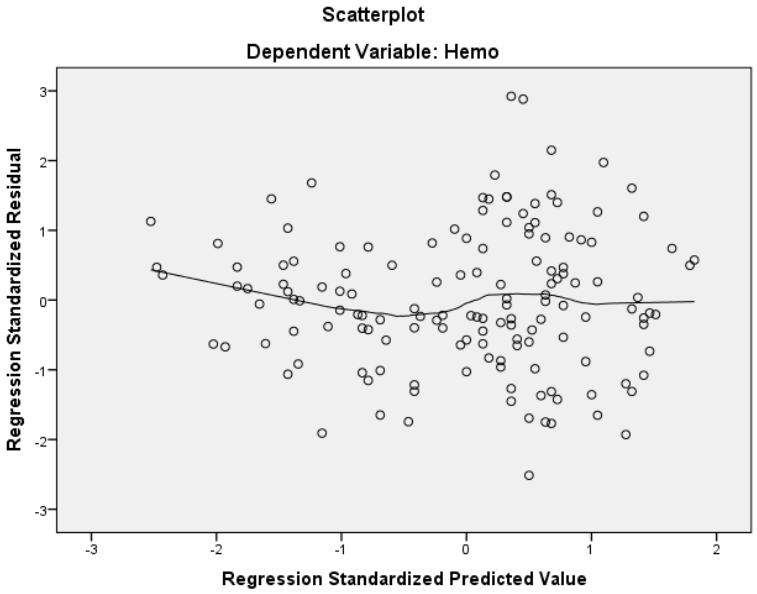
Predicted DSM =a*SC + constant



Predicted DDS=a*SC + constant

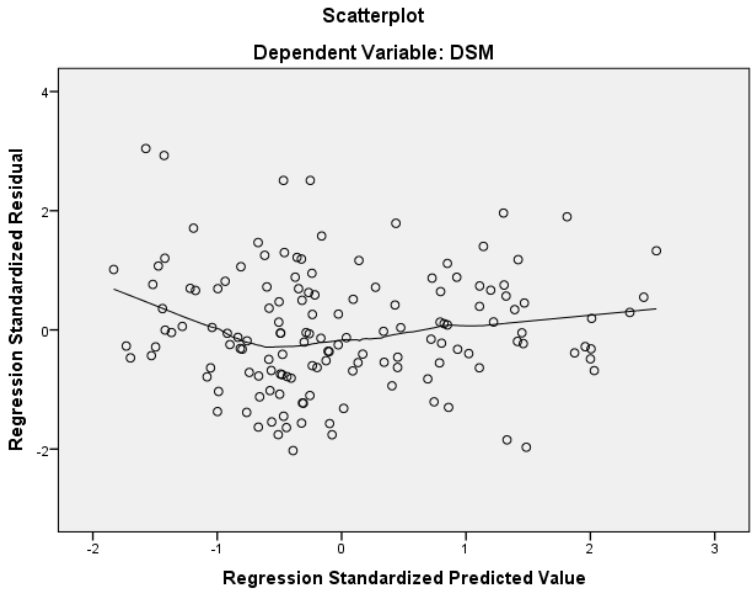


Predicted SC=a*HbA_{1c} + constant

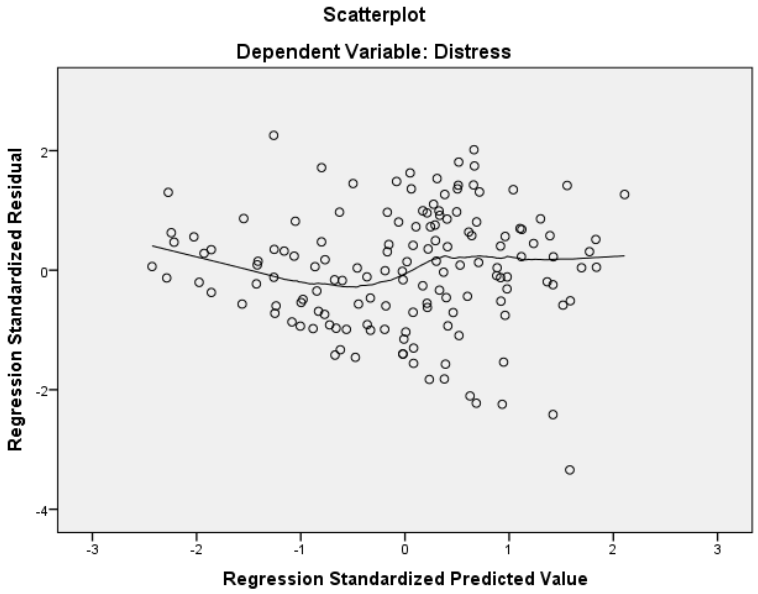


Direct Path (*c´*)

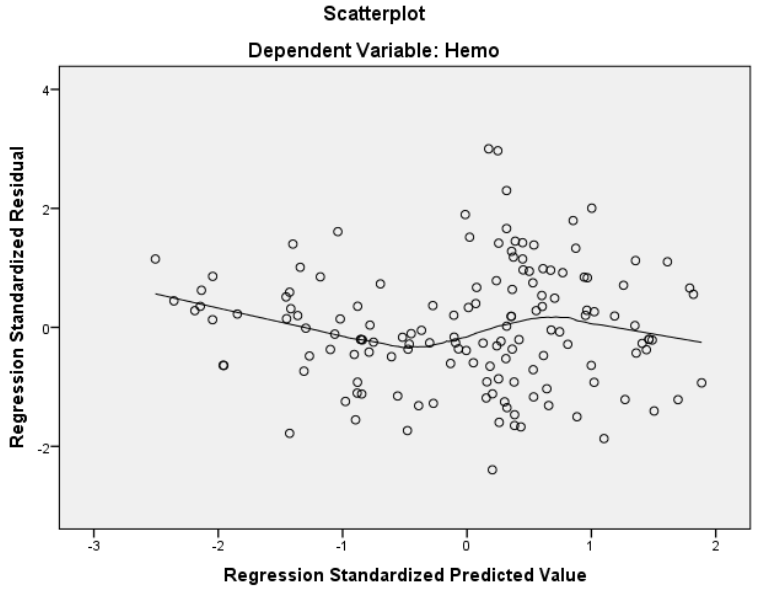
Predicted DSM=a*GRC + b*SC + constant



Predicted DDS=a*GRC + b*SC + constant



Predicted HbA_{1c} =a*GRC + b*SC + constant

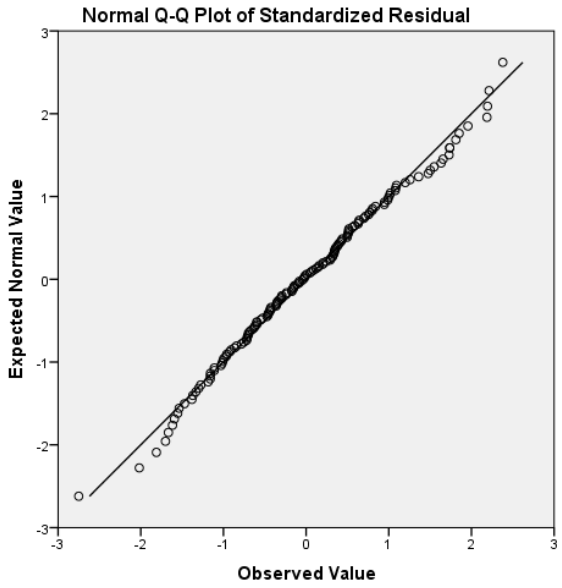


APPENDIX M

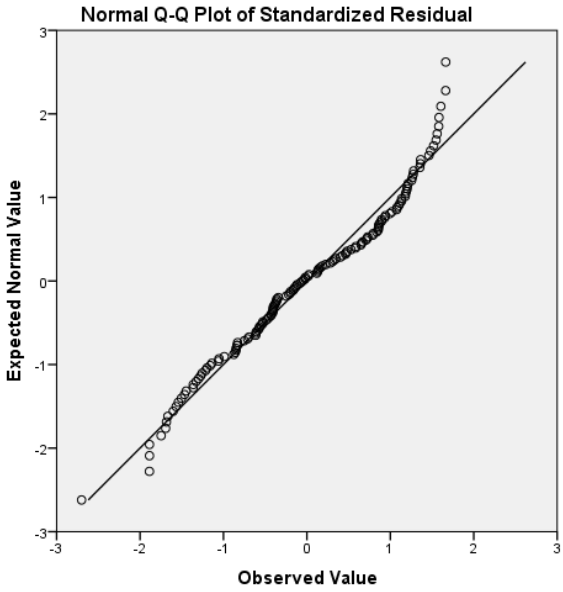
Normal Q-Q Plots of Standardized and Observed Regression Residuals

Total Path (*c*)

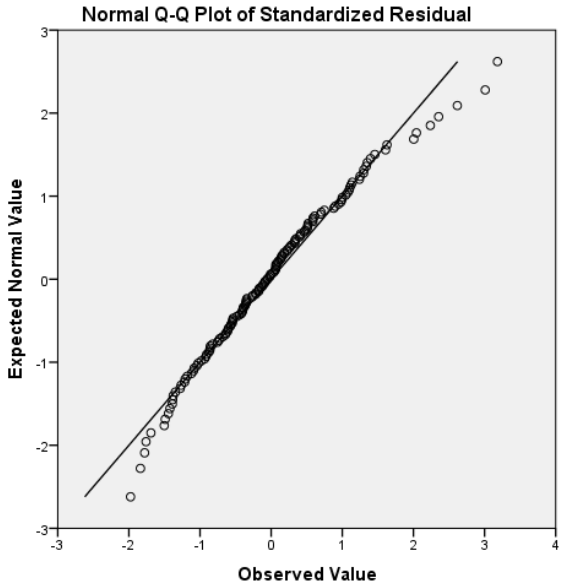
Predicted DSM=a*GRC + constant



Predicted DDS=a*GRC + constant

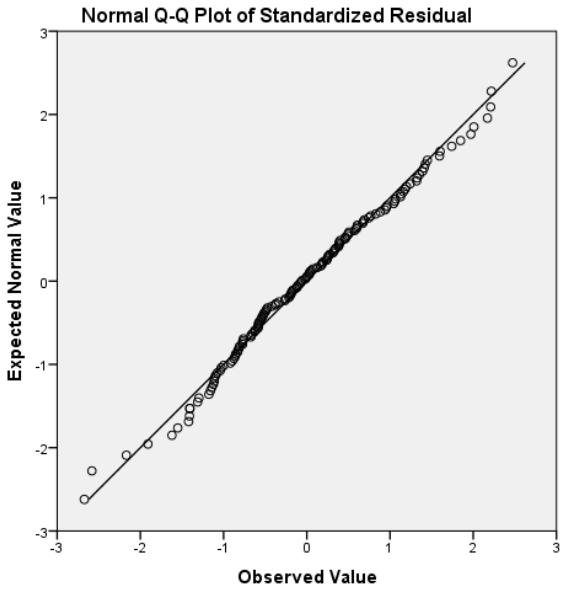


Predicted HbA_{1c}=a*GRC + constant



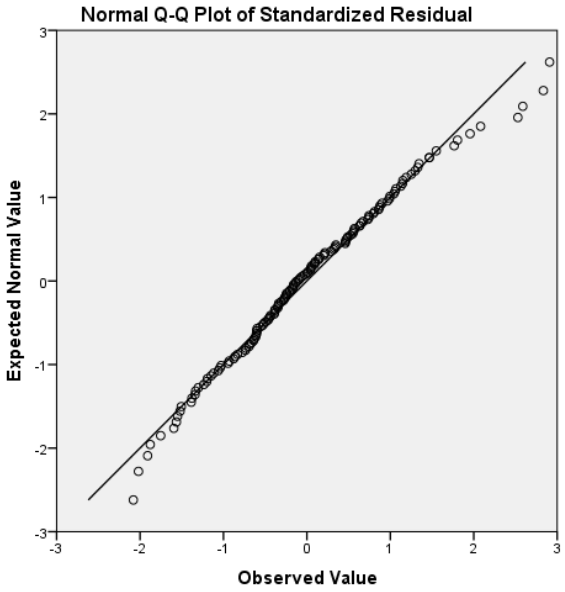
Path (*a*)

Predicted SC=a*GRC + constant

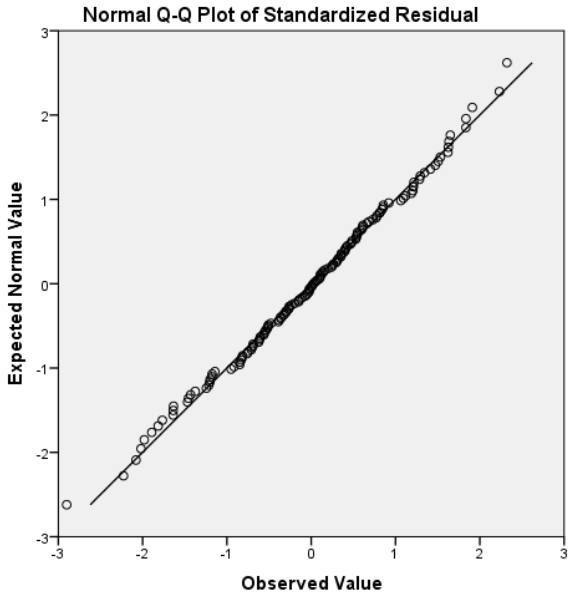


Path (*b*)

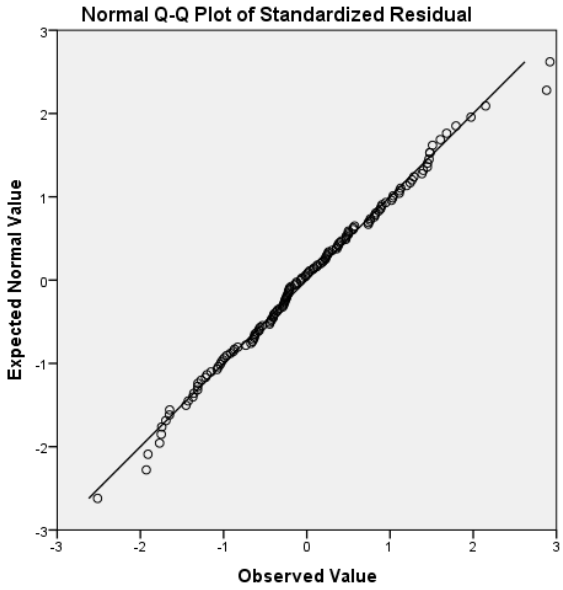
Predicted DSM=a*SC + constant



Predicted DDS =a*SC + constant

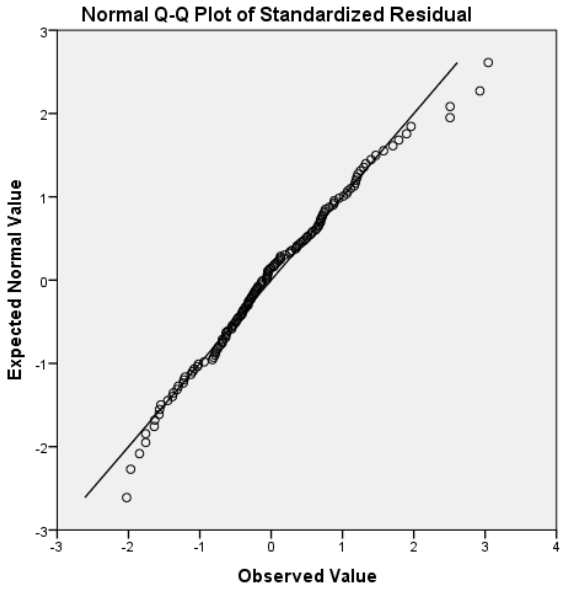


Predicted HbA_{1c} =a*SC + constant

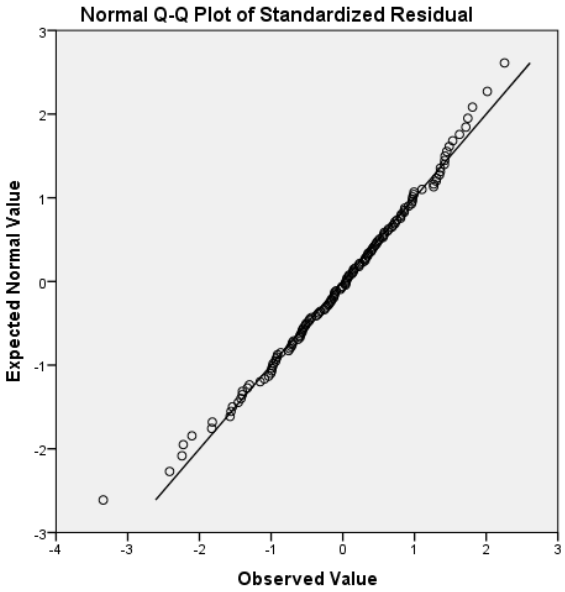


Direct Path (*c´*)

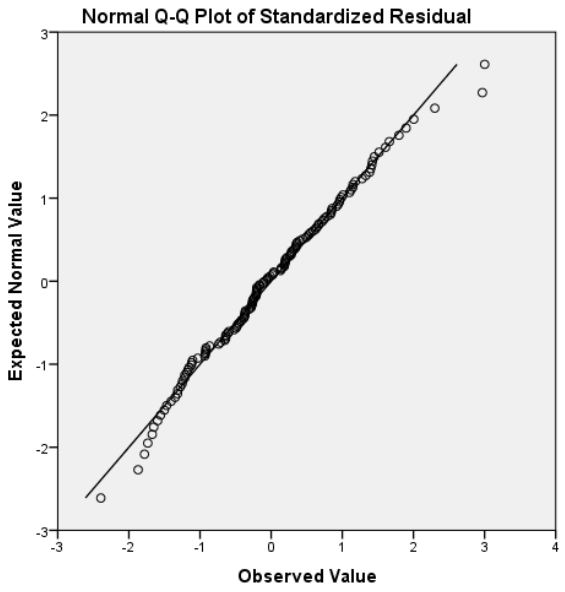
Predicted DSM=a*GRC + b*SC + constant



Predicted DDS=a*GRC + b*SC + constant



Predicted HbA_{1c} =a*GRC + b*SC + constant



Appendix N

Independence of Residuals for Regressions

Regression Models	Durbin-Watson statistic
Predicted DSM=a*GRC + constant	2.093
Predicted DSM=a*SPC + constant	2.115
Predicted DSM=a*RE + constant	2.208
Predicted DSM=a*RABBM + constant	1.964
Predicted DSM=a*CBWLFR + constant	2.073
Predicted DDS=a*GRC + constant	2.223
Predicted DDS=a*SPC + constant	2.287
Predicted DDS=a*RE + constant	2.090
Predicted DDS=a*RAABM + constant	2.122
Predicted DDS=a*CBWLFR + constant	2.216
Predicted HbA_{1c}=a*GRC + constant	1.879
Predicted HbA_{1c} =a*SPC + constant	2.008
Predicted HbA_{1c} =a*RE + constant	1.868
Predicted HbA_{1c} =a*RAABM + constant	1.880
Predicted HbA_{1c} =a*CBWLFR + constant	1.946
Predicted SC=a*GRC + constant	1.993
Predicted SC=a*SPC + constant	1.992
Predicted SC=a*RE +constant	1.930
Predicted SC=a*RABBM + constant	1.900
Predicted SC=a*CBWLFR + constant	1.935
Predicted DSM=b*SC + constant	2.049
Predicted DDS=b*SC + constant	2.129
Predicted HbA_{1c}=b*SC + constant	1.924
Predicted DSM=a*GRC + b*SC + constant	2.058
Predicted DSM=a*SPC + b*SC + constant	2.047
Predicted DSM=a*RE + b*SC + constant	2.043
Predicted DSM=a*RABBM + b*SC + constant	2.060
Predicted DSM=a*CBWLFR + b*SC + constant	2.054
Predicted DDS=a*GRC + b*SC + constant	2.129
Predicted DDS=a*SPC + b*SC + constant	2.154
Predicted DDS=a*RE + b*SC + constant	2.057
Predicted DDS=a*RAABM + b*SC + constant	2.090
Predicted DDS=a*CBWLFR + b*SC + constant	2.133
Predicted HbA_{1c}=a*GRC + b*SC + constant	1.886
Predicted HbA_{1c} =a*SPC + b*SC + constant	1.934
Predicted HbA_{1c} =a*RE + b*SC + constant	1.913
Predicted HbA_{1c} =a*RAABM + b*SC + constant	1.895
Predicted HbA_{1c} =a*CBWLFR + b*SC + constant	1.943

Appendix O

Means, Standard Deviations, Cronbach Alpha Coefficients, and Scale Intercorrelations for all Study Variables

Scale	*M*	*SD*	α	1	2	3	4	5	6	7	8	9	10
1. GRC	3.57	0.85	.95	-									
2. SPC	3.42	1.00	.92	.768**	-								
3. RE	3.58	1.15	.92	.783**	.421**	-							
4. RABBM	3.33	1.43	.90	.677**	.348**	.590**	-						
5. CBWLFR	3.99	1.26	.91	.689**	.610**	.444**	.249**	-					
6. SCS	2.65	0.84	.77	-.543**	-.373**	-.482**	-.461**	-.396**	-				
7. GSES	21.26	4.86	.92	.063	-.106	.210*	.087	.040	-.024	-			
8. DSMQ	3.25	1.54	.79	-.399**	-.228**	-.401**	-.262**	-.274**	.621**	-.139	-		
9. DDS	2.92	1.89	.94	.537**	.320**	.475**	.437**	.328**	-.620**	.081	-.696**	-	
10. H_bA1_c	7.67	1.19	--	.286**	.238**	.202**	.236**	.106	-.389**	.070	-.496**	.481**	
11. BDI-II	12.18	9.00	.87	-.192*	-.123	-.327**	-.158	-.148	.290**	-.525**	.248**	-.158	-.068

Note. N = 146. GRC = Gender Role Conflict Scale Total, scores range from 1 to 6 with higher scores indicating more gender role conflict; RE = Restrictive Emotionality, scores range from 1 to 6 with higher scores indicating more restrictive emotionality; RABBM = Restrictive Affective Behavior Between Men, scores range from 1 to 6 with higher scores indicating more restrictive affective behavior; CBWLFR = Conflict Between Work and Leisure - Family Relations, scores range from 1 to 6 with higher scores indicating more work-life and family relation conflicts; SCS = Self-Compassion Scale, scores range from 1 to 5, with higher scores indicating greater self-compassion; GSES = General Self-Efficacy Scale, scores range from 10 to 40, with higher scores indicating more self-efficacy; DSMQ = Diabetes Self-Management Questionnaire, scores range from 0 to 48, with higher scores indicating better diabetes self-care; DDS = Diabetes Distress Scale, scores range from 1 to 5, with higher scores indicating greater distress; H_bA_{1c} = Hemoglobin A_{1c}, scores ranged from 5.0% to 11.0% (31 to 97 mmol/mol), higher values indicate poorer glucose control.
*$p < .05$. **$p < .01$.

Appendix P

Primary Mediation Analyses

Unstandardized Coefficients, Indirect Effects, Effect Sizes and 95% Bias-Corrected Confidence Intervals for Self-Compassion (SCS) as Mediator in the Relationships between Gender Role Conflict (GRCS), Diabetes Self-Management (DSMQ), Diabetes Distress (DDS), and Glucose Control (HbA_{1c})

Dependent Variable		Total Effect of IV on DV Path (*c*)	Effect of IV on M Path (*a*)	Effect of M on DV Path (*b*)	Direct Effect Path (*c'*)	Indirect Effect			Effect Size		
							95% Boot CI			95% Boot CI	
DSMQ						*(ab)*	Lower	Upper	*ab*/*s*Y	Lower	Upper
	B	-.73	-.54	1.05	-.16	-.57	-.77	-.38	-.37	-.49	-.26
	SE	.139	.070	.143	.142	.101			.058		
	t	-5.22	-7.75	7.38	-1.13						
	P-value	< .001	< .001	< .001	= .26						
DDS											
	B	.75	-.54	-.66	.40	.40	.24	.49	.30	.20	.41
	SE	.100	.070	.105	.105	.064			.043		
	t	7.63	-7.75	-6.26	3.82						
	P-value	< .001	< .001	< .001	< .001						
HbA_{1c}											
	B	.40	-.54	-.47	.15	.25	.11	.42	.21	.09	.35
	SE	.11	.070	.13	.13	.082			.066		
	t	3.58	-7.75	-3.63	1.16						
	P-value	< .001	< .001	< .001	= .25						

Notes. *N* = 146; DDS = Diabetes Distress Questionnaire-17; DSMQ = Diabetes Self-Management Questionnaire; DV= Dependent Variable; GRCS = Gender Role Conflict Scale; HbA_{1c} = Glycosylated Hemoglobin A_{1c}; IV = Independent Variable; M = Mediator; *ab*/*s*Y = partially standardized indirect effect of X on Y.

Appendix Q

GRCS Subscale Mediation Analyses for Diabetes Self-Management (DSMQ)

Unstandardized Coefficients, Effect sizes, and 95% Confidence Intervals for Self-Compassion (SCS) as Mediator in the Relationship between GRCS Subscales and Diabetes Self-Management (DSMQ), N = 146

		Total Effect of IV on DV Path (*c*)	Effect of IV on M Path (*a*)	Effect of M on DV Path (*b*)	Direct Effect Path (*c'*)	Indirect Effect			Effect Size		
							95% Boot CI			95% Boot CI	
SPC						*(ab)*	Lower	Upper	*ab*/*s*Y	Lower	Upper
	B	-.31	-.31	1.14	.001	-.36	-.54	-.19	-.23	-.34	-.13
	SE	.065	.065	.130	.109	.090			.054		
	t	-4.82	-4.82	8.81	.063						
	P-value	< .001	< .001	< .001	= .95						
RE											
	B	-.58	-.38	1.02	-.19	-.39	-.54	-.25	-.25	-.34	-.17
	SE	-.578	.057	.136	.107	.075			.043		
	t	-5.26	-6.60	7.53	-1.79						
	P-value	< .001	< .001	< .001	= .075						
RAABM											
	B	-.34	-.324	1.17	.19	-.38	-.51	-.17	-.24	-.33	-.17
	SE	.104	.052	.136	.457	.068			.040		
	t	-3.25	-6.23	8.60	.419						
	P-value	= .001	< .001	< .001	= .676						
CBWLFR											
	B	-.34	-.26	1.12	-.04	-.29	-.28	-.11	-.19	-.28	-.11
	SE	.100	.051	.131	.087	.072			.043		
	t	-3.42	-5.17	8.52	-.478						
	P-value	< .001	< .001	< .001	= .641						

Notes. DV= Dependent Variable; GRCS = Gender Role Conflict Scale; IV = Independent Variable; M = Mediator; SPC = Success, Power, and Competition; RE = Restrictive Emotionality; RAABM = Restrictive Affectionate Behavior Between Men; CBWLFR = Conflicts Between Work and Leisure-Family Relations; *ab*/*s*Y = partially standardized indirect effect of X on Y.

Appendix R

GRCS Subscale Mediation Analyses for Diabetes Distress (DDS)

Unstandardized Coefficients, Effect sizes, and 95% Confidence Intervals for Self-Compassion (SCS) as Mediator in the Relationship between GRCS Subscales and Diabetes Distress (DDS), N = 146

		Total Effect of IV on DV Path (*c*)	Effect of IV on M Path (*a*)	Effect of M on DV Path (*b*)	Direct Effect Path (*c'*)	Indirect Effect			Effect Size		
							95% Boot CI			95% Boot CI	
SPC						*(ab)*	Lower	Upper	*ab*/*s*Y	Lower	Upper
	B	.379	-.312	-.821	.123	.253	.142	.383	.217	.122	.315
	SE	.093	.065	.099	.083	.061			.049		
	t	4.056	-4.820	-8.279	1.480						
	P-value	< .001	< .001	< .001	= .141						
RE											
	B	.527	-.378	-.720	.254	.272	.177	.385	.246	.162	.336
	SE	.081	.057	.102	.080	.054			.045		
	t	6.475	-6.604	-7.032	3.168						
	P-value	< .001	< .001	< .001	= .002						
RAABM											
	B	.433	-.324	-.751	.191	.243	.161	.336	.245	.167	.329
	SE	.074	.052	.102	.072	.045			.041		
	t	5.826	-6.228	-7.362	2.660						
	P-value	< .001	< .001	< .001	< .01						
CBWLFR											
	B	.309	-.264	-.821	.092	.217	.121	.315	.230	.128	.331
	SE	.074	.051	.100	.067	.049			.051		
	t	4.164	-5.173	-8.185	1.378						
	P-value	< .001	< .001	< .001	= .171						

Notes. DV= Dependent Variable; GRCS = Gender Role Conflict Scale; IV = Independent Variable; M = Mediator; SPC = Success, Power, and Competition; RE = Restrictive Emotionality; RAABM = Restrictive Affectionate Behavior Between Men; CBWLFR = Conflicts Between Work and Leisure-Family Relations; *ab*/*s*Y = partially standardized indirect effect of X on Y.

Appendix S

GRCS Subscale Mediation Analyses for Glucose Control (HbA_{1c})

Unstandardized Coefficients, Effect sizes, and 95% Confidence Intervals for Self-Compassion (SCS) as Mediator in the Relationship between GRCS Subscales and Glucose Control (HbA_{1c}), N = 146

		Total Effect of IV on DV Path (*c*)	Effect of IV on M Path (*a*)	Effect of M on DV Path (*b*)	Direct Effect Path (*c'*)	Indirect Effect			Effect Size		
							95% Boot CI			95% Boot CI	
SPC						*(ab)*	Lower	Upper	*ab*/*s*Y	Lower	Upper
	B	.282	-.312	-.493	.128	.154	.072	.225	.130	.062	.210
	SE	.096	.065	.117	.098	.047			.038		
	t	2.941	-4.820	-4.227	1.309						
	P-value	< .005	< .001	< .001	= .193						
RE											
	B	.224	-.378	-.538	.201	.203	.108	.318	.183	.099	.282
	SE	.091	.057	.124	.098	.055			.047		
	t	2.473	-6.604	-4.324	.211						
	P-value	< .015	< .001	< .001	= .833						
RAABM											
	B	.234	-.324	-.503	.071	.163	.084	.262	.164	.085	.261
	SE	.080	.052	.122	.086	.045			.044		
	t	2.912	-6.228	-4.112	.829						
	P-value	< .005	< .001	< .001	= .408						
CBWLFR											
	B	.100	-.264	-.582	-.054	.154	.076	.247	.163	.082	.261
	SE	.078	.051	.118	.079	.044			.046		
	t	1.281	-5.173	-4.914	-.677						
	P-value	= .202	< .001	< .001	= .499						

Notes. DV= Dependent Variable; GRCS = Gender Role Conflict Scale; IV = Independent Variable; M = Mediator; SPC = Success, Power, and Competition; RE = Restrictive Emotionality; RAABM = Restrictive Affectionate Behavior Between Men; CBWLFR = Conflicts Between Work and Leisure-Family Relations; *ab*/*s*Y = partially standardized indirect effect of X on Y.

Appendix T

PROCCESS Macro Primary Mediation Analyses Output

```
Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Version 3.3 *******************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**************************************************************************
Model  : 4
    Y  : DSM_TOTA
    X  : GRC
    M  : Self_com

Sample
Size:  146

**************************************************************************
OUTCOME VARIABLE:
 Self_com

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5427      .2945      .5007    60.1054     1.0000   144.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant     4.5743      .2550    17.9379      .0000     4.0703     5.0784
GRC          -.5394      .0696    -7.7528      .0000     -.6770     -.4019

Standardized coefficients
         coeff
GRC     -.5427

**************************************************************************
OUTCOME VARIABLE:
 DSM_TOTA

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6252      .3909     1.4668    45.8772     2.0000   143.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant     1.0287      .7849     1.3105      .1921     -.5229     2.5803
GRC          -.1600      .1418    -1.1287      .2609     -.4403      .1202
Self_com     1.0522      .1426     7.3772      .0000      .7703     1.3341

Standardized coefficients
             coeff
GRC          -.0877
Self_com      .5732
```

```
************************** TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 DSM_TOTA

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3988      .1590     2.0110    27.2294     1.0000   144.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     5.8417      .5110    11.4310      .0000     4.8316     6.8518
GRC          -.7276      .1394    -5.2182      .0000    -1.0032     -.4520

Standardized coefficients
         coeff
GRC     -.3988

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI       c_ps
c_cs
     -.7276      .1394    -5.2182      .0000    -1.0032     -.4520     -.4722
-.3988

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI      c'_ps
c'_cs
     -.1600      .1418    -1.1287      .2609     -.4403      .1202     -.1038
-.0877

Indirect effect(s) of X on Y:
             Effect     BootSE   BootLLCI   BootULCI
Self_com     -.5676      .1013     -.7741     -.3778

Partially standardized indirect effect(s) of X on Y:
             Effect     BootSE   BootLLCI   BootULCI
Self_com     -.3683      .0585     -.4887     -.2575

Completely standardized indirect effect(s) of X on Y:
             Effect     BootSE   BootLLCI   BootULCI
Self_com     -.3111      .0504     -.4115     -.2128

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  10000

NOTE: Variables names longer than eight characters can produce incorrect
output.
      Shorter variable names are recommended.

------ END MATRIX -----
```

```
Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Version 3.3 ******************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**************************************************************************
Model  : 4
    Y  : Distress
    X  : GRC
    M  : Self_com

Sample
Size:  146

**************************************************************************
OUTCOME VARIABLE:
 Self_com

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5427      .2945      .5007    60.1054     1.0000   144.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant     4.5743      .2550    17.9379      .0000     4.0703     5.0784
GRC          -.5394      .0696    -7.7528      .0000     -.6770     -.4019

Standardized coefficients
         coeff
GRC     -.5427

**************************************************************************
OUTCOME VARIABLE:
 Distress

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6641      .4411      .7976    56.4259     2.0000   143.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant     3.2382      .5788     5.5943      .0000     2.0940     4.3824
GRC           .3991      .1046     3.8170      .0002      .1924      .6057
Self_com     -.6579      .1052    -6.2557      .0000     -.8658     -.4500

Standardized coefficients
             coeff
GRC           .2841
Self_com     -.4656

************************ TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 Distress

Model Summary
```

```
          R       R-sq        MSE          F        df1        df2          p
      .5368      .2881     1.0089    58.2833     1.0000   144.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant      .2285      .3620      .6313      .5289     -.4870      .9440
GRC           .7540      .0988     7.6344      .0000      .5588      .9492

Standardized coefficients
         coeff
GRC      .5368

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI       c_ps
c_cs
      .7540      .0988     7.6344      .0000      .5588      .9492      .6356
.5368

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI      c'_ps
c'_cs
      .3991      .1046     3.8170      .0002      .1924      .6057      .3364
.2841

Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Self_com      .3549      .0638      .2378      .4867

Partially standardized indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Self_com      .2992      .0510      .2067      .4047

Completely standardized indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Self_com      .2527      .0425      .1720      .3379

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  10000

------ END MATRIX -----
```

```
Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Version 3.3 ******************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**************************************************************************
Model  : 4
    Y  : Hemo
    X  : GRC
    M  : Self_com

Sample
Size:  146

**************************************************************************
OUTCOME VARIABLE:
 Self_com

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5427      .2945      .5007    60.1054     1.0000   144.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant     4.5743      .2550    17.9379      .0000     4.0703     5.0784
GRC          -.5394      .0696    -7.7528      .0000     -.6770     -.4019

Standardized coefficients
         coeff
GRC     -.5427

**************************************************************************
OUTCOME VARIABLE:
 Hemo

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3990      .1592     1.2017    13.5420     2.0000   143.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant     8.3422      .7105    11.7414      .0000     6.9378     9.7466
GRC           .1484      .1283     1.1564      .2495     -.1053      .4021
Self_com     -.4692      .1291    -3.6345      .0004     -.7244     -.2140

Standardized coefficients
             coeff
GRC           .1056
Self_com     -.3318

************************ TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 Hemo

Model Summary
```

```
          R       R-sq        MSE          F        df1        df2          p
      .2856      .0816     1.3036    12.7899     1.0000   144.0000      .0005

Model
              coeff         se          t          p       LLCI       ULCI
constant     6.1959      .4115    15.0583      .0000     5.3826     7.0092
GRC           .4015      .1123     3.5763      .0005      .1796      .6234

Standardized coefficients
         coeff
GRC      .2856

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI       c_ps
c_cs
      .4015      .1123     3.5763      .0005      .1796      .6234      .3382
.2856

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI      c'_ps
c'_cs
      .1484      .1283     1.1564      .2495     -.1053      .4021      .1250
.1056

Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Self_com     .2531      .0813      .1078      .4208

Partially standardized indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Self_com     .2132      .0661      .0945      .3514

Completely standardized indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Self_com     .1800      .0547      .0795      .2928

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  10000

------ END MATRIX -----
```