A META-ANALYSIS OF THE ROLES AND RESOURCES MODEL OF SUPPORT GIVING'S HEALTH EFFECTS

by

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ABSTRACT

THOMAS MICHAEL LAPORTE. A meta-analysis of the Roles and Resources model of support giving's health effects. (Under the direction of DR. RYAN P. KILMER)

Giving social support is lauded in society and regarded as contributing to the development and maintenance of social relationships, but research has typically focused on the benefits of receiving such support and the costs of giving. An emerging literature has begun to show the potential for giving to yield health benefits, but these studies have examined diverse possible benefits (e.g., relationship quality, mortality) and documented highly variable effect sizes. The literature could benefit from a theory-driven meta-analysis to organize and evaluate the robustness of these effects. However, the only existing theory addressing the benefits of giving support, the Caregiver Systems model (Konrath & Brown, 2013), suggests that giving support buffers stress during discrete stressful experiences. However, it does not address giving that occurs outside of stressful experiences, and does not account for the potential direct salutary effects of giving on stable health factors that help individuals prevent and manage future stress, including social relationships, social resources (e.g., trust and reciprocity), and personal resources (e.g., self-esteem). The present meta-analysis tested relationships posited via a new integrative framework – the Roles and Resources model (LaPorte, 2016) – to explain the variable levels of associations among giving and relationships, resources, and stress within and outside of stressful contexts. Results showed giving is (a) not significantly correlated with social relationships; (b) correlated with social and personal resources; and (c) unrelated to stress, even in high stress contexts. These findings provide incomplete but essential support for the Roles and Resources model and do not support the Caregiver

Systems model's stress-buffering framework. Implications of these findings for future research and application are discussed.

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CHAPTER 1: INTRODUCTION

Giving social support to others is generally lauded in society (Batson, 1998; Post & Neimark, 2008; Uehara, 1995) and regarded as an important contributor to the development and maintenance of close relationships (Feeney & Collins, 2014a). However, social support research has primarily focused on the positive health effects of receiving support (see, e.g., Schwarzer & Leppin, 1989; Smith, Fernengel, Holcroft, & Gerald, 1994 for reviews). In contrast, support giving research has tended to focus on negative effects, typically examining giving in obligatory or demanding contexts (e.g., caregiving; Taylor, 2011). However, a number of studies have begun to counteract these trends, indicating the potential for support giving's positive effects.

This emerging literature could benefit from a meta-analysis of studies to determine the robustness of these effects (Konrath & Brown, 2013) and generate research questions that would facilitate work in this area, but the research to date has assessed giving's relationship with a large variety of health outcomes, from the proximal (e.g., self-esteem; Bracke, Christiaens, & Verhaeghe, 2008) to the distal (e.g., physical health, mortality; Brown, Nesse, Vinokur, & Smith, 2003). Moreover, effect sizes appear highly variable, ranging from moderate and positive (e.g., Reis, Maniaci, & Rogge, 2014; Shakespeare-Finch & Obst, 2011) to negative (e.g., Acitelli & Antonucci, 1994; Lu, 1997).

A meta-analysis of giving's relationship with health would be strengthened by drawing upon theory to explain the observed variation in effects. However, the only existing theory regarding giving's health function proposes a stress-buffering framework (Konrath & Brown, 2013), suggesting that individuals give support to counteract acute stress and, as a consequence, limit the negative downstream health effects of stress. As such, this theory does not account for giving's potential direct salutary effect on stable, long-term health factors, such as its cultivation and maintenance of interpersonal relationships (Feeney & Collins, 2015; Ries et al., 2014) and its enhancement of self-esteem (e.g., Batson, 1998), or for support giving that occurs outside of acute stress contexts, such as encouraging someone to explore interests or goals (Wrosch, Scheier, Miller, Schulz, & Carver, 2003). Thus, a meta-analysis that uses a comprehensive theory of support giving to explain giving's variations in strength of associations with a number of health effects within and outside of acute stress contexts could (a) enhance understanding of the obtained effects within this emerging literature, and (b) guide well-targeted subsequent work in this area.

The present dissertation is a theory-driven meta-analysis – it is guided by a new, integrative theoretical framework, the Roles and Resources Model (RRM; LaPorte, 2016), to examine giving's relationship with a number of proximal and distal health outcomes. Further, the use of the RRM informs the selection of moderators to test for variations in strengths of association between giving within and outside of acute stress contexts. That is, individuals' giving may reduce stress within acute stress contexts (e.g., giving after a natural disaster; Boszczanin, 2012) but, when stress is relatively less salient, individuals' giving might protect or enhance resources, such as emotional

(positive affect), psychological (self-esteem, competency beliefs), or social resources (e.g., routine, everyday giving between spouses; Feeney & Collins, 2014b; Hobfoll, 2009, 2011; Reis et al., 2014). As such, individuals' support giving might be expected to be more strongly related to stress within acute stress contexts, but more strongly related to resources outside of such contexts.

This dissertation has four objectives. First, it provides an overview of the RRM, describing support giving's effects on a range of health outcomes and focusing specifically on giving effects within and outside of acute stress contexts. A second prime objective involves identifying, coding, and organizing statistical associations in order to understand which aspects of the RRM are currently testable and which require further empirical research. As a third objective, the work examines and tests selected relationships specified by the RRM (i.e., for as many relationships as the literature includes correlations). A final central step evaluates the extent to which the literature supports testable relationships specified by the RRM and, for relationships that cannot be tested due to insufficient evidence, outlines research questions and hypotheses for additional subsequent empirical studies that could add meaningfully to the body of evidence for future meta-analysis.

The present dissertation has the potential to contribute to theory, research, and work in health promotion. First, a rigorous investigation of the RRM's central tenets is necessary, and support for the model could expand meaningfully upon existing theory, providing a single framework within which multiple types of psychosocial mechanisms can be understood and described, resulting in a more parsimonious model for giving's health effects. Second, the study's theoretical grounding helps address criticisms that an

overreliance on meta-analysis has detracted from theory development and inhibited the advancement of behavioral research (e.g., Eysenck, 1994); by using the RRM to guide analysis, the present meta-analysis is not subject to this criticism. Third, this study could improve understanding of support giving's basic health promoting processes and identify conditions that enhance or inhibit these processes. As a result, the study could yield a theoretical foundation for future efficacy and effectiveness studies aiming to harness support giving's health promoting potential.

The next two chapters (Chapters 2 and 3) include The Framework for the Present Study and the Methodology for the meta-analysis. The second chapter includes construct definitions and elaborates on the RRM's basic premise that support giving during acute stress reduces individuals' stress and, outside of acutely stressful situations, builds stress-resistance resources (i.e., personal and social resources that facilitate the capacity to manage chronic stress, reduce occurrence of stressors, and address stressors more effectively when they occur; Antonovsky, 1987; Hobfoll, 2011; Kobasa, 1979). The third chapter presents the analytic approach, including descriptions of the (a) data sources; (b) inclusion and exclusion criteria for the selection of studies; (c) search strategy; (d) procedures for identification, selection, and coding of statistical associations; and (e) procedures for the meta-analysis. The fourth and fifth chapters include the Results and Discussion, respectively, which include the results of the meta-analysis, discuss central findings, and frame implications for future research and intervention.

CHAPTER 2: THE FRAMEWORK GUIDING THE PRESENT STUDY

The RRM (Figure 1) was developed to establish a theoretical foundation for research on support giving's health effects in order to facilitate explanation of the wide-ranging effects documented in the literature to date (LaPorte, 2016). The model integrates ideas from theories of resource exchange, including Conservation of Resources (COR) theory (Hobfoll, 1989), social exchange theories (Emerson, 1976, Gouldner, 1960) and Role-Identity theory (Thoits, 1986), which, together, provide the basis for proposing possible resource-enhancing effects and conditions of support giving in addition to stress-buffering effects and conditions. The rest of this section (1) introduces and defines key terms used in the model, (2) describes key model distinctions, and (3) articulates the benefit of using the RRM to examine the support giving literature's diverse effects.

Before elucidating the model's two major distinctions of (1) giving within and outside of acute stress contexts and (2) giving's effects on social and personal resources, it is necessary to define key terms. The present study's definition of social support giving parallels conceptualizations of social support receiving, i.e., giving in a variety of ways (e.g., money, listening, advice, time, etc.) to family, friends, co-workers, and others to help them address specific challenges or in ways that otherwise help them improve personally (e.g., explore their personal goals) or help both the giver and receiver(s) improve together (e.g., saving for purchase of a home that the entire family can enjoy). This definition excludes volunteering, caregiving, and anonymous giving (e.g., donations

or helping strangers). The model aligns with and draws from several stress and coping models (e.g., Antonovsky, 1987; Hobfoll 1989; Lazarus & Folkman, 1984; see Hobfoll, 2002 for a review) in its broad definition of stress-resistance resources (hereafter referred to as resources), suggesting they are beliefs, abilities, skills, structures, and conditions that facilitate the management of stress by helping individuals make sense of stress (e.g., its causes, its severity), and how to prevent and address it. Such resources contribute to individuals' appraisals of stressful events and circumstances, their reactions and responses, their specific coping approaches, and their broader outlook regarding themselves, their world, and their future.

The RRM holds that when acute stress is low, individuals give in ways that have the potential to contribute to the enhancement of their own resources, whether they do this consciously, such as giving with the expectation that the recipient will return support in the future, or unconsciously, such as giving to be friendly or to make someone happy (e.g., writing a letter to a friend to brighten her day). In the latter case, such acts might contribute to a giver's own resources even if the giver did not intend to benefit, as recipients may feel greater affection toward the giver and enhance their commitment to the relationship and support for the giver (see Feeney & Collins 2014a, 2014b, 2015).

The RRM contends that giving that does not address stress (e.g., gift giving; Aknin & Human 2015) still can benefit the giver. These benefits do not come in the form of *immediate stress reduction*, because, in the absence of stress (or, when stress is low), stress cannot be reduced and therefore cannot be the motivating force behind the act of giving. Rather, the RRM holds that under these "low-stress" circumstances, giving develops or augments givers' resources, which benefits givers by enhancing their

capacity to manage stress more effectively, thereby curtailing the potential negative effects of stress. Thus, within the RRM framework, it is suggested that individuals who are unfettered by stress may benefit from giving because giving in such circumstances enhances their capacity to avoid potential stress-related harm from *chronic and future stress*. Figure 2 depicts support giving within acute stress contexts (Panel 1) and giving outside of acute stress contexts (Panel 2), as represented via the RRM framework.

The model also draws on common and widely-cited definitions of stress (Hobfoll, 2002; Lazarus & Folkman, 1984), suggesting that stress is the experience of events or conditions that overwhelm coping capacity, contributing to physical strain and psychological distress. Chronic stress is defined as problems, conditions, circumstances, or issues that occur frequently or define an individual's daily roles or activities to the degree that they are experienced as if they are continuous (e.g., poverty, neighborhood crime and violence, intimate partner violence; e.g., Wheaton, 1994). Acute stress is defined as stress experienced over a delimited, typically short period of time (i.e., the stressor has a clear start and end point, e.g., a broken leg, a car accident without serious injuries or complications; Cohen, Kellser, & Gordon, 1997).

While these notions are theoretically distinguishable, stress researchers have not always provided operationally distinct measures of acute versus chronic stress, as evidenced by the inclusion of stressful events *and* stressful *conditions* or *circumstances* (e.g., bereavement, homelessness) on stressful event inventories or checklists (e.g., Social Readjustment Rating Scale, SRRS; Holmers & Rahe, 1967; PERI Life Events Inventory; Dohrenwend, Askenasy, Krasnoff, & Dohrenwend, 1978). Given their episodic, time-limited nature, events may be more characteristic of acute stress and, by contrast, given

their unremitting nature, conditions (or circumstances) may be more characteristic of chronic stress. Despite attempts to weight stressful conditions more heavily in terms of their relative health impact (as is done with the SRRS), or to ask respondents to assign ratings of "stressfulness" to endorsed stressors, there is little evidence that such weighting has improved the predictive validity of these inventories (see, e.g., Cohen et al., 1997), suggesting that stressful events and stressful conditions may not be all that meaningfully different in their influence on health. That said, researchers have maintained that, although both circumscribed events and chronically stressful conditions can have negative consequences for adjustment and functioning (Johnson, 1986), chronic stressors and their cumulative effect are thought to have greater risk potential (Cowen, Wyman, Work, & Parker, 1990), and the occurrence of multiple adversities increases risk for maladjustment substantially (Luthar & Cicchetti, 2000).

Further complicating efforts to distinguish types of stress and their potential impact (e.g., McMahon, Grant, Compas, Thurm, & Ey, 2003), some evidence suggests that stressful events and conditions are related or occur together. For example, studies (e.g., Schilling & Diehl, 2014) have shown that some stressful conditions may be the result of the accumulation of daily stressors (e.g., daily negative interactions with a supervisor), events or risk conditions may cluster or occur together (e.g., Farmer & Farmer, 2001), or, in selected cases, stressful daily events mediate the negative effect of major events (e.g., transition to college; Wagner, Compas, & Howell, 1988) on psychological symptomatology. Thus, although theoretically distinct, acute and chronic stress may often co-occur and, at least in some cases, may be experienced in similar ways. Thus, in the RRM's frame for support giving contexts, it is suggested that when

individuals give under conditions of chronic *or* acute stress, the primary, immediate outcome is reduced stress for both the giver and receiver.

It is important to note that although giving motivations have received limited empirical attention in social support giving research, Konrath and Brown (2013) have suggested that only giving motivated by compassion (i.e., care for the other) will yield benefits (i.e., stress reduction). More recently, Crocker, Canevello, and Brown (2016) questioned the notion that giving is only beneficial if it is purely altruistic, suggesting that both "other" and "self" motivations may have costs and benefits. They maintained that the association between motivation and the outcomes of giving (e.g., reducing distress, feeling good about "doing the right thing", etc.) remains an empirical question. Thus, it seems that although self-other motivations are important factors to consider in the support giving context, neither theory nor evidence has clearly delineated whether or how motivations influence the extent to which givers benefit from giving. Given this lack of clear direction from the literature, in the RRM, giving is not necessarily (or exclusively) driven by a goal of stress reduction or building up one's resources (e.g., improving intimacy). That is, while giving may serve that function (i.e., maintaining or enhancing resources), givers may not be consciously motivated to give to build up resources (i.e., it may not be an intentional "goal" of the giving), but may experience such benefits as a result of their giving.

The model also distinguishes between social and personal resources (Taylor & Stanton, 2007) and, in general, this difference has been described more explicitly and clearly in the existing literature. Social resources are binding features or salient characteristics of relationships (Hobfoll, Freedy, Lane & Geller, 1990; Thoits, 1995) – for

instance, trust is a critical such feature; other examples include reciprocity, sense of obligation, community, and commitment – as well as the relationships themselves and the sense of connectedness and support they may afford. Personal resources are individual skills, beliefs, or attributes that facilitate stress resistance. Such resources could include self-esteem, self-efficacy, mastery, and optimism (Bandura, 1982; Kobasa, Maddi, & Kahn, 1982; Sandler, Tein, Mehta, Wolchik, & Ayers, 2000). The distinction between social and personal resources holds salience because, according to the model (LaPorte, 2016), enhancements to social resources can improve a single social relationship's capacity to limit a giver's stress, whereas enhancements to one's personal resources can equip a giver to develop resources in an array of social relationships (e.g., with family, friend, religious institutions, or place of employment), thereby expanding a giver's social networks and potentially diversifying the giver's collection of available resources.

Social relationships are defined as an individual's ties or connections to another individual or a group. A given relationship, therefore, could include as few as two individuals, but could be comprised of many more, for example, an individual's participation or role in a large organization or community (Umberson & Montez, 2010). Having the capacity to give in a variety of social relationships is advantageous because different types of relationships have different types of capacities, and the nature of one's relationships (and the support he or she gives or receives) likely differs across varying relationships as well. Each social relationship, therefore, is unique and can help individuals meet the diversity of challenges they may face. In a similar vein, relationships vary in their capacity to facilitate the development of resources (e.g., work provides income, friends provide belonging, etc.; Thoits, 2011).

The next section describes support giving's predicted effects on stress within acute stress contexts and, outside of such contexts, its effects on resources. The subsequent section introduces and describes three mechanisms by which support giving contributes to resource development. Discussion of these mechanisms helps set the stage for an elaborated consideration of giving's enhancement of social and personal resources.

2.1 Giving's Stress-buffering versus Resource-enhancing Effects

Konrath and Brown's (2013) *Caregiver Systems* model suggests support giving restores homeostasis during acute stress. Their model contends that when givers experience stress from "helping cues" – either stress from their own challenges or stress experienced when someone else needs help – support giving activates release of endogenous opioids or oxytocin to relieve stress-related discomfort (Eisenberger & Cole, 2012; Eisenberger, Taylor, Gable, Hilmert, & Lieberman, 2007). Giving outside of acute stress contexts may be qualitatively different (see Feeney & Collins, 2014b) because such support would likely have different aims, such as giving to uphold mutually-beneficial exchange processes (e.g., sharing of household chores; Beckes & Coan, 2011; see Uehara, 1995) and giving to "instill" positive affect in oneself or others (see Feeney, 2004; Feeney & Thrush, 2010). As such, giving outside of stressful events may have distinct effects and yield different potential benefits.

To frame and explain these effects, the RRM holds that, beyond its potential to reduce stress, support giving should also be understood as a process that accesses or enhances resources. Further, the model contends that these resources not only help address present moment stress, but also help givers manage conditions that limit chronic stress and supply greater capacity for addressing future acute stress (Antonovsky, 1987;

Hobfoll, 1989). This is an important distinction because it suggests that giving can have a positive impact on individuals' health, whether or not the giving occurs in the context of a stressor. Thus, when individuals give active and ongoing support, their support can contribute to the maintenance and enhancement of resources which, in turn, can increase individuals' capacity to respond to subsequent adversity. Although stated previously, it is important to emphasize that, in the RRM, givers may not be consciously motivated to give to enhance resources (i.e., it may not be an intentional "goal" of their giving), but may experience such benefits because of their giving.

The emerging support giving literature shows evidence of support giving's positive association with resources that have been widely recognized in the broader stress and coping literature as useful for stress resistance (e.g., Taylor & Stanton, 2007), including personal resources such as self-esteem (e.g., Jaeckel, Seiger, Orth, & Wiese, 2012; Krause & Shaw, 2000) and self-efficacy (e.g., Bracke et al., 2008) as well as social resources such as sense of community (e.g., Bokszczanin, 2012) and perceived availability of social support (e.g., Litwin, 1998; Smith, 2014). A substantial body of research has shown that individuals who have robust social and personal resources are more likely to cope effectively in the face of stress (e.g., Hobfoll, 2011; Hobfoll et al., 1990; Hobfoll, Stevens, & Zalta, 2015). For example, such individuals might perceive stressors positively, such as viewing them as welcomed challenges, rather than threats (Antonovsky, 1987) or, when exposed to stressors, they may be better able to mobilize their resources to respond, reduce the potential impact of the stressor, and adapt effectively (Briscoe, Akin, & Guilkey, 1990; Hobfoll, 2011; Kimhi, 2015; Laverack & Labonte, 2000; Pham, Vinck, Kinkodi, & Weinstein, 2010; Quennerstedt, 2008). Thus,

support giving may enhance an individual's resources directly and, in turn, enhance their capacity to give more and resist and respond to stress.

2.2 Mechanisms Through Which Giving Enhances Resources

The RRM suggests there are three types of mechanisms relevant to support giving, including (1) social relationships, (2) the norm of reciprocity, and (3) role-identities. It is also suggested that each of these mechanisms provide access to a range of related resources and, thus, each is a key contributor to an individual's overall stress-resistance capacity. This section begins with a discussion of research suggesting that a variety of resources are related, then describes the three support-giving mechanisms.

The RRM takes the view of COR theory and other resource-focused coping models (e.g., see Hobfoll, 2002) that multiple types of resources (e.g., social or personal) are proximate and interrelated. Several studies have shown that social resources are related, such as those that have documented associations between trust and relationship closeness (e.g., Berscheid, Snyer, & Omoto, 1989). Studies have also shown that personal resources are related, such as those that have reported associations between self-esteem and self-efficacy (e.g., Judge & Bono, 2001). Judge, Erez, Bono, and Thoresen (2002) have observed that some personal resources – self-esteem, low neuroticism, locus of control, and generalized self-efficacy – are so highly related that they speculated such resources may be indicators of a single construct. Moreover, research has demonstrated that social and personal resources are related to one another. For example, studies have shown that individuals who believe that they have high levels of social support are also high in optimism (Prati & Pietrantoni, 2009). Taken together, findings from this research

indicate that an individual's resources are intricately tied to one another and some are so interrelated that they may be facets of the same resource construct.

These findings have led some to consider factors that could be responsible for these strong associations or for holding these resources together (Adger, 2000; Hobfoll, 2011). Others have suggested that distinct types of social and personal resources exist as part of a system of resources (Antonovsky, 1987; Hobfoll, 1989; Taylor & Stanton, 2007), including systems of social resources (Cattell, 2001) or, in the case of personal resources, what Bandura (1978; 2005) referred to as the self-system. This tendency for resources to be linked to one another is also suggested by studies showing that a loss of resources can trigger what has been described as a resource loss spiral (Lane & Hobfoll, 1992; Schumm, Vranceanu, & Hobfoll, 2013; Schumm, Doane, & Hobfoll, 2012), a situation in which multiple types of resources are lost within a short period of time, such as when a sudden health crisis (e.g., serious car accident) incurs not only loss of health, but also loss of financial, social, and personal resources stemming from medical bills, time away from work, and capacity to participate fully in family life and with friends. Research in this area suggests that an event that affects one or a small number of resources can have a wider impact on a variety of related resources, thereby depleting or adding to an individual's overall capacity to respond and cope adaptively in the face of subsequent stress. Therefore, if giving can have an impact on a single type of resource (e.g., improving relationship satisfaction), there is rationale and evidence to suggest that it would have similar effects on a variety of related resources (e.g., enhancing intimacy, social support, etc.).

Thus, COR theory suggests that understanding the contributions of specific types of resources (e.g., self-esteem, self-efficacy, optimism, etc.) to an individual's stress-resistance capacity is less important than understanding conditions that inhibit or facilitate access to collections of these resources, as well as individual and collective beliefs and actions that create and safeguard those conditions (Hobfoll, 2011). Further, if support giving influences resources through a limited set of mechanisms that affect a range of resources, a single act of giving may have similar effects on multiple social (e.g., trust and availability of support) and personal resources (e.g., self-esteem and self-efficacy). To the extent that support giving enhances resources, then the mechanisms for this influence are of salience to the present discussion.

The three support-giving mechanisms include (1) social relationships, (2) the norm of reciprocity, and (3) role-identities. The *social relationship,* defined above, is the fundamental mechanism in this context because, without others, potential givers would lack a crucial kind of resource and means of connection and would be unable give resources; they would, therefore, lack the possibility of developing resources via giving. The *norm of reciprocity* (Gouldner, 1960) is a well-documented "rule" that governs social actors to give resources given to them or to expect resource returns if they have given them (Cook, Cheshire, & Gerbasi, 2006; Emerson, 1964). It functions as a mechanism because it impels receivers of support to return resources to givers and lowers givers' perceptions of risk of resource loss in giving (Adams, 1965; Emerson, 1965; Offer, 2012). Thus, the norm of reciprocity helps establish mutually dependent (and beneficial) resource exchange processes *(*Burger, Sanchez, Imberi, & Grande, 2009; Emerson, 1976; Gouldner, 1960; Jaeckel et al., 2012; Offer, 2012; Thoits, 1995; Vaux,

1988; Whatley, Webster, Smith, & Rhodes, 1999) and serves to establish and perpetuate social relationships (Emerson, 1965; Uehara, 1995). *Role-identities* are individuals' self-labels acknowledging their social roles and behavioral standards or the social norms associated with that role (e.g., a "father" cares for his children, a "Catholic" follows the catechism, etc.; Thoits, 1983, 1986, 1991). According to role identity conceptualizations, individuals strive to meet behavioral standards of role-identities to achieve positive sense of self (e.g., to be a "caring father", a "good Catholic", a "trustworthy friend", etc.). In turn, these role-identities are mechanisms to personal resources because they provide a standard individuals use to evaluate their support giving performance (cf. Support Giving's Effects on Personal Resources subsection below for more). Having described the mechanisms through which giving influences resources, the next sections describe support giving's potential contributions to social and personal resources.

2.3 Support Giving's Effects on Social Resources

The RRM suggests that support is not only given to reduce stress, but also to (a) establish relationships and (b) uphold ongoing processes of social exchange once relationships have been established. Giving to establish and perpetuate relationships is of benefit to givers, as research suggests relationships can help minimize chronic stress and reduce the likelihood of the occurrence of stressors (e.g., Beckes & Coan, 2011; Flinn & England, 1995; Lakey & Orehek, 2011; see Seeman, 1996 for a review). In addition to serving as key contexts for social support, relationships help minimize chronic stress in a number of ways (see Feeney & Collins, 2014a), such as by providing opportunities for members to work together to manage ongoing challenges more efficiently (e.g., sharing of household chores; Beckes & Coan, 2011), to pool resources to accomplish shared

goals (e.g., purchase of a house; Godman, 2013), and to have "ordinary conversation" about mutual interests (see Lakey & Orehek, 2011). Thus, not only does giving reduce the risk of negative consequences subsequent to acute stress, it might also protect health by contributing to mutually beneficial social connections and interactions that minimize chronic stress.

As one case in point, giving might establish and perpetuate these stress-minimizing exchanges in relationships by helping build the support recipient's trust in the giver, as giving demonstrates a willingness to expend resources for someone else and can encourage others to return resources (Cook et al., 2006; Emerson, 1976; Halbesleben & Wheeler, 2015; Reis, Collins, & Berscheid, 2000; see Uehara, 1995 for more). In fact, trust has been recognized as a crucial social resource (Putnam, 2001), as it is associated with higher perception of availability of support (Dunkel-Schetter, Folkman, & Lazarus, 1987) and appears linked with more adaptive perceptions of stressors (Gerich, 2013). Thus, support giving may help to establish trust, a social resource in itself, which thereafter perpetuates stress-minimizing social connections and exchanges.

2.4 Support Giving's Effects on Personal Resources

Some research suggests that, in addition to enhancing social resources, support giving can also positively influence givers' personal resources (e.g., self-esteem, self-efficacy, social usefulness; Brack et al., 2008; Riessman, 1965) and, in turn, givers' capacity to be supportive in multiple relationships. According to the RRM, support giving enhances self-esteem when the giving is consistent with givers' role-identities. Furthermore, such self-esteem enhancement is thought to rely on givers' support giving

skill-set and beliefs about their capacity to apply those skills, i.e., support giving self-efficacy (Bandura, 1982).

Research on role-identity shows that variations in the degree of adherence to role-identity standards (i.e., behavioral standards or norms associated with one's role-identities) is associated with variations in self-esteem, such that individuals whose behavior is more closely aligned to their role-identity standards have higher self-esteem (Burke & Reitzes, 1981; Kandel, Davies, & Raveis, 1985; Menaghan, 1989; Repetti & Crosby, 1984; Thoits, 1983, 1986; see Stets & Burke, 2000 for a review). Although researchers describing positive associations between support giving and self-esteem (e.g., Batson, 1998; Bracke et al., 2008; Krause & Shaw, 2000; Warner, Schüz, Wurm, Ziegelmann, & Tesch-Römer, 2010) have not posited mechanisms that could explain the relationship, it would seem reasonable to suggest that role-identity standards would also apply to standards of support giving. As with any other role-identity standard, standards of support giving (e.g., fathers care for children in a particular way) would seem to motivate giving in manners consistent with self-perceptions and provide criteria for self-evaluation (Krause & Shaw, 2000). Givers, therefore, may be able to enhance their self-esteem by giving in ways consistent with their role-identity. Put another way, doing so would be engaging in behaviors that are consistent with their models and expectations of how they "should" be in a given relationship or context.

Core role-identity standards of giving may originate in early childhood when children begin to individuate, i.e., develop a sense of who they are apart from their primary caregivers (e.g., Sroufe, 2005). Individuation is thought to continue throughout childhood, adolescence, and even young adulthood as individuals form new relationships

(e.g., relatives, classmates, teachers, etc.), new role-identities, and learn how to empathize, infer others' needs, and address those needs (Carlson, Sroufe, Egeland, 2004; Klimstra, 2013). Throughout childhood and adolescence, then, individuals may build on their core role-identity and develop an increasingly complex sense of self through the integration of new role-identities, each with common and unique behavioral standards of support giving. The development of standards of support giving is also likely shaped by socio-cultural factors, such as values of collectivism or individualism (Chen, Kim, Mojaverian, & Morling, 2012). For example, giving in cultures that value collectivism may be largely driven by a sense of fulfilling social duties; giving in cultures that value individualism may be predominately driven by a sense of demonstrating one's personal value to others (Markus & Kitayama, 1991).

The RRM suggests that givers enhance their capacity to meet role-identity standards by building support giving skills and support giving self-efficacy (Bandura, 1982). Research suggests that support giving is a skill-based activity (see Feeney & Collins, 2014b) – that is, in order to be an effective giver, individuals need to possess knowledge of how to be supportive of a particular person (e.g., a romantic partner vs. a friend; Johnson, Hobfoll, Zalcberg-Linetzy, 1993; Feeney & Collins, 2001) and the ability to understand accurately another's needs in varying situations (Verhofstadt, Buysse, Ickes, Davis, & Devoldre, 2008). Developing support giving skills, therefore, might contribute to the development of support giving self-efficacy and, in turn, motivate individuals to give support, providing further opportunities to enhance their support giving skills. Although researchers have not examined the relationship between support giving skills and support giving self-efficacy, recent research suggests that giving and an

individual's general sense of self-efficacy are positively related (Bracke et al., 2008; Jaeckel et al., 2012).

According to the RRM, these three personal resources associated with support giving (i.e., self-esteem, support giving skills, and support giving self-efficacy) should influence one another, a claim consistent with COR theory (Hobfoll, 2014), self-systems theory (Bandura, 1978, 2005), and research showing that personal resources tend to cluster together because they influence one another (Baumeister, 1993; Bracke et al., 2008; Cast & Burke, 2002; Hobfoll, 2011; Judge et al., 2002). Givers need support giving skills to give well-targeted support and they need support giving self-efficacy to feel motivated to use their skills to give. In turn, using one's support giving skills successfully – that is, in ways that adhere to givers' role-identity standards – should enhance givers' self-esteem.

Support giving in one social context that leads to enhancement of givers' personal resources might also enhance givers' capacity and motivation to be supportive across roles in other contexts, thereby extending their access to social resources and additional opportunities to build on their personal resources. Research in relevant areas such as role expansion (Eveson & Eveson, 1974) or role accumulation (Spreitzer, Snyder, & Larson, 1979) shows that activity (e.g., support giving) in roles in one life domain can have positive "crossover" (e.g., Carlson, Ferguson, & Kacmar, Grzywacz, & Whitten, 2011) or "spillover" (Hammer, Cullen, Neal, Sinclair, & Shafiro, 2005) effects to roles in other life domains. For example, multiple studies (Carlson et al., 2011; Carlson, Kacmar, Wayne, & Grzywacz, 2006; Hunter, Perry, Carlson, & Smith, 2010; Lu, Siu, Chen, & Wang, 2011; Siu et al., 2010) have documented that the development of resources at work (e.g.,

increased job autonomy) or within one's family (e.g., increased social support) can heighten performance in or commitment to the other domain (e.g., greater job commitment; Wayne, Randel, & Stevens, 2006). Over time, to the extent that individuals can enhance their personal resources through support giving in select relationships, they may enhance their capacity and motivation to be supportive to a broader array of individuals across diverse social contexts and, moreover, access additional resources (Hobfoll, 1989, 1993, 2002). Thus, support giving that enhances personal resources can, over time, expand givers' social networks and, in turn, facilitate development of more robust collections of resources.

2.5 The RRM Provides an Integrative Framework for Examining the Literature on Giving

Given the current state of the giving literature, the RRM is a well-suited frame for guiding meta-analysis because it integrates theories that have provided unique perspectives on processes relevant to support giving, substantiating predictions about (1) a variety of health effects of support giving and (2) the conditions that may moderate those effects. To elaborate on these notions, the next paragraphs discuss briefly the theories that underlie the RRM's descriptions of support giving's contribution to the management and development of resources and specify the limitations of those theories and/or how the RRM builds upon or augments each.

The Salutogenic Model of Health (Antonovsky, 1984, 1987) provides a useful starting point for the RRM's focus on ways in which individuals give support to enhance resources, as it was one of the first stress and coping models to emphasize resources. However, the model is of limited utility to theories of support giving because it does not discuss possible ways an individual can develop resources through social interactions;

rather, the theory focuses primarily on examining resources that individuals already appear to possess in order to explain differences in responses to stress.

COR theory (Hobfoll, 1989) also emphasizes resources, but builds on the Salutogenic Model by suggesting individuals are motivated to create and maintain relationships (including their partners and friends, as well as larger social units in which there are multiple relationships among members, such as their families or communities) because they help facilitate the conservation and development of resources (Hobfoll et al., 1990). In that vein, it extends the Salutogenic Model in two important ways. First, COR theory describes how individuals manage their resources under conditions of high stress (acute and chronic) versus low stress and, therefore, can provide the theoretical basis for articulating both (a) the stress-buffering effects established in the Caregiver Systems model (Konrath & Brown, 2013) and (b) the possible effects of giving when stress is low. COR theory suggests that when individuals are not managing acute stress, they are freed up from immediate adversity, giving them the opportunity to augment their resources, thereby improving their capacity to manage chronic stress and future stressors (Hobfoll, 2001). Second, although the theory does not discuss support giving explicitly, it suggests that many of individuals' most valuable stress-resistance resources are social (e.g., social ties, social support) and that accessing and enhancing these social resources requires resource investment (Hobfoll, 2009), notions that at least point to the role of support giving in the development of resources.

However, COR theory has two notable limitations in describing and predicting a variety of health effects of support giving. First, the theory does not describe explicitly the potential ways in which social behaviors (e.g., social support) contribute to the

creation and maintenance of relationships. Instead, studies employing COR theory have tended to examine the consequences of changes in resources (e.g., trauma stemming from rapid resource loss; Schumm et al., 2012). Second, while the theory outlines the importance of personal resources (e.g., self-esteem, self-mastery), it does not articulate possible ways in which social processes may contribute to developing or enhancing these resources. Thus, although COR theory provides critical theoretical foundation for the RRM, the model does not describe the specific role of support giving in both social and personal resource development. Therefore, to provide a comprehensive account of support giving's health effects, elements of additional theories (and related research) were needed to address COR theory's limitations.

Social exchange theories (Emerson, 1976, Gouldner, 1960) and Role-Identity theory (Thoits, 1983, 1986, 1991) address these limitations. Social exchange theories are a helpful complement to COR theory, as they were originally designed to explain the benefits of exchange to individual social actors (Cook et al., 2006), suggesting that social interactions have both individual as well as relational benefits (and costs). Role-Identity theory is specifically suited to describing relationships between social processes, identity, and identity-related attributes (e.g., self-esteem). Therefore, it makes an important contribution to the RRM model because it elucidates mechanisms between social exchange processes and personal resources.

Thus, in summary, COR theory is the prime theoretical foundation for the RRM, providing the basis for predictions about how individuals use support giving to reduce stress and enhance resources, and is complemented by theories of social exchange and Role-Identity theory, which provide more explicit descriptions of the specific role of

support giving's contributions to social and personal resources. The RRM draws from these complementary theories and, by integrating key tenets from each, provides a more comprehensive frame for describing, understanding, and reconciling the diverse findings related to support giving's effects across contexts.

2.6 Present Study

The present study tested the RRM's specified relationships using studies from the available support giving literature that reported quantitative measures between social support giving and any indicator of health. In addition, a binary moderator reflecting giving within and outside of stressful situations or conditions was used to examine variations in the strength of the relationship between giving and (a) stress and (b) resources. This moderator tested the premise that individuals' support giving reduces stress when stress is high and, by contrast, builds resources when stress is low.

More specifically, the present study examined three overarching questions. Each is presented below, followed by a set of analyses for addressing the research question and specific related hypotheses. Overall, the study's prime questions and analytic sets focused on tests of association between (1) support giving and its hypothesized proximal effects, including being in or having social relationships, stress, social resources and personal resources; (2) each of these proximal effects (i.e., relationships, stress, and social and personal resources; See Figure 3); and (3) support giving's effects on stress and resources under conditions of (a) high stress and (b) low stress (see Figure 4).

The study also evaluated whether there is evidence to support the RRM's grouping of multiple different types of social and personal resources into social and personal resource categories. Evidence in support of these groupings would be consistent

with the RRM's premise that a variety of similar types of social and personal resources are interrelated and hang together such that giving would similarly strengthen or diminish different types of resources within each of these broader categories. This step involved tests of homogeneity of effects between giving and resources in each resource category (cf. Meta-analytic models subsection below).

Before describing the present study's research questions, hypotheses, and analytic approach, two issues that constrained the present study's attempt to examine how well the RRM explains effects obtained in the literature to date warrant mention. The first issue pertains to limitations on the potential use of model-driven meta-analysis, the optimal analytic approach given the present study's objective to test the RRM. Just as model-driven regression (e.g., path analysis, structural equation modeling) is a more rigorous test of empirical models in original research studies, model-driven meta-analysis (Becker, 2009) is the more rigorous approach to model-testing in empirical reviews. However, model-driven meta-analysis was seen as likely untenable in the present context, given the support giving literature's large variety of effects yielded by a relatively small set of studies with highly diverse samples (see Becker, 2009). Thus, instead of pursuing model-driven meta-analysis, the present study examined the extent to which the literature supports the RRM's specified links, noting which links have empirical support, which do not, and which require additional effects in order to test, thereby providing a foundation for future meta-analytic model-testing should additional data become available.

The second issue limits examination of the model's distal effects, including relationships between stress and health outcomes and the buffering effect of social and personal resources on that relationship. There are no anticipated challenges with the first

relationship (between stress and health outcomes); evidence of this relationship is among the more well-established findings in social science and health research. Thus, while the support giving literature offers an opportunity to replicate this finding, estimating this effect is not a primary focus of the present study. However, tests of whether social and personal resources reduce the negative effect of stress on health, salient links within the RRM, were not possible. To conduct these tests, studies would have had to include homogeneous samples of participants that were functioning at a particular "resource level" (e.g., high versus low), permitting grouping of samples by level of resources, yielding a categorical (or ordinal) distribution of resource levels by sample. However, many of the measures of resources (e.g., self-esteem, sense of community) in the pool of studies have measured resources with instruments that conceptualize resources as functioning dimensionally, yielding a sample distribution of resource levels. In light of these challenges, which reflect the current state of the literature, tests of the stress buffering effect of resources were untenable.

Having identified those salient limitations, the present work was guided by three prime research questions. Each is identified below, along with descriptions of sets of associated analyses and hypotheses.

2.6.1 Research Question 1: To what degree is support giving associated with positive health benefits (i.e., stress reduction, social relationships, improved social resources, and improved personal resources)?

Analysis Set 1 – testing giving's proximal effects. Analysis Set 1 tested premises about support giving's reduction of stress, establishment and perpetuation of social relationships, and development of both personal and social resources (see Figure 3).

Thus, Analysis Set 1 included four tests (Figure 3, Links 1a-d). The first test evaluated the notion that support giving reduces givers' acute stress, the key tenet of the Caregiver Systems model (Konrath & Brown, 2013; Link 1a). It was hypothesized that support giving would be positively related to stress. A positive association between giving and stress was hypothesized because the present meta-analysis used correlations that were estimated at a single point in time (cf. Data Sources subsection below). If the present study examined the association between support giving and stress at multiple time points, a hypothesis of that support giving reduces stress would have been proposed. That is, levels of giving measured at an initial observation would have been expected to be negatively associated with levels of stress at a second time point (i.e., giving reduced the stress). However, the correlations used in the present meta-analysis only represent a single point in time. As such, a single correlation of the relationship between support giving and stress were expected to reflect both (a) levels of giving that occurred in response to a stressor (i.e., a positive association, because higher stress levels should prompt greater levels of giving); and (b) levels of giving that diminish concurrently with stressor intensity (i.e., again, a positive association, because giving diminishes in response to waning demand). Therefore, cross-sectional examinations of the relationship between support giving and stress were expected to yield positive correlations.

The second test evaluated the premise that support giving establishes and perpetuates social relationships which, in turn, provide opportunities to give support (Link 1b). It was hypothesized that support giving would be positively associated with indicators of being in or having social relationships (e.g., spouse, belonging to religious institution, etc.). The third and fourth tests evaluated the premises that support giving

enhances social (Link 1c) and personal resources (Link 1d), respectively, and that enhanced resources create greater capacity and motivation to give support. It was hypothesized that support giving would be positively associated with social resources and personal resources.

2.6.2 Research Question 2: To what degree are social relationships, social resources, personal resources, and stress associated?

Analysis Set 2 – testing relationships among giving's proximal effects. Analysis Set 2 tested premises from resource-based models of stress and coping (Antonovsky, 1987; Hobfoll, 1989, 2002; adopted by the RRM) that resources facilitate enhancement and acquisition of other resources and that such resources facilitate stress resistance (Figure 3, Links 2a-f). Thus, Analysis Set 2 included six tests. The first three tests evaluated whether being in or having social relationships contributes to (1) social resources (Link 2a), (2) personal resources (Link 2b), and (3) minimizing stress (Link 2c), respectively. It was hypothesized that social relationships would be positively associated with social and personal resources and negatively associated with stress. The fourth test evaluated whether social and personal resources have positive influences on one another (Link 2d). It was hypothesized that social and personal resources would be positively associated. The fifth and sixth tests evaluated whether social and personal resources facilitate stress resistance, helping givers manage stress. It was hypothesized that social and personal resources would each have negative associations with stress.

2.6.3 Research Question 3: Does the strength of the associations between support giving and resources and support giving and stress vary by whether support is given under conditions of high stress versus low stress?

Analysis Set 3 – testing giving's effects under conditions of low and high stress. Analysis Set 3 tested the RRM's premise that when stress is low, givers' resources are freed up from addressing adversity and can be directed toward enhancing resources (see Figure 4). Determination of high versus low stress was based on whether a given study sample was currently (i.e., at the time of the study) enduring stressful conditions (e.g., post-disaster; cf. Coding subsection). Under low-stress conditions, support giving should build stress-resistance resources. Under high-stress conditions, support giving should reduce stress and its immediate negative effects (e.g., psychological distress). Thus, it is hypothesized that support giving would be more strongly, positively related to social and personal resources when stress is low versus when it is high, and that support giving will be more strongly, positively related to stress and its immediate negative effects when stress is high versus when it is low.

CHAPTER 3: METHODOLOGY

3.1 Data Sources

This review included studies that were previously identified for a project with objectives that differed from those of the present review. Studies were initially collected in order to estimate support giving's overall contribution to health, whereas the objective of the present review is to estimate support giving's effects as specified by the RRM. In order to examine giving's overall contribution to health, it was necessary to identify studies that examined a diversity of health outcomes, including social, emotional, mental, and physical health and well-being, as well as factors that protect and promote health, such as coping strategies and goal-seeking.

Thus, given that these previously collected studies included a broad diversity of health outcomes, they were also relevant to the present study's central objective to estimate support giving's relationships with factors that protect and promote health. However, in order to use these studies for the present work, it was necessary to employ a more focused, theory-driven coding protocol. The subsections that follow describe how studies were collected initially, including inclusion/exclusion criteria and search strategy, as well as the present review's procedures for coding and meta-analysis.

3.2 Inclusion/Exclusion Criteria

The present meta-analysis used studies in the English language published between January 1990 and February 2015 that reported quantitative measures between social

support giving and any indicator of health. Social support giving was conceptualized broadly as self-reported or observed supportive behaviors in personal relationships or groups, such as giving to spouses, family, neighbors, or peers, as well as general support giving, that is, not to any person in particular.

The search excluded studies that reported the health effects of volunteering because such studies frequently examine impersonal, structured activities (e.g., office assistance or improving the environment) and, thus, it is often unclear whether participants gave support directly to other people. The search also excluded studies that measured support giving in caregiving, operationalized as giving support to individuals with medical or psychiatric illness, or physical disability or impairment (e.g., studies involving the adult caregiver of a parent with dementia). Although measures of support giving in these studies clearly sought to capture a social process (as opposed to studies of volunteering), caregiving studies were excluded because they generally focus on and indicate negative effects on health (see Vitaliano, Zhang, & Scanlan, 2003 for a review) and, thus, are not relevant to the present study's objective to estimate support giving's positive health effects.

3.3 Search Strategy

Several literature databases were used to identify a preliminary pool of published studies from which keywords were drawn to develop search terms. Literature databases used in this initial search included the following: PsycINFO, ERIC, Medline, Health Source Nursing, Social Work Abstracts, Academic Search Premier, and Google Scholar. Keywords drawn from the initial pool of studies included "providing support", "giving support", "reciprocal support", "helping behavior", "altruistic behavior", "health", and

"mental health". Various combinations of keywords were used again in the databases to generate an initial pool of published studies. This initial pool was expanded through additional manual searches of the reference list of each study, as well as identification of studies that cited studies from this initial pool, as listed in Social Science Citation Index.

Abstracts were read to screen studies in this initial pool ($N = 664$), reducing the pool of studies to 56. Many studies were excluded because they examined organized volunteer activities, caregiving, or predicted support giving from measures of behavioral motivations. A smaller subset of studies was excluded because they were qualitative ($n = 9$) or used a measure of reciprocity that did not provide a separate measure for support giving ($n = 11$).

Eighteen of the remaining 36 articles did not report bivariate correlations between measures of support giving and health. Requests for data were sent via e-mail to the first authors of these articles. E-mail messages were re-sent after two to three weeks to authors who did not respond to initial requests. Nine requests were fulfilled, four emails were returned as undeliverable, and five authors did not respond after first and second requests.

The final sample of studies for the first review included 33 articles (30 journal publications, two dissertations, and one thesis) reflecting 31 studies. From this original set, 26 articles reflecting 28 studies reported at least one statistical association reflecting a relationship specified in the RRM, per the present study's coding protocol. Table 1 presents a summary of study characteristics.

3.4 Coding

The coding protocol involved coding statistical associations to test relationships specified in the RRM. For example, the RRM suggests that support giving is positively associated with social resources. However, articles did not report or identify outcomes of support giving as "social resources" per se; rather, such studies included measures of "trust" or "perceived support", which may facilitate stress resistance. In order to evaluate whether support giving was positively associated with social resources, the various associations of support giving and outcomes that could be considered under the broader rubric of social resources were grouped (i.e., coded) into the category of social resources. This process was followed for each of the relationships specified by the RRM. Indicators of RRM constructs that were measured and aggregated (e.g., summed or averaged) with an index that included measurement of constructs not specified in the RRM were excluded.

The author of the present work examined each statistical association in each report to determine whether it could be coded into one or more of the following categories: (a) giving and stress; (b) support giving and social relationships; (c) giving and social resources; (d) giving and personal resources; (e) social relationships and social resources; (f) social relationships and personal resources; (g) social relationships and stress; (h) social resources and personal resources; (i) social resources and stress; and (j) personal resources and stress. Each study was also coded for whether it measured support giving under conditions of high or low stress (cf. Stress subsection below). Sample sizes for each effect coded for analyses were also included.

A randomly selected subsample (22%) of articles was doubled coded (i.e., coding of articles by two coders) to ensure reliability of coding. Codes assigned through double-coding (i.e., by both coders) were assessed for reliability using Cohen's (1960) Kappa. Coefficients were 1.00 for stress level and .82 for relationship type; 1.00 is perfect agreement and .82 would permit confident interpretations of these relationships even by conservative cutoffs (e.g., Krippendorf, 1980). The Kappa coefficient for sample size was 0.00 because coders did not agree at a greater rate than would be expected by chance alone. Review of codes showed that every case of disagreement (N = 3) was attributable to one coder's erroneous doubling of participants due to misinterpretation of correlation matrices that presented separate correlations for male and female spouses. Review of all other articles showed that the error only affected the reliability subsample and errors in this subsample were corrected before analyses were conducted. Disagreements regarding relationship type were resolved through discussion. The following variables were coded to evaluate their aggregate strength of association with other variables specified in the model.

3.4.1 Social Relationships.

Membership in social systems was defined as an individual's actual or perceived participation in the exchange of resources with one or more individuals which are typically (a) expressed by social roles (e.g., student) or social statuses (e.g., marital status) or (b) role-identities (i.e., individuals' self-labels acknowledging their social roles and the behavioral standards associated with that role). Coding for correlations with memberships in social relationships (Figure 3, Links 1b, 2a-c) targeted effects reflecting relationships with indicators such as presence or number of (a) individuals with whom

participants exchange support, (b) roles, or (c) role identities (e.g., marital status or network size). Indicators that measured a dynamic feature of relationships, such as frequency of contact or dichotomous indicators (i.e., yes or no) of whether participants were regularly in contact with someone were excluded.

3.4.2 Social Resources.

Social resources were defined as binding features or characteristics of relationships (Hobfoll et al., 1990; Thoits, 1995) which facilitate efficient, stress-minimizing resource exchange processes. Coding for correlations with social resources (Figure 3, Links 1c, 2a, 2d-e) targeted effects reflecting relationships with indicators such as trust, reciprocity, sense of community, sense of commitment, sense of belonging, sense of intimacy or closeness, and perceived availability of support. Indicators of social activity such as frequency of contact were not coded. Equity of support – the degree to which a participant's levels of giving and receiving were equal – was also excluded because several articles that used equity theory (Adams, 1965) tested hypothesized costs associated with pronounced disparities in either giving or receiving.

3.4.3 Personal Resources.

Personal resources were defined as individual skills, beliefs, or attributes that facilitate stress resistance and equip individuals to continue giving in their existing relationships, as well as to give to help them form new relationships. Key personal resources for support giving are self-esteem, support giving skills, and support giving self-efficacy; however, given the state of the literature, coders did not expect the latter two to appear in articles (or assessed in a sufficient number of studies to warrant analysis here) and thus, the more general constructs of self-esteem, social skills, and self-efficacy

were chosen as acceptable proxies. Coding for correlations with personal resources (Figure 3, Links 1d, 2b, 2d, and 2f) targeted effects reflecting relationships with indicators such as self-esteem, self-efficacy and related constructs, such as positive identity or sense of self-worth, mastery, and optimism.

3.4.4 Stress.

Stress was defined as events or conditions in which environmental demands overwhelm coping capacity, resulting in physical strain and psychological distress (Lazarus & Folkman, 1984). This definition holds that both the environment (events or conditions) and the individual's experience within that environment interact to produce stress. Coding for correlations with stress (Figure 3, Links 1a, 2c, 2e-f) targeted effects reflecting relationships with (1) studies' participants' endorsements of events and experiences as stressful or (2) subjective (i.e., self-report) or objective (i.e., biomarkers such as cortisol) measurement of intraindividual experiences of stress.

Additionally, studies were coded according to whether a given study sample was currently (i.e., at the time of the study) enduring stressful events or conditions (e.g., post-disaster) in order to test for whether support giving reduces stress under conditions of high stress and enhances resources under conditions of low stress. Studies that examined support giving in situations, conditions, or events identified on common stressful life events checklists (e.g., SRRS) were targeted as "high stress support giving" and studies that did not examine support giving in those contexts were coded as "low stress support giving". If a sample included a mix of some individuals who were experiencing the stress and some who were not (e.g., bereaved or not), the sample was only coded as a high stress sample if the intent of the article was to sample participants who were experiencing

the stressor. For example, Brown, Brown, House, and Smith (2008) included a sample of primarily bereaved participants in order to examine buffering effects of helping behavior; consistent with coding protocol decision rules, this study was coded as a high stress sample.

3.5 Meta-analytic Procedures

3.5.1 Meta-analytic models.

Analyses used a Random Effects Model because effects were expected to be heterogeneous across studies. A shifting unit of analysis approach was used whereby multiple effects were drawn from the same samples (Cooper, 2010), and then aggregated through sample-weighted averaging, yielding one effect per category per moderator test for each sample, and avoiding the problem of weighting samples based on the number of effects reported. Standardized beta weights were transformed in studies that did not provide bivariate correlations, using Peterson and Brown's (2005) recommendations. Study-level effects were transformed into *z*-scores to detect outliers as those beyond a cutoff of ±3 standard deviations. All estimates were calculated using the weighted mean of *z*-transformed bivariate correlations, as recommended by Lipsey and Wilson (2001).

In order to test whether studies on support giving and health provide evidence of relationships specified in the RRM (i.e., testing giving's proximal effects and associations among the proximal effects, Analysis Sets 1 and 2), significance levels associated with overall point estimates of these relationships were examined. In order to test the premise that support giving's association with stress is stronger within stressful contexts and, by contrast, stronger with resources outside of stressful contexts, Analysis Set 3, meta-analyses involved tests of homogeneity following the ANOVA-analog method (Hedges

& Olkin, 1985), which permit comparisons across categories for each moderator variable. Between-class (i.e., within and outside of stressful contexts) effects were evaluated using the Q_b statistic, which has a chi-square distribution with k–1 degrees of freedom (with k as the number of classes).

In order to evaluate whether strengths of associations between support giving and social and personal resources are homogeneous – and, therefore, consistent with the RRM's notion that resources are interrelated and hang together such that giving would have a similar degree of association with different types of resources – homogeneity of effect sizes within each class were estimated by Q_w. The *Qw* also has a chi-square distribution with n–1 degrees of freedom (with n as the number of effect sizes within each class). The null hypothesis of the *Qw* is that effect sizes are homogeneous. Thus, failure to reject the homogeneity assumption ($p > .05$) suggests that there is little variation in estimates of correlations of a particular type (e.g., between giving and social resources).

The typical use of homogeneity analysis is to examine whether disparate correlations used to calculate the overall estimate (e.g., giving and sense of community, giving and marital satisfaction, etc.) reflect a single type of relationship (e.g., giving and social resources), despite the fact that they were generated from unique samples, contexts, and measures. Such a result in the present study would suggest that the various correlations between giving and resources reflect a single, underlying relationship rather than multiple, distinct linkages between different forms/functions of giving and various types of resources. The RRM does not suggest that a single type of relationship (i.e., a single population parameter) exists for all forms and functions of giving (e.g., giving

emotional vs. tangible support) and all types of social or personal resources. Rather, the model recognizes the uniqueness and unique function of different forms of giving and different types of resources, but also suggests that resources are interrelated and cluster together. Thus, because homogeneity analysis typically examines the presence of a single type of relationship, it would therefore be a more stringent test of the RRM premise that giving has unique but similar strengths of association with a variety of social and personal resources.

Analysis of the overall point estimates, moderator-level effects and homogeneity analyses were conducted in Comprehensive Meta-analysis (CMA) Version 3 (Borenstein, Hedges, Higgins, & Rothstein, 2015). Consistent with recommendations of the Cochrane collaborative (Higgins & Green, 2008), the present study adopted an alpha level of .10 for all significance tests.

3.5.2 Analysis for Publication Bias. Analyses for publication bias included calculations of Rosenthal's and Orwin's Fail-Safe *N* and examination of funnel plots. Rosenthal's Fail-Safe *N* is the number of studies not included in analyses with null results (i.e., $r = 0$) required to lower the observed level of significance to non-significance (i.e., $p > .10$). Orwin's Fail-Safe *N* is considered a more conservative test of publication bias because it does not assume null results; rather, it allows for selection of a trivial effect (Lipsey & Wilson, 2001). For the present study, an effect size equal to half of the overall point-estimate was selected as the threshold for meeting the "trivial" criterion. Publication bias is detected in funnel plots showing asymmetrical distribution of effects about the overall point-estimate (represented by a vertical line), suggesting that studies of

smaller sample sizes (and therefore greater standard error) with large effects are favored by publishers due to favorable outcomes.

CHAPTER 4: RESULTS

4.1 Research Question 1 (Analysis Set 1): Support Giving's Association with Positive Health Benefits

Table 2 shows results of Analysis Set 1, the overall correlations between support giving and each of the health benefits (i.e., proximal effects) specified in the RRM. It was expected that support giving would have positive associations with intraindividual stress, social relationships, social resources, and personal resources. Figures 5 through 8 show funnel plots of these relationships. As predicted, support giving had significant, positive overall correlations with social resources, r = .38 [95% confidence interval (CI): r = .22 to r = .52] and personal resources, r = .12 (CI: r = .11 to r = .19). Contrary to expectations, support giving had a nonsignificant overall correlation with social relationships, though the correlation was in the expected direction, r = .18 (CI: r = -.05 to r = .52), and support giving had no overall correlation with stress, r = .00 (CI: r = -.10 to r = .10).

Results of analyses of homogeneity of relationships between giving and each of the resource categories – social and personal – were also examined in Analysis Set 1 to evaluate whether the disparate correlations used to calculate the overall correlations varied. Failure to reject the homogeneity assumption would be indicative of giving having a similar impact on a variety of social and personal resources (and, likewise, various types of resources contributing to similar levels of giving).

Although not evaluating evidence of potential support for the RRM directly, homogeneity of effects for the other relationships in Analysis Set 1 – giving and stress and giving and social relationships – were also examined, because homogeneity is routinely examined in meta-analysis to determine whether variance among effects could be explained by additional moderator(s) and, therefore, provide suggestions for future research. Effects were heterogeneous for all relationships assessed, except for support giving's relationship with personal resources, $\chi 2\ (7) = 1.63$, $p = .90$.

Because the power to detect heterogeneity in the *Qw* is highly sensitive to sample size – i.e., small sample sizes are highly underpowered whereas large sample sizes are highly overpowered (see Huedo-Medina, Sánchez-Meca, Marin-Martinez, & Botella, 2006) – another metric of intra-class variance, the I^2 statistic, was examined. The I^2 measures the proportion of true variability among effect sizes, i.e., the variability that would be due to actual between-study differences relative to total between-study variability, including true variability and between-study method variance. It determines this by dividing the difference between the *Qw* and its degrees of freedom ($k - 1$) by the actual *Qw*, and then multiplies the result by 100. The I^2 showed that 0% of the variance between effects reflecting relationships between support giving and personal resources was attributable to true variance, suggesting that 100% of the variance was due to between-study method variance. This finding is consistent with the nonsignificant *Qw* finding that effects of giving and personal resources are homogeneous.

Taken together, this set of findings suggests that giving is related to social and personal resources, but neither being in or having social relationships nor stress reduction. Further, findings suggest that the range of correlations of giving and personal

resources do not vary. This finding provides some evidence for the RMM postulate that giving is similarly related (in strength) to a range of related personal resources (i.e., personal skills, beliefs, or attributes that may be useful for comprehending and managing stress). However, results of all other homogeneity analyses showed significant variability in the strengths of associations between the other variables, i.e., giving and stress, giving and social resources, and giving and social relationships. These results suggest that other factors not identified in the present study, such as differences in measurements of constructs or differences in study samples (e.g., older versus younger samples), produced variation in effect sizes; such results warrant the identification of additional variables that might help explain these variations.

4.2 Research Question 2 (Analysis Set 2): Relationships among Health Benefits

Table 3 shows results of Analysis Set 2, which examined the relationships among giving's hypothesized proximal effects. Figures 8 through 11 show funnel plots for these relationships (at least three effects are needed to construct funnel plots and, thus, funnel plots for relationships with fewer than three effects are not possible and, therefore, not displayed). Overall, correlations among proximal effects were in the expected directions, but the correlation between personal resources and stress, r = -.21 (CI: r = -.33 to r = -.08) was the only one of these relationships to reach statistical significance; however, the latter specific effect was based on a single sample. Analyses of homogeneity of effect sizes showed effects were homogeneous for all relationships, with the exception of relationships between social resources and personal resources, $\chi 2$ (5) = 9.98, p < .05, and social resources and stress, $\chi 2$ (9) = 103.51, p < .001. However, overall correlations with homogeneous effect sizes (n = 4) were based on a small number of samples (k = 2 to k =

4); correlations showing heterogeneous effects were based on larger samples (k = 6 and k = 10 for social and personal resources and social resources and stress, respectively). Together, these findings suggest that (a) the health benefits identified in the RRM are not related, but (b) inferences about estimates of these relationships should be tempered because they were based on small sample sizes.

4.3 Research Question 3 (Analysis Set 3): The Moderating Effect of Stressful Conditions (High vs. Low) on Support Giving's Associations with Stress and Resources

Table 4 shows results of Analysis Set 3, this study's examination of the moderating effect of stressful contexts on support giving's associations with stress and resources. Moderator analyses showed that in high stress samples giving was more strongly related to social resources than to stress, $\chi 2$ (1) = 16.43, $p < .001$, and that these relationships were in the expected direction (social resources pooled r = .29; stress pooled r = -.04). Giving was also more strongly related to personal resources than to stress, $\chi 2$ (1) = 5.43, $p < .05$, and this association was in the expected direction (personal resources pooled r = .14; stress pooled r = -.03). Contrary to hypotheses, in low stress samples giving was not more strongly associated with stress than with either social or personal resources. Instead, giving was actually more strongly associated with social resources, $\chi 2$ (1) = 15.12, $p < .001$, and personal resources, $\chi 2$ (1) = 3.16, $p < .10$.

Analyses of homogeneity of effect sizes showed effects were heterogeneous for all relationships, except for giving's relationship with personal resources in high stress samples in studies with measures of personal resources and stress, $\chi 2$ (3) = 14.87, p = .97, and giving's relationship with (a) personal resources and (b) stress in low stress samples in studies with measures of personal resources and stress, $\chi 2$ (3) = .26, p = .97 and $\chi 2$ (3)

= .18, $p < .98$, respectively. These findings suggest that giving is related to resources (social and personal) but not stress, regardless of stress levels. Furthermore, these results provide additional evidence that giving and various types of personal resources may be related at similar levels, regardless of whether individuals are in high or low stress contexts.

4.4 Results of Analysis of Publication Bias

The funnel plots (Figures 5 through 11) were symmetrical and therefore did not show patterns of publication bias. Among statistically significant effects based on more than one sample – specifically, giving's positive relationship with social resources and personal resources – results of Rosenthal's Fail-Safe *N* indicated that 7914 and 140 missing studies would be required to reduce the effect of support giving and social resources and support giving and personal resources, respectively, to nonsignificance, suggesting that these effects are robust. Orwin's Fail-Safe *N* indicated that 25 and 8 missing studies would be required to reduce the effect of support giving and social and personal resources, respectively, to half (i.e., $r = .21$ and $r = .08$, respectively); given that these figures exceed or are equal to the total number of effects in each analysis (social resources $k = 22$ and personal resources $k = 8$), they provide further evidence that the effects are robust.

CHAPTER 5: DISCUSSION

The major goal of the present study was to enhance understanding of support giving's contribution to health. In that vein, the present dissertation identified, coded, and organized statistical associations from studies on support giving in order to identify which aspects of a new integrative theoretical framework of support giving and health – the Roles and Resources Model (LaPorte, 2016) – are currently testable and which require further empirical research. To that end, this work examined each of the relationships specified by the RRM, including (1) support giving's relationship with a number of health benefits (i.e., social and personal resources, being in or having social relationships, and stress reduction), (2) relationships among these health benefits, and (3) the extent to which giving would be more strongly related to stress versus resources under stressful conditions versus outside of these conditions. It was hypothesized that giving would be positively related to all health benefits and that benefits would also be positively related, except for relationships between personal resources and stress and social resources and stress. Another aim was to evaluate whether effect sizes in the social and personal resource categories specified in the model were homogeneous, indicating that giving has similar effects on a variety of distinct social and personal resources. Table 5 summarizes relationships examined, hypotheses, and findings.

The central finding from this study is that giving is related to stress-resistance resources. This result provides incomplete, but essential support for the RRM. While

research to date has emphasized the costs of giving (e.g., Brown, Brown, House, & Smith, 2008; Taylor, 2011), this finding suggests that giving may also hold important benefits for the giver by enhancing his or her stress resistance. Stress resistance refers to the capacity to (1) manage chronic stress, (2) address stressors (i.e., acute stress) effectively, and (3) prepare for potential future stress (Antonovsky, 1987, 1996; Hobfoll, 2011; Taylor & Stanton, 2007). Resisting stress is beneficial because acute and chronic stress have been associated with the onset and exacerbation of an array of health conditions and mental health challenges (Carver & Vargas, 2011; Cohen & Williamson, 1991; Hobfoll, 2011; Kobasa, 1979; Schneiderman, Ironson, & Siegel, 2005), particularly chronic health conditions (e.g., diabetes and cardiovascular disease; McEwen, 1998). Further, individuals endorsing higher levels of subjective well-being and life satisfaction also tend to have lower levels of stress (Diener & Fujita, 1995; Sheldon & Hoon, 2013), cope and adapt effectively in the face of stress (Fredrickson & Joiner, 2002), and evidence better recovery from illnesses (Cohen & Williamson, 1991). To the extent that giving develops resources that facilitate stress resistance, then it may (1) reduce the likelihood of developing health problems, (2) promote recovery from disease and illness, and (3) enhance well-being.

Contrary to expectations, results suggest that giving may even enhance resources for individuals experiencing high levels of stress. The RRM suggests that individuals give to reduce stress under stressful conditions and, by contrast, under low levels of stress their giving (regardless of its conscious or unconscious motives) serves to build resources, which can, in turn, promote future stress resistance (LaPorte, 2016). However, results of moderator analyses showed that, although the relationship is somewhat weaker,

giving is associated with social and personal resources even during times of high stress. These findings suggest that individuals could benefit from giving under times of low stress as well as under high stress, when resources may be constrained.

However, conclusions regarding giving's health promoting potential should be tempered for two reasons. First, the present study did not demonstrate that giving is a causal determinant of protection from the negative health effects of stress because model-based meta-analytic procedures were precluded by the small number of studies in the extant literature and because the available data were correlations reflecting cross-sectional relationships. Consequently, the study did not (and could not) demonstrate RRM propositions that support giving (a) reduces stress, either directly or indirectly (through stress-resistance resources); (b) causes increases in or depends on resources; or (c) promotes health through its reduction of stress or enhancement of resources. Second, results showed the relationship between giving and stress was zero, which suggests that giving does not directly reduce (or increase) stress.

The sections that follow: (1) evaluate the extent to which the literature supports the relationships and premises postulated by the RRM by discussing the results of study analyses; (2) discuss theoretical and practical implications of these findings, (3) and propose research questions and hypotheses for future studies that could add meaningfully to the body of evidence for future meta-analysis.

5.1 Results Provide Partial Support for the RRM

Giving appears to be related to social and personal resources, but not with other health benefits (i.e., stress reduction and being in social relationships), providing partial, but critical support for the RRM. Beyond providing an integrative framework for work in

this area, the RRM's chief contribution is its suggestion that, in addition to regulating stress – as suggested by the Caregiver System's model (Konrath & Brown, 2013) – support giving may also enhance and/or depend on resources, which can help individuals resist subsequent stress. The present findings indicate that giving is more closely tied to resources (see Table 6) that are useful in managing stress than to stress itself. This finding lends tentative support for the RRM premise that giving enhances and depends on resources, but offers no support for the RRM's (a) Caregiver Systems component, that giving reduces stress, or (b) premise that giving helps establish and maintain relationships and that being in relationships provides essential opportunities to give. The following subsections discuss these findings, beginning with the relationship between giving and resources.

5.1.1 Giving is associated with resources.

It was expected that there would be a positive association between support giving and social resources. This expectation was grounded in the RRM premise that giving demonstrates a willingness to expend resources for others, signaling to receivers that they matter to givers and encouraging receivers to return resources to givers. Giving thereby has the potential to create the kinds of social experiences that establish and sustain relationships such as trust and reciprocity, and supply givers with sources of support going forward. A positive association between support giving and personal resources was also expected on the basis that giving enhances givers' self-esteem, capacity to give, and beliefs about the ability to give.

Predictions about giving's association with various types of resources were based on the premise from COR theory that many of the resources individuals use to resist

stress are proximate and interrelated (Hobfoll, 1987, 1989). According to the theory, loss of one type of resource (e.g., self-esteem), places individuals at risk for loss of other, related resources (e.g., self-efficacy); in the same way, developing resources (e.g., trust) can amplify other related resources (e.g., availability of support). This idea was adopted in the RRM, with the suggestion that because particular types of resources are interrelated, support giving should have similar effects on a variety of social and personal resources, as well as the reverse: these resources should have similar effects on individuals' level of giving.

Results showed positive associations between giving and (a) social and (b) personal resources, and the strengths of association were moderate and small to moderate (by Cohen's standards; Cohen, 1988), respectively. Additionally, the strength of the relationships between personal resources and giving, but not social resources and giving, appeared to be homogeneous across samples. Thus, analyses showed positive associations between giving and resources, both social and personal, but what do these associations really reflect? A core aspect of this finding is that the overall associations between giving and social resources and giving and personal resources reflect relationships with composites of resources (see Table 6), as opposed to any single type of resource. Therefore, it is not accurate to infer giving is associated with any single type of social or personal resource. That said, it is still possible to make some plausible inferences about what these associations between giving and social and personal resources reflect. The next section considers both of these associations, beginning with giving's association with social resources.

5.1.2 Giving enhances social resources.

As Table 2 shows, the overall effect between giving and social resources may primarily reflect the relationship between giving and receiving support. The effect, therefore, may be an indication of the strength of the relationship between various forms of giving and receiving. Nonetheless, although conceptually similar (i.e., many indicators assessed receiving support), homogeneity analyses showed that effects between giving and social resources were heterogeneous. This finding suggests that studies included meaningful sources of variance, such as differences between samples (e.g., giving among spouses or first year college studies) or type of support received (e.g., perceptions of availability of support vs. actual support received or emotional vs. tangible) that altered the strength of correlations between giving and social resources. This warrants identification of additional moderators that may explain variations in effects sizes across studies.

5.1.3 Giving enhances personal resources.

The results of homogeneity analyses of the correlations between giving and various types of personal resources – individual skills, attributes, and beliefs – suggested that different types of personal resources have similar strengths of association with giving, regardless of how support is given, the context in which support is given, or who gives the support. In other words, although multiple sources of variation could have led to a stronger or weaker correlation in any one of the studies, which could have resulted in a significant heterogeneity among the effect sizes that comprised the overall association between giving and personal resources, none of these sources of variation contributed to meaningful differences in effect sizes across studies. In addition to between-study method

error, these sources of variation include differences in the type of giving (i.e., purpose, target, form, etc.) and type of personal resource (e.g., self-esteem, self-efficacy, etc.) in each correlation, as well as differences in the characteristics (e.g., sociodemographic background) of the samples. Moreover, differences in the context in which support was given (e.g., after a natural disaster or in one's congregation) – which are, at least in part, captured in the correlation between giving and personal resources because measures of giving reflect multiple aspects of giving, such as the target (e.g., family, co-worker, or generally) or function (e.g., emotional or tangible support) of the giving – could also contribute to heterogeneity. That effects did not vary despite the presence of these sources of variation suggests that givers benefit from enhanced personal resources and draw on these resources when they give, regardless of who they are, to whom they give their support, or how they give it.

Two studies from the present meta-analysis, by Bracke and colleagues (2008) and by Schwartz and colleagues (2009), illustrate how investigators examined giving and personal resources in unique ways and contexts (and with demographically dissimilar samples) and still found correlations of similar size. The Bracke et al. study reported correlations between an indicator of the frequency of general support giving and two personal resource indicators, self-esteem and self-efficacy, among psychiatric patients living in Brussels. The Schwartz et al. (2009) study reported correlations between indicators of various forms of giving, such as self-reported family helping behavior, and an indicator of purpose among adolescent members of the Presbyterian Church. Despite the differences in these samples and the distinct approaches to measuring the giving and personal resources relationship, the associated *Qw* revealed that observed associations

from these two studies (involving giving and self-esteem and self-efficacy and giving and purpose in life and self-acceptance, respectively), along with each of the other studies that contributed correlations to the calculation of the giving-personal resources relationship, were so similar in size as to suggest that different forms of giving and different types of personal resources are associated at similar levels, regardless of the context in which support is given and the type of personal resource the giving depends on or enhances.

5.1.4 Giving is not associated with social relationships.

Social relationships – the critical mechanism that makes access and enhancement of resources possible – did not appear to be related to giving. The premise that giving and social relationships would be related was based on the notion that giving would create or enhance giver-receiver linkages through encouragement of reciprocity that could set in motion or build upon an ongoing mutually beneficial relationship (and continued reciprocity). Thus, it was anticipated that giving would have a positive association with being in social relationships because giving has the potential to establish and perpetuate these relationships. However, contrary to expectations, even though social relationships are thought to be a critical mechanism by which giving influences resources, giving was not (significantly) related to social relationships.

These results suggest that giving does not contribute to the formation of relationships. Alternatively, this finding may suggest that giving is not key to the formation of relationships, but helps distinguish between meaningful and positive ongoing relationships (e.g., romantic partners) and other types of relationships (e.g., co-worker); giving may not be as salient at the beginning, but may hold relevance in

sustaining relationships. That said, another interpretation is that the forms of giving that are typically assessed in social support research – deliberate, episodic forms of helping – are not as key to establishing and perpetuating relationships as the subtler, routine forms of giving that are often neglected (Lakey & Orehek, 2011; Feeney & Collins, 2015). Researchers and respondents alike may not consider the latter forms of giving when considering what "support giving" entails. In effect, these everyday forms of support – presence, shared activities, ordinary conversations – may be so routine and commonplace as to be unrecognizable or inconspicuous and, therefore, may go unmeasured and unreported in studies on support giving. Instead, it is perhaps a common tendency to think that support is something individuals do actively and intentionally to address a particular need with a circumscribed solution.

5.1.5 The assessed health benefits are not associated.

In addition to their lack of associations with giving, stress and social relationships did not relate with each other or with resources, suggesting that these potential health benefits of giving (i.e., stress reduction, resources, and social relationships) are not associated with each other. This set of findings does not align with predictions grounded in the RRM. Specifically, the RRM proposes that being in relationships creates opportunities to develop social and personal resources, reflected in positive associations; that social and personal resources influence one another, reflected in positive associations; and that each of these types of resources reduce stress, reflected in negative associations. Contrary to expectations, none of these relationships was significant, except a negative association between personal resources and stress; however, this relationship reflected a single sample, limiting the reliability and generalizability of this finding.

The central explanation for these null effects is that they were small and based on a small number of effect sizes. In order for these effects to be available, studies had to measure at least two proximal effects. That is, a single study had to report an indicator of, for example, a personal resource, such as self-esteem, and stress (e.g., self-reported general stress). However, several studies included a small number (in several cases one) outcome of giving. With so few studies having measured at least two of the health benefits in the RRM (i.e., the proximal effects), there were few correlations on which to estimate associations among these benefits. Moreover, the available correlations were quite small (i.e., in some cases, close to zero) and, therefore, limited power to detect significant effects.

It is important to, at minimum, establish that social and personal resources are associated with stress reduction in order for the RRM to be a useful model of the health benefits of giving social support. The RRM suggests that giving promotes health by bolstering resources which are useful insofar as they help individuals manage stress. While the RRM is based on findings from stress and coping research that suggest that each of the benefits of giving facilitate management of stress and reduce its negative impact, the present study did not have enough studies reporting correlations between the benefits of giving and stress to detect significant associations and, consequently, corroborate the findings from previous research.

5.1.6 Giving enhances resources during low and high stress.

One important source of variation in the present study was the degree of stress during which giving occurred. That is, the present study examined giving during conditions of high and low stress in order to test the premise that giving would be more

strongly related to social and personal resources under conditions of low stress and, in contrast, that giving would be more strongly related to stress under conditions of high stress. These analyses were based on the idea that individuals give to reduce stress and in response to helping cues; thus, in such circumstances, their giving would be more strongly related to stress. Furthermore, according to the RRM, when stress is low, individuals give for other reasons, such as to brighten someone's day, which can enhance intimacy or bonding (social resources) and feelings of usefulness (personal resources). It was suggested that giving under these low stress conditions can improve relationships by building trust and reciprocity, the building blocks of many important social resources (e.g., availability of support), and can develop personal resources because it can enhance individuals' role-identity.

Results show that giving seems to be more strongly related to resources (personal and social) under low stress conditions, as expected, but giving is also more strongly related to resources than stress under high stress conditions. That is, giving is more strongly related to social and personal resources than to stress among individuals experiencing high *and* low stress (see Table 4). This suggests that (a) giving and resources are associated, and (b) giving and stress are not associated, regardless of whether giving occurs within stressful conditions. This result is probably driven by strong overall giving-resource relationships and weak overall giving-stress relationships, a pattern of results suggesting giving relates to resources but not stress. These findings suggest that, even within stressful conditions, giving appears to be related to resources, albeit to a lesser degree, suggesting that individuals giving at a time when their resources are strained due to stress may still benefit from enhanced social resources (e.g.,

relationship quality) and personal resources (e.g., feelings of usefulness). Likewise, although their resources may be constrained during high stress conditions, they may nonetheless play a role in support giving, such as when individuals believe they have the capacity (i.e., knowledge, skills, abilities) to help someone in need. By contrast, giving does not appear to reduce stress even when givers are more likely to be motivated to give to reduce stress (i.e., during stressful circumstances). These findings align with some previous research, such as investigations showing that support giving can bring spouses closer during times of stress by contributing to relationship satisfaction (Pasch & Bradbury, 1998) and relationship quality (Cutrona, 1996).

5.2 Results Are Inconsistent with the Caregiver Systems Model

While giving appears to be associated with resources that facilitate stress-resistance, it does not appear to be associated with stress itself. The overall correlation between giving and stress was zero, indicating that giving and stress are unrelated. This result is unexpected, in large part because the Caregiver Systems model suggests that support giving is directly related to stress reduction. The present findings do not support the Caregiver Systems model element of the RRM – i.e., that support giving reduces stress or that giving is prompted by helping cues which arouse stress in givers and lead to helping behavior aimed at reducing the stress.

There are several plausible interpretations for this lack of association. First, these findings may point to an explanation grounded in COR theory, i.e., that support giving reduces givers' loss of resources, rather than reducing their stress. The fact that support giving was positively associated with resources, both social and personal, but not stress suggests giving is more strongly related to resources than stress; giving, therefore, may

be more directly related to resources. COR theory suggests that stress arises from the prospective or actual loss of resources (Hobfoll, 1989), an idea that has received some empirical support (Benotsch, Brailey, Vasterling, Uddo, Constans, & Sutker, 2000; Holahan, Moos, Holahan, and Cronkite, 1999; Lane & Hobfoll, 1992). Studies in this area show that many of the negative effects of stressful events (e.g., psychological tension, anxiety, etc.) are mediated by a loss of resources (e.g., loss of confidence about the future stemming from possible home foreclosure). Thus, the lack of association between giving and stress provides evidence that aligns with COR theory and not the tenets of the Caregiver Systems model.

Second, it is also possible that effect sizes vary by some other factor(s), as suggested by the significant *Qw*, which indicated that the studies that contributed effect sizes measured different facets of the giving and stress association. Thus, although the overall effect size was zero, it is possible that giving and stress are related in certain contexts. Tenets of the Caregiver Systems model point to possible factors that may have contributed to variation in effect sizes. The model posits that the impetus for giving arises from either self-interests or compassion, with only compassionate giving reducing stress. None of the studies that measured stress investigated the role of motivation in giving's effect on stress, and this unexamined factor could contribute to the observed variability in effects which. Thus, although the overall relationship was zero, it is possible giving was more strongly related to stress in studies involving participants who gave support in contexts in that fostered high levels of compassion (e.g., daughters at risk for breast cancer providing support to their mothers who were diagnosed with cancer; Vodermaier & Stanton, 2012).

A third explanation is that the various ways in which support giving and stress were examined in the studies used in the meta-analysis do not align with or capture adequately the components of the Caregiver Systems model. The Caregiver Systems model suggests that individuals respond to "helping cues" – problems, needs, deficits experienced by others (e.g., friends, family) in their social environment – with helping behavior that regulates the giver's own stress. The scope of this model is quite narrow, as it is focused on a set of related events that could play out over a short period of time within a particular helping context. Such a model lends itself to observation of helping contexts and behaviors, and sampling of biomarkers of stress, rather than self-report. However, many of the studies in the meta-analysis reported correlations between measures of participants' perceived levels of general stress (i.e., not stress that was specific or the result of specific social problems in specific social networks) and estimates of levels of support giving that occurred over a longer period of time (e.g., over the past year). These studies did not ask specifically about the extent to which respondents' stress stemmed from challenges experienced by members of their social networks, nor did they ask about the extent to which respondents' support giving helped to reduce such stress. Even this type of assessment that identifies the challenges that prompted support giving, and the extent to which support giving reduces the stress experienced as a result of observing such challenges, depends on respondents' capacity to estimate the relationships between these events accurately. Thus, it is possible that the original studies used in the present meta-analysis did not adequately assess the Caregiver System model.

5.3 Limitations

The present study was not without limitations. Most notably, because this area of research is still emerging, analyses were based on a small number of samples, a limitation which is attributable to (a) the small size of the literature (i.e., limited number of studies) and (b) the scarcity of correlations needed to examine relationships specified in the RRM (i.e., studies varied in the number of relationships they provided). This section focuses primarily on the issue of small sample size, but also discusses the impact of two other limitations, including (1) the aggregation of effects at the level of the sample and (2) the use of correlations to examine RRM premises of causality.

The issue of few samples and effects is akin to the issue of small sample sizes in original research. A meta-analysis is hampered by a small number of samples (i.e., small "*k*") just as an original study is hampered by a small sample (i.e., too few participants) and faces the same types of challenges, specifically, limited power to detect effects and limitations on inferences of generalizability of findings (Borenstein, Hedges, Higgins, & Rothstein, 2009). The issue of a small number of samples in this study presented several challenges – it precluded model-testing, a more rigorous approach to test the RRM, and the estimation of relationships involving health outcomes, and also constrained the reliability of inferences about several estimates, particularly those based on the smallest sample sizes. The first challenge led to the use of a less rigorous approach to examining the RRM; that is, instead of model-testing meta-analysis, the present meta-analysis relied on examination of component relationships. As a consequence, there are insufficient empirical grounds to suggest that the results support the RRM; rather, inferences are limited to assertions that the results support certain relationships specified by the RRM

for which effects were large enough and based on a sufficient number of samples to be statistically significant, including giving's association with personal and social resources. The second challenge – the exclusion of examination of relationships with health outcomes – limits inferences about the utility of the RRM as a whole still further. These two challenges were described in the present study section (cf. pages 21-26). As such, this section focuses on considering further the impact of analyses that were based on particularly small sample sizes, including estimates of relationships among health benefits (Analysis Set 2), moderator analyses of differences in strength of association between stress and resources within high and low stress samples (Analysis Set 3), and homogeneity analyses. The section concludes with a consideration of possible factors that contributed to the relatively small number of samples.

Inferences about several estimates – including whether they exist, their size, and whether they were based on homogeneous effects – should be framed tentatively, particularly (a) estimates of the differences in strengths of relationships between giving and resources when stress is high versus low (i.e., moderator analyses) and (b) estimates of relationships among health benefits, i.e., proximal effects, as these correlations were based on the fewest samples. In addition to estimates of overall correlations, inferences from results of homogeneity analyses based on small numbers of samples should be viewed with caution, as homogeneity analyses are particularly sensitive to sample size (i.e., "*k*"; Huedo-Medina et al., 2006). Because the present study sought to examine the evidence for homogeneity to evaluate support for the RRM's suggestion that resources tend to be related and hang together, the low sample sizes would increase the likelihood of erroneously failing to reject the homogeneity assumption and therefore falsely

inferring they have similar degrees of association with giving. The most critical relationship for which this could be a problem is the association between giving and personal resources because it represents the one overall correlation with homogeneous effects. Nonetheless, despite being based on small samples, these effects are likely homogeneous, given that three different methods for assessing homogeneity – that is, *Qw*, I^2, and forest plots – all showed the effects were homogeneous.

The present study might have included more effect sizes had original studies used alternative measures for constructs specified in the RRM. While original studies did measure key RRM constructs, many did so with instruments that also included measures of other constructs not specified in the RRM (e.g., frequency of social contact). Exclusion of correlations with these indicators resulted in a smaller sample of effect sizes. The issue of relying on a small numbers of samples was particularly problematic for correlations with indicators of being in or having social relationships, as the greatest number of potential studies were excluded for estimating the correlation between relationships and giving (i.e., because frequency of social contact was often included in indicators of presence of social relationships). In turn, because the overall correlation between giving and social relationships was based on few samples ($k = 5$), it was sensitive to studies with relatively larger sample sizes. Additionally, studies with larger sample sizes would be more heavily weighted in the estimation of the overall effect. In the case of the correlation between social relationships and giving, one study by Warner (2010) included a sample size (N = 1415) of more than three times the size of the study with the next largest sample (Strazdins & Broom, 2007; N = 398). The larger study also reported the second smallest effect size of giving and relationships ($r = .07$), less than half the size of

the overall estimate (r = .18). As such, the Warner study and its particular focus and methodology might be overrepresented in the overall effect. In this case, Warner (2010) provided a correlation between giving and whether or not participants had a partner (i.e., partner status) among older participants with multiple chronic health conditions. As such, the weak association between giving and social relationships may be more applicable to this group than others.

Another limitation was that estimates of overall effects and analyses of homogeneity were based on study-level effect aggregation. Effects from studies that reported multiple effects were aggregated (i.e., n-weighted average) before they were used in the overall estimate. Thus, studies with more than one type of effect of the same relationship (and/or the same relationship measured at multiple timepoints) did not offer an estimate of a pure relationship between two conceptually distinct constructs; instead, such studies yielded averages of different types of effects. This complicates the analysis of the homogeneity of effects of giving and personal resources, as the aggregations of effect sizes at the study level may obscure true variance between giving and personal resources. Although aggregating effects from studies with multiple effects is a common practice in meta-analysis, it is not without its detractors, as some critics of the method of aggregation suggest randomly selecting a single effect from studies that provide multiple effects of interest (see Morris & DeShon, 2002). However, this approach has its own set of challenges, such as including effects without a theoretical basis (Lipsey & Wilson, 2001), and aggregation of effect sizes is generally viewed as the superior approach (see Glaser & Olkin, 1994).

Finally, because the meta-analysis used zero-order correlations (transformed to Fisher's *z*) from cross-sectional analyses to calculate overall estimates of relationships specified in the RRM, inferences of causality must be viewed tentatively. This is most salient with regard to the relationships between giving and resources, i.e., the suggestion that giving enhances resources. While, according to the RRM, resources also contribute to giving (i.e., one needs resources to give), the present meta-analysis was not designed to examine questions of directionality or such premises of causality.

5.4 Future Directions for Research

One of the central aims of the present study was to identify understudied relationships in the support giving literature (i.e., associations specified by the RRM for which there were insufficient effects from which to draw for meta-analysis) in order to provide research questions and hypotheses that could stimulate future research. Meta-analysis is useful for identifying understudied relationships because it involves collation of effect sizes of relationships from studies in a given literature area and thus can provide a count of the number of instances a particular relationship has been examined. Although there was at least one effect for each relationship specified in the RRM, several of the relationships have been understudied (i.e., primarily, relationships among health benefits). Given the findings from the present study, more research on two key relationships would be particularly fruitful for future research, including between (1) resources and stress and (2) giving and being in or having social relationships.

The present study showed that support giving is related to resources under high and low stress conditions, but unrelated to stress in either condition, even under high stress conditions. Further research on the former, the relationship between resources and

stress, could explicate the extent to which giving promotes health through direct stress reduction (and thereby curbing its pernicious health effects), as suggested by the Caregiver Systems model (Konrath & Brown, 2013) or, as suggested by the results of this study, potentially indirectly through enhancement of stress-resistance resources. Additionally, although the present study showed that support giving has a small to moderate strength of association with social relationships (r = .18), it was based on a small number of effects, which yielded a nonsignificant association. Strengthening the body of research on the relationship between giving and social relationships could improve understanding of the role of support giving in building and maintaining these critical social contexts in which stress-resistance resources may be developed and protected. Clarifying how and the degree to which support giving promotes health by examining these potential pathways – stress reduction, strengthening resources, and formation and maintenance of social relationships – would illuminate potentially essential functions of support giving. In turn, such research could aid efforts to understand and employ support giving in health promotion.

Consistent with the present study's aim to provide research questions and hypotheses, the remainder of this subsection discusses steps future research could take to improve understanding of the relationship between stress and resources and giving and social relationships. Additionally, this section considers complementary future research avenues that could support research in this area. To that end, this section discusses research opportunities identified in the course of carrying out this meta-analysis, including (a) improving construct precision and operationalization of support giving, (b) distinguishing between potentially different types of stress that may precipitate support

giving (i.e., stress from helping cues versus from perceived lack of social contact), (c) expanding research of social resources beyond a focus on receiving social support, (d) determining the extent to which support giving has similar effects on different types of personal resources, and (e) examining factors that may moderate the effects of support giving, including role-identity, the giver's perception of support giving's impact, and the roles of developmental and socio-cultural factors. This section discusses strategies for improving construct clarity and operationalization of support giving before framing the other specified future research directions, because these steps are imperative for progress in improving understanding of support giving's health-promoting potential.

Efforts toward improving the construct validity of support giving measures should begin with improving the precision of construct definitions. Such efforts might begin by identifying and articulating the characteristics that distinguish support giving from related phenomena, including volunteering, caregiving, reciprocity, and self-other orientation. Making these conceptual distinctions could lead to more targeted examinations of the potential contributions giving can make to health, facilitate more focused future meta-analyses, and yield more precise estimates of specific health effects of giving. Qualitative (or mixed methods) research may help distinguish between support giving and these phenomena. For example, studies aiming to determine the ways in which support giving differs from caregiving and volunteering could identify and target individuals engaging in volunteering or caregiving (e.g., individuals who regularly volunteer or those in caregiver) and conduct interviews or focus groups that include questions about how support giving in these specific contexts differs from support giving more generally. Furthermore, studies of caregiving might include inquiries about the potential ways in

which giving changed after the participant became a caregiver or how his or her giving may differ in other contexts.

Once support giving is clearly defined and distinguished from other related forms of giving (i.e., volunteering, caregiving, reciprocity, self-other orientation), future research should turn to enhancing the operationalization and, in turn, the assessment of support giving. As Shakespeare-Finch and Obst (2011) note, there are few measures of giving, and perhaps no standardized self-report measures. Lacking such measures, studies on support giving have often resorted to using single-items or revised versions of support receiving surveys to assess support giving by reversing the direction of support (for example, such studies might revise "There are people I can rely on for financial advice" to "People rely on me for financial advice"). In an attempt to address these shortcomings, Shakespeare-Finch and Obst validated an instrument – the "2-Way Social Support Scale" – that assesses giving and receiving instrumental and emotional support, and shows strong psychometric properties. Responding to the call to improve research rigor, researchers should begin to use questionnaires showing strong psychometric properties, such as the 2-Way Scale, in research on support giving.

In order to examine the extent to which support giving is health promoting, efforts to enhance the construct validity of measurements of support giving should be complemented with efforts to elucidate the relationship between giving and stress, a critical pathway in both the Caregiver Systems model and the RRM. These efforts could benefit research in this area in at least two ways. First, because stress is identified as the primary mediator through which giving and resources influence health, efforts to clarify the role of support giving in stress reduction (or amplification) could improve the study

of support giving's impact on health. Second, elucidating the relationship between giving and stress could improve construct precision of giving, thereby aiding foundational future research efforts.

In order to clarify the nature of the relationship between giving and stress, future research could determine whether giving has a direct ameliorative effect on stress, as suggested by the Caregiver Systems model, or whether giving impacts stress indirectly through its effect on resources. If giving appears to have indirect effects on stress, this would be evidence in support of COR theory and, conversely, would be contrary to the premise of the Caregiver Systems model. Such evidence in support of COR theory would also suggest needed revisions to the RRM, such that giving would no longer be expected to have a direct effect on stress (i.e., elimination of link 1a in Figure 3); instead, giving would be expected to influence stress through its effect on resources.

In order to test these competing premises, future research should use model-based longitudinal designs that would permit examination of resources as a potential mediator of stress. Temporal ordering of measures of giving, resources, and stress would be a central design component of such studies, and mediational models that incorporate repeated measures, such as cross-lagged panel designs, should be employed (see Preacher, 2015). Future research employing these methods and guided by hypotheses developed from within the Caregiver Systems framework could examine whether occurrences of giving precede decreases in levels of stress. Further, such studies would have to demonstrate that alternative factors do not explain significant or practical variance in stress. Changes in social and/or personal resources would not be expected to occur after giving or before changes in stress. Future research guided by hypotheses

stemming from COR theory would, by contrast, examine whether resources do in fact explain a significant and practical proportion of the variance between giving on stress. If resources were shown to completely mediate the effects of giving on stress, such evidence would support eliminating the Caregiver Systems component of the RRM.

Nonetheless, the Caregiver Systems model may have utility even if support giving is not found to have a direct effect on stress, as it might help to distinguish between different types of resource loss or stressor states that contribute to different giving behaviors which might, in turn, result in distinct health outcomes. The Caregiver Systems model suggests individuals give support to reduce their own stress that arises when they notice that someone needs help. It also suggests that individuals give to form social bonds, which would seem to be motivated by less participation in social environments than desired. That is, to notice a helping cue, one would presumably have to be in a social environment; by contrast, desire for greater social bonding would presumably stem from dissatisfaction with one's current level of social contact. Thus, the model seems to suggest that individuals give support to reduce one of two kinds of stress: one stemming from a helping cue (i.e., secondary stress) and another from a lack of social contact, or what some have referred to as a kind of social deprivation stress (Beckes & Coan, 2011; Berry et al., 2011; Cacioppo & Hawkley, 2003).

This distinction in stressor states and objectives of giving may help identify different functions of giving and, subsequently, how those functions yield potential unique effects. Support that is given in response to helping cues might be a targeted form of support and therefore more consistent with specific functional forms of support, such as tangible, informational, and emotional support (House, Landis, & Umberson, 1988;

Shakespeare & Obst, 2011). Support that is given to form social bonds may not necessarily be in response to helping cues. Instead, such support may be a kind of unsolicited, "companionship" support (Strazdins & Broom, 2007), coming in the form of gift-giving (e.g., surprise flowers), creating an opportunity for everyday conversations in which giving is part of a back-and-forth exchange of listening and sharing (Lakey & Orehek, 2011), or posting friendly messages through social media (Ellison, Vitak, Gray, & Lampe, 2014).

As with support giving, construct clarification would be an important first step toward enhanced measurement of social relationships. Toward that end, studies should distinguish between being in or having a social relationship and social activity. The present study suggests that being in a social relationship is an individual's actual or perceived participation in the exchange of resources with one or more individuals, typically expressed by social roles or statuses (e.g., marital status) or role-identities (i.e., individuals' self-labels acknowledging their social roles). This definition suggests a relationship holds sufficient significance for individuals to the extent that they recognize the relationship as part of who they are (i.e., role-identity) or is either a stable, socially-structured element of an individual's social life (e.g., marriage) such that it would be verifiable in the absence of self-report. This definition was adopted because it was reasoned that individuals could have frequent contact but not consider themselves to have meaningful affiliation with other individuals or groups. For example, despite frequent contact with a co-worker, some individuals may not consider themselves as being in a relationship with the co-worker. Thus, measuring social relationships should be distinguished from measuring other factors reflective of social activity.

Future research could continue to examine the relationship between giving and social and personal resources, as these relationships appear to be strong and robust. For instance, future investigations could improve study of these relationships by (1) identifying the resources that are most reliably associated with giving, and (2) examining potential moderators of these associations, particularly role-identity or the impact of support giving (i.e., whether it had the intended effect). In a similar vein, future research could expand the scope of variables assessed beyond indicators of receiving support and examine other social resources such as trust, sense of community, commitment, and social connectedness as these resources may be have unique relationships with giving and contribute meaningfully to stress management, health, and well-being. Furthermore, given the high degree of variability among effects of giving and social resources, studies could examine the extent to which giving varies in its degree of association with different forms of support receiving identified in Table 6, such as receiving tangible vs. emotional support (Shakespeare-Finch & Obst, 2011) or perceived support (i.e., perceptions of available support) vs. received support (i.e., actual amount received).

Likewise, research should continue to investigate the role of giving in enhancing personal resources. One fruitful path research could take is to confirm whether giving has the same effect on a variety of different personal resources, as suggested by the findings from the present study (see Table 5). Related research efforts could build upon the work of Judge et al. (2002) to determine the extent to which these personal resources (or a subset of these personal resources) are part of a superordinate factor reflecting self-worth or, more broadly, socio-emotional attributes that reflect one's self-views (e.g., social identity, role-identity, self-efficacy, or self and social regulation capacities; e.g., Coan,

Schaefer, & Davidson, 2006; Haslam, Jetten, Postmes, & Haslam, 2009; Jetten, Haslam, Haslam, Dingle, & Jones, 2014; Thoits, 1991). Findings from these related areas of research could combine to provide evidence of a possible association between giving and one's self-worth or self-views which, if true, would provide a means of increasing the level of parsimony in the study (and potential application) of support giving. That is, if this reduction aids understanding and clarity, subsequent research may be able to condense personal resource outcomes to the measure of a single personal resource construct (i.e., self-worth, self-views). Health promotion efforts could subsequently seek to build socio-emotional competences and, in particular, harness support giving to address an array of vulnerabilities reflecting self-worth or self-views (e.g., low self-esteem) that may undergird a number of mental health challenges (see Thoits, 2013).

Studies that aim to examine variations in strengths of associations between giving and various types of social and personal resources might benefit from employing designs that permit control of factors that may moderate these relationships, such as to whom support is given (e.g., parent or friend), type of relationship (e.g., romantic or platonic), or context (e.g., work or home). A key moderator in the RRM framework is role-identity and, thus, examining its influence on personal resources would provide an important test of a tenet of the RRM. As one case in point, role-identity could be examined by studying the degree to which identity significance moderates the effect of support giving on personal resources. For example, an individual who prizes her role as tutor could be crushed if her student fails or affirmed if she passes; the self-worth of individuals who place less value on the role of tutor may be less sensitive to support giving and its effects in these relationships. Another related factor is the degree of impact of giving, that is, the

extent to which the support had the intended effect. Because the intended effect of support giving is generally to benefit others (e.g., the tutor helps the student pass), even if givers also anticipate to benefit (consciously or unconsciously), givers' and receivers' perceptions of the actual effect giving would seem to be important moderators of the relationship between giving and personal resources.

Developmental and socio-cultural factors may add further complexity to moderating effect of role-identity. As individuals age, their needs, capacities, interests, and society's expectations of them change. Alongside these changes, individuals' roles and relationships change, as some are gained (e.g., marriage) or lost (e.g., loss of spouse), while others evolve (e.g., relationship between parents and children; Bosma & Kunnen, 2001; Erikson, 1982). Changes in roles and relationships may affect giving, role-identities, and giving's health benefits. Particularly salient developmental changes may be those occurring during transitions between adolescence and emerging adulthood, from emerging adulthood to middle adulthood, and from middle adulthood into older adulthood. For instance, in the transition from adolescence to adulthood, increased desires for autonomy and concurrent shifts in relationships with parents (e.g., less dependence), peers (e.g., romantic relationships), and other adults (e.g., employers) may engender new roles that have stronger expectations for reciprocity and, thus, greater degrees of giving than was expected during adolescence (Tanner, 2006). As emerging adulthood yields to middle adulthood, reciprocity standards may change again as individuals become responsible for supporting children and parents (Lachman, 2004), both with significant needs, but perhaps limited capacities to return support at similar levels. Older adulthood may bring further changes as desires for generativity emerge

(Erikson, 1982), but physical and cognitive capacities decline (Krause & Shaw, 2000). Socio-cultural factors may add further complexity to these relationships. For example, enhancing self-esteem may be more important to individuals in individualistic societies, whereas enhancing closeness may be more important to individuals in collectivistic societies (Chen et al., 2012; Markus & Kitayama, 1991). These factors warrant exploration.

A final point that bears mention is that in order to advance meta-analytic reviews generally and model-based meta-analysis, specifically, future research studies should adhere to recommended best practices (Lipsey & Wilson, 2001) and include correlation matrices in their manuscripts. This straightforward step is an important way to advance an area of study. To that end, correlation matrices are an indispensable component of meta-analytic approaches that test mediation (e.g., model-based meta-analysis; Becker, 2009), as they permit examination of direct and indirect effects. The RRM is a general mediation model, suggesting that the health effects of giving are mediated by resources and stress. In order to examine this general mediational component of the RRM, multiple zero-order correlations are needed, including correlations between giving and stress, giving and resources, and stress and resources, as well as between these factors and health outcomes (e.g., indicators of chronic illness or mental health challenges). The present meta-analysis excluded a number of studies and effects because correlations were unavailable, which constrained examination of all relationships specified in the RRM, particularly among the selected health benefits. Further, such constraints in the number of available effects prohibited use of model-based meta-analysis that could have tested the RRM as a whole rather than its component parts.

5.5 Implications for Intervention

Findings from the present study indicated that support giving may be a generally beneficial process, one that could increase coping capacity for a range of individuals and across diverse contexts, and could therefore be used in a variety of health promotion interventions, even those targeting individuals who may have limited social and personal resources. Examples of individuals whose social and personal resources may be constrained include older adults (Kite & Wagner, 2002), individuals with serious medical conditions (Bloom & Kessler, 1994), and individuals with mental illness (Goffman, 1961; Link, Mirotznik, & Cullen, 1991; Roe, 2001). Such individuals are often the target of support, both informally (i.e., from family and friends) and from formal interventions (Rappaport, 1981) and they may have limited opportunities or capacity to give support because their support may be devalued (Roe, 2001; Wolfensberger, 2000). They may also be in relationships with professionals whose ethics codes prevent them from accepting support from clients (e.g., American Psychological Association, 2002).

As such, individuals whose resources may be already constrained may receive greater levels of support than they can or have the opportunity to reciprocate, further limiting their opportunity to build resources via support giving. Research shows that while receiving support is beneficial in myriad ways, it can also have negative effects (Barrera, 1986), particularly on the self-esteem of those who receive more than they give (Lu, 1997), as it may signal to recipients that they are deficient or lacking in some way. Thus, it is possible that if receiving support is complemented with opportunities to give support, some of these threats of support receiving to self-worth may be counteracted (Jaeckel et al., 2012).

More research would be needed to confirm the salutary effects of giving for individuals whose resources are strained because such individuals would be vulnerable to further resource depletion if support giving does not prove beneficial to them. That said, findings from the present study may support strategies that are already in use and have already received some empirical support, such as shared decision-making and person-centered approaches to health and social care (Barry & Edgman-Levitan, 2012; Cowen, 1985). Person-centered approaches encourage participants to give knowledge about their own experiences and strategize solutions for their own challenges. In such an approach, providers may adopt a disposition of recipient, participants a disposition of expert, and both provider and participant rely on the knowledge of the participant to formulate and implement solutions.

5.6 Summary and Conclusions

The present study is the first meta-analysis on support giving. This study also used a new integrative framework, the Roles and Resources model, to organize and examine associations between support giving and potential health benefits. The model was developed through integration of existing support giving theory (i.e., Caregiver Systems model; Konrath & Brown, 2013) and several theories of resource exchange (COR theory, Hobfoll, 1989; Role-Identity theory, Thoits, 1983; and social exchange theory, Emerson, 1976, Gouldner, 1960) in order to develop a comprehensive framework that could be used to examine support giving's association with a wide variety of health benefits across diverse support giving contexts documented and described in the literature.

To that end, the present study examined support giving's association with several health benefits, including stress reduction, being in or having social relationships, and enhanced social resources and personal resources, as well as the associations among these health benefits. The model was also used to formulate hypotheses about the effects of support giving in high and low stress contexts.

The results of the meta-analysis showed that support giving has small to moderate strengths of association with social and personal resources under conditions of high and low stress, but no association with stress, even under conditions of low stress, suggesting that support giving enhances resources, but does not reduce stress, regardless of the level of stress the giver experiences. Results also showed that health benefits were not related to one another, but analyses of these relationships were based small numbers of studies, limiting their generalizability.

Taken together, the present study's findings point to several conclusions. First, the meta-analysis provides incomplete, but essential support for the RRM; it also challenges the main tenet of the Caregiver Systems model by showing that support giving is associated with resources, but not with stress. Second, findings suggest that support giving may be explained best through a resource-focused lens. That is, rather than buffering stress, giving helps *reduce the loss of resources* in situations in which resources are threatened or are actively being lost (e.g., when a friend is injured) and, furthermore, when resources are secure, giving may enhance resources. This framing would be consistent with two conceptual cornerstones of COR theory (Hobfoll, 1989), namely, that (1) stress is what is felt when resources are being lost or are threatened and (2) that individuals endeavor to conserve, protect, and enhance resources and the conditions in

which they are accessed (e.g., social relationships). The present study would add to COR theory by suggesting that support giving is one way in which individuals can have a positive influence on their social and personal resources. Additional research is needed to clarify the role of support giving in reducing stress, which could provide further evidence of the utility of a resource-focused lens for support giving. Third, in order to determine the extent to which support giving actually promotes longer-term health (i.e., mental and physical health and well-being) through its enhancement of stable resources that help individuals manage stress, longitudinal research that permits examination of mediation is needed. While the present study makes an important contribution to the study of social support and health by showing that support giving may contribute to important stress-resistance resources, it was hampered by a small sample of studies, limiting generalizability of several findings, and by correlational data, thereby precluding causal inferences. Finally, the results of the present study lend support to interventions that encourage participants to give support in the form of knowledge about their own experiences and to strategize solutions for their own challenges, such as shared decision-making and person-centered approaches to health and social care.

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Table 1: Studies included in present meta-analysis

Authors (year)	Nature of Sample	Location	N	Mean Age	Level of Stress
Abolfathi Momtaz, Ibrahim, & Hamid (2014)	Older adults	Malaysia	2552	69	Low
Acitelli & Antonucci (1994)	Older adult couples	US	67	74	Low
Bangerter, Kim, Zarit, Birditt, & Fingerman (2014)	Older adults	US	337	76	Low
Bokszczanin (2012)	Adolescents	Poland	262	Girls = 16 Boys = 17	High
Bracke & Verhaeghe (2008)	Adults with mental health challenges	Belgium	628	44	Low

Table 1 (Continued)

Author(s) (year)	Nature of Sample	Location	N	Age	Level of Stress
Brown, Nesse, Vinokur, & Smith (2003)	Older adults	US	846	Husbands = at least 65 at baseline	Low
Brown, Brown, House, & Smith (2008)	Bereaved older adults	US	289	Husbands = at least 65 at baseline	High
Cruza-Guet, Spokane, Caskie, Brown, & Szapocznik (2008)	Older adults	US	273	M = 79	High
Feenstra (2003)	Mothers of young children	US	57	M = 33[a]	Low

Note. M = Mean; a = indicates that although this study included two samples, one of which was from a pilot study, no demographic data were provided for the pilot study sample.

Table 1 (Continued)

Author(s) (year)	Nature of Sample	Location	N	Mean Age	Level of Stress
Jaeckel, Seiger, Orth, & Wiese (2012)	Mothers re-entering workforce	Switzerland	267	34	High
Jou & Fukada (2002)	Students in Japan	Japan	484	20	Low
Kim, Han, Moon, Shaw, Shah, McTavish, & Gustafson (2012)	Women with breast cancer	US	146	51	High
Knoll, Kienle, Bauer, Pfüller, & Luszczynska (2007)	Couples undergoing in-vitro fertilization	Germany	66	Women = 35 Men = 37	High

Table 1 (Continued)

Author(s) (year)	Nature of Sample	Location	N	Age	Level of Stress
Ko & Lewis (2011)	Older couples	US	423	M (women) = 79 M (men) = 83	Low
Krause & Shaw (2000)	Older adults	US	1041	72 at baseline	Low
LaPorte (2014)	Adults with mental health challenges	US	41	M = 47	Low
Litwin (1998)	Older adults residing in assisted living facilities	Israel	140	M = 77	Low
Reis Maniaci, & Rogge (2014)	Newlywed couples	US/Canada	175	M = 28	Low

Note. M = Mean

Table 1 (Continued)

Authors (year)	Nature of Sample	Location	N	Age	Level of Stress
Roberts, Salem, Rappaport, Toro, Luke, & Seidman (1999)	Adults with mental health challenges	US	98	M = 39	Low
Rodriguez, de Jong Gierveld, & Buz (2014)	Older adults	Spain and Netherlands	Spain = 646 Netherlands = 656	Spain: 60-74 = 52.5%; 75+ = 47.5 Netherlands: 60-74 = 54.9; 75+ = 45.1	Low
Schwartz, Keyl, Marcum, & Bode (2009)	Adolescents	US	457	M = 16	Low

Note. M = Mean

Table 1 (Continued)

Authors (year)	Nature of Sample	Location	N	Mean Age	Level of Stress
Shakespeare-Finch & Obst (2011)	College students and general community samples	Australia	372	Sample 1 = 30 Sample 2 = 29	Low
Smith (2014)	Older adults at risk for vision impairment	US	101	73	Low
Strazdins & Broom (2007)	General adult sample	Australia	398	38	Low
Vodermaier & Stanton (2012)	Women at high risk of breast cancer	US	147	47	High
Warner, Schüz, Wurm, Ziegelmann, & Tesch-Römer (2010)	Older adults with multiple chronic health conditions	Germany	1663	65	High

Table 2: Overall correlations of support giving and key health benefits (Analysis Set 1)

Analysis	*k*	Weighted *r*	95% CI for *r*		*Qw*
Giving and Stress	8	0.00	-0.10	0.10	35.38***
Giving and Social Relationships	5	0.18	-0.05	0.40	86.68***
Giving and Social Resources	22	0.38***	0.22	0.52	399.76***
Giving and Personal Resources	8	0.15***	0.11	0.19	2.87

Note. *Qw* = within-class homogeneity statistic

****p*<.001

Table 3: Overall correlations among key health benefits (Analysis Set 2)

Analysis	*k*	Weighted *r*	95% CI for *r*		*Qw*
Social Relationships and Social Resources	4	0.03	-0.05	0.11	0.04
Social Relationships and Personal Resources	2	0.11	-0.15	0.34	0.00
Social Relationships and Stress	2	-0.06	-0.17	0.04	0.00
Social Resources and Personal Resources	6	0.09	-0.03	0.20	9.98*
Social Resources and Stress	10	-0.06	-0.28	0.16	103.51***
Personal Resources and Stress	1	-0.21***	-0.33	-0.08	NA

Note. *Qw* = within-class homogeneity statistic

*p<.05. ***p<.001

Table 4: Overall correlations between intraindividual stress and resources at high and low levels of stress

Analysis	*k*	Weighted *r*	95% CI for *r*		*Qb*	*Qw*
High Stress Samples						
Stress vs. Social Resources					16.43***	
Stress	4	-0.04	-0.17	0.09		14.87***
Social Resources	7	0.29***	0.20	0.38		24.36***
Stress vs. Personal Resources					5.43**	
Stress	4	-0.03	-0.14	0.07		14.87***
Personal Resources	4	0.14***	0.04	0.23		1.44

Note. *Qw* = within-class homogeneity statistic; *Qb* = between-class homogeneity

***p<.001, **p<.05, *p<.10

Table 4 (Continued)

Analysis	*k*	Weighted *r*	95% CI for *r*		*Qb*	*Qw*
Low Stress Samples						
Stress vs. Social Resources					15.12***	
Stress	4	0.03	-0.17	0.23		17.50***
Social Resources	15	0.45***	0.36	0.53		254.52***
Stress vs. Personal Resources					3.16*	
Stress	4	0.05	-0.05	0.14		17.50***
Personal Resources	4	0.17***	0.07	0.26		0.18

Note. *Qw* = within-class homogeneity statistic; *Qb* = between-class homogeneity

***p<.001, **p<.05, *p<.10

Table 5: Summary of relationships examined, hypotheses, and findings

	Relationship Tested	Hypothesis, based on Roles and Resources Model	Findings
Analysis Set 1	1a. Giving and Stress	positively related	Hypothesis unsupported: association was exactly zero
	1b. Giving and Social Relationships	positively related	Hypothesis unsupported: association was small-moderate and positive (r = .18), but nonsignificant
	1c. Giving and Social Resources	positively related	Hypothesis supported: association was moderate, positive (r = .38), and significant
	1d. Giving and Personal Resources	positively related	Hypothesis supported: association was small-moderate, positive (r = .15), and significant

Table 5 (Continued)

	Relationship Tested	Hypothesis	Findings
Analysis Set 2	2a. Social Relationships and Social Resources	positively related	Hypothesis unsupported: association was small, positive (r = .03), and nonsignificant
	2b. Social Relationships and Personal Resources	positively related	Hypothesis unsupported: association was small, positive (r = .11), and nonsignificant
	2c. Social Relationships and Stress	negatively related	Hypothesis unsupported: association was small, negative (r = -.06), and nonsignificant
	2d. Social Resources and Personal Resources	positively related	Hypothesis unsupported: association was small, positive (r = .09),and nonsignificant
	2e. Social Resources and Stress	negatively related	Hypothesis unsupported: association was small, negative (-.06), and nonsignificant
	2f. Personal Resources and Stress	negatively related	Hypothesis supported: association was moderate, negative (r = -.21), and significant, but based on single sample

Table 5 (Continued)

	Relationship	Hypothesis	Findings
Analysis Set 3	Giving in High Stress Samples	Giving and stress more strongly associated than giving and resources	Hypothesis unsupported: Giving was actually more strongly associated with social (r = .29) and personal (r = .14) resources than with stress (r = -.04 and -.03, respectively)
	Giving in Low Stress Giving	Giving and resources more strongly associated than giving and stress	Hypothesis supported: Giving was more strongly associated with social (r = .45) and personal (r = .17) resources than with stress (r = .03 and .05, respectively)

Table 6: Indicators of social and personal resources from original studies

Social Resources	Personal Resources
Received Support	Self-Esteem
Perceived Support	Self-Efficacy
Sense of Community (at school)	Occupational Self-Efficacy Beliefs
Anticipated Support	Coping (Approach Cognitive
Perceived Reciprocity	Strategies)
Actual Reciprocity	Proactive Coping
Quality of Support Received	Positive Religious Coping
Emotional Support Received	Positive Reframing
Instrumental Support Received	Control Beliefs
Perceived Support from Friends	Purpose in Life
Perceived Support from Family	Personal Growth
Support for Recovery from Mental Health Peer	Self-Acceptance
Received Support from Mental Health Peer	
Perceived Partner Positive Acts	
Help Received	
Guidance Received	
Interpretation Received	
Relationship Quality with Target Child	
Relationship Quality with All Children	

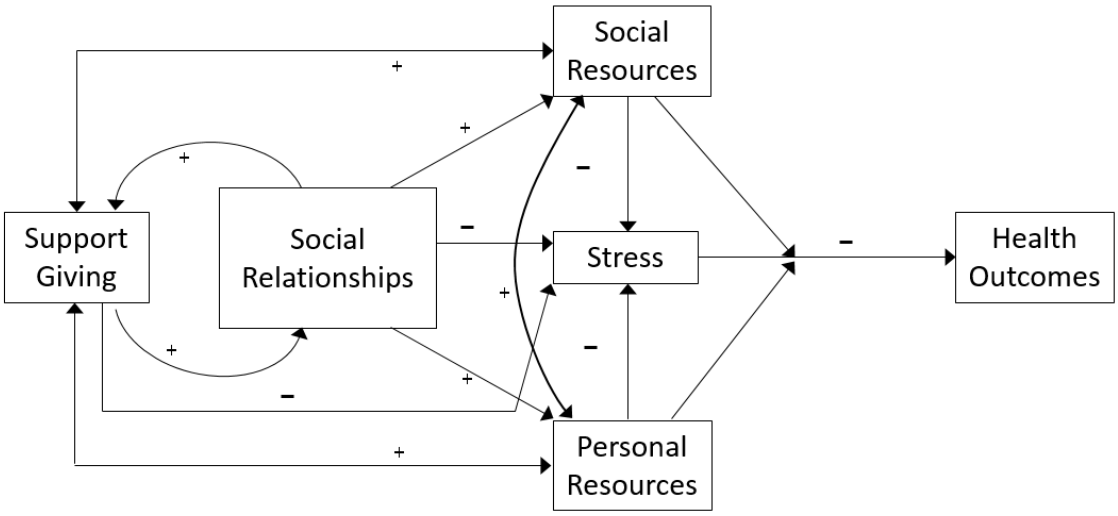
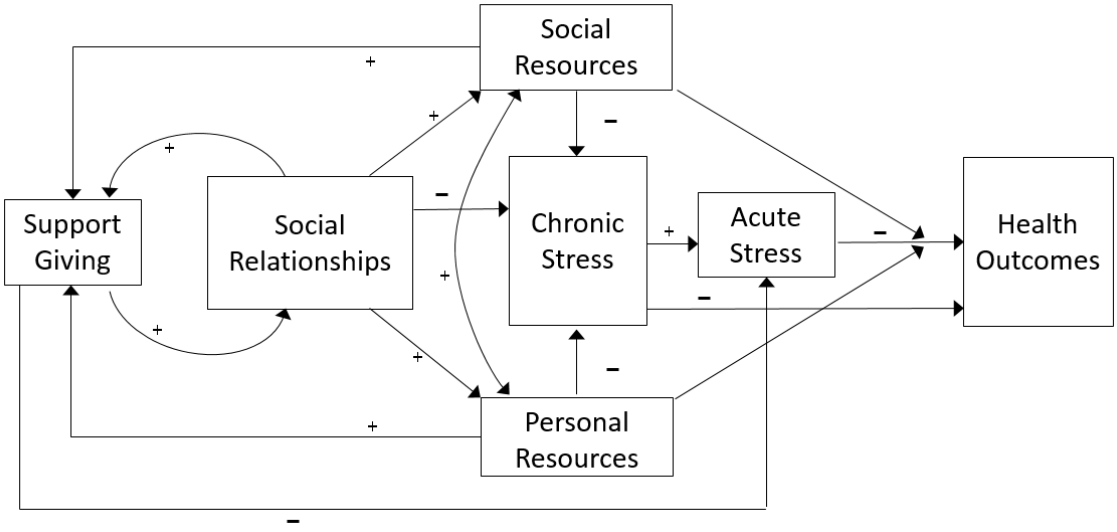


Figure 1. The Roles and Resources Model: A general mediation model of support giving's health effects

Panel 1: Support giving's health effects within high stress contexts



Panel 2: Support giving's health effects outside of high stress contexts

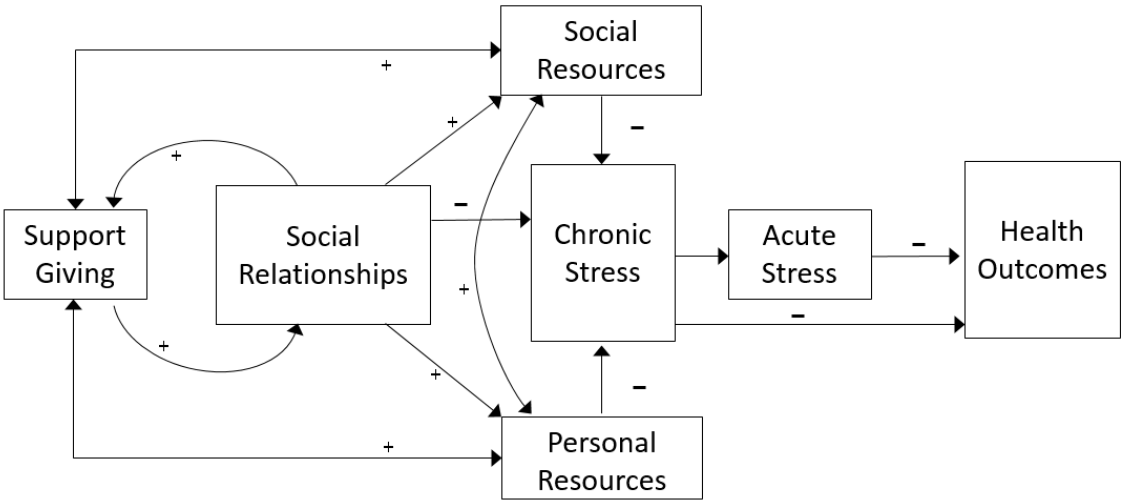


Figure 2. Support giving's health effects within high stress (Panel 1) and low stress (Panel 2) contexts

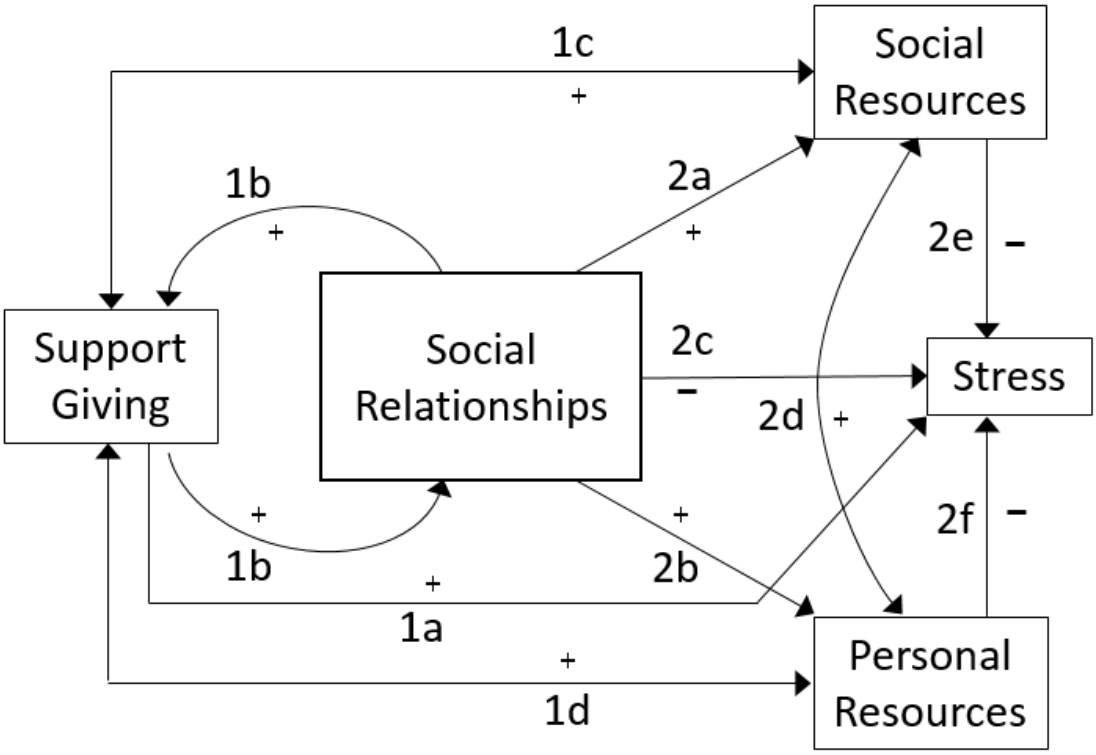


Figure 3. Support giving's proximal effects and relationships among proximal effects

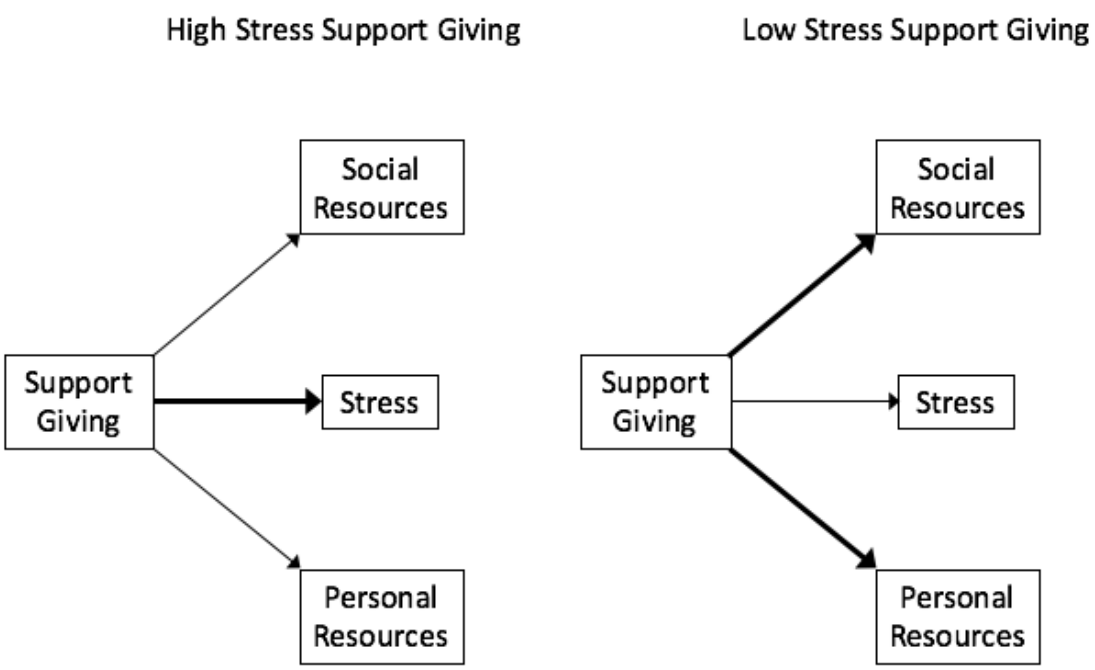


Figure 4. Support giving's effects on stress and resources under high stress support giving and low stress support giving conditions.

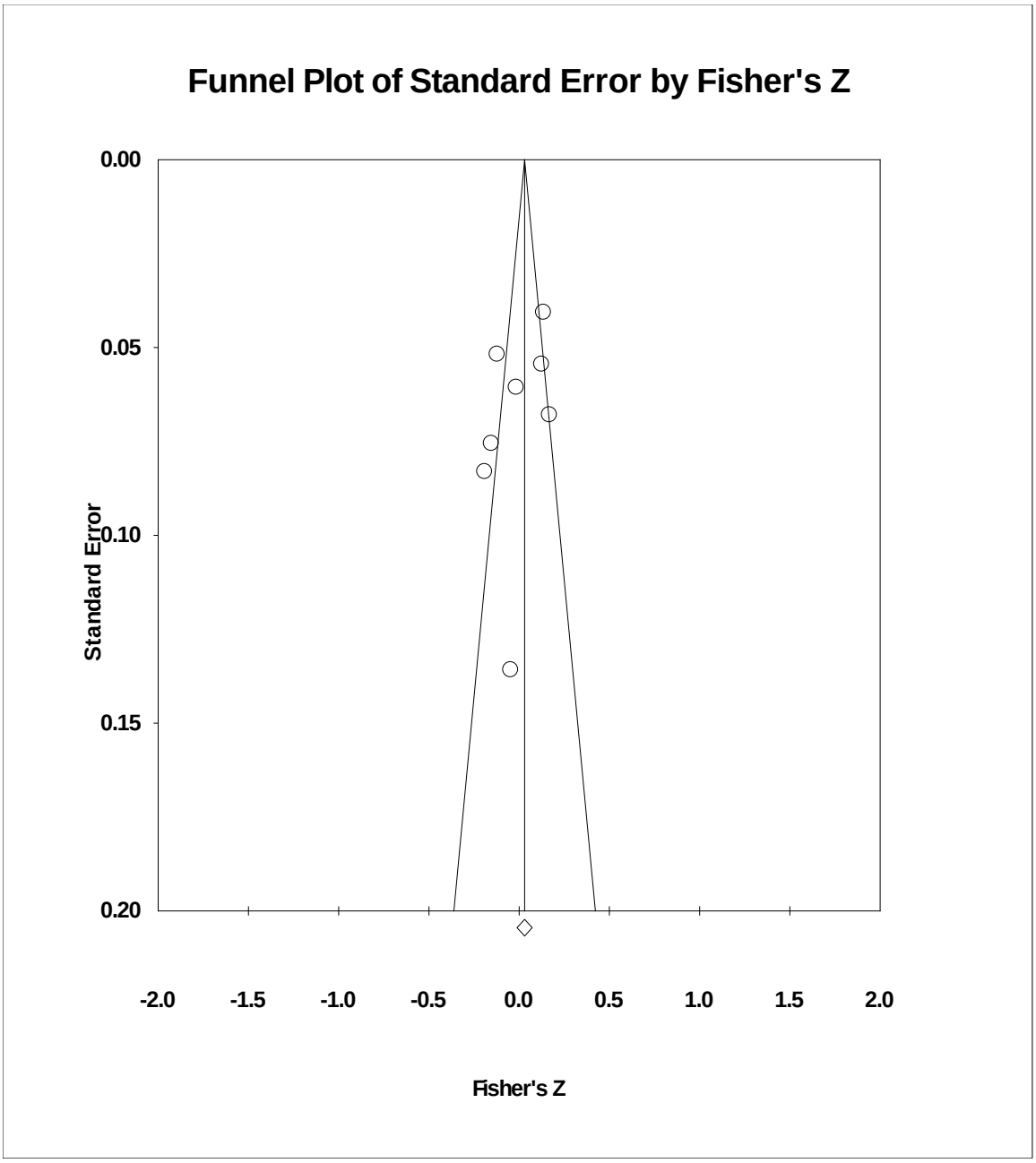


Figure 5. Funnel plot of standard error by Fisher's Z for effects of support giving and stress

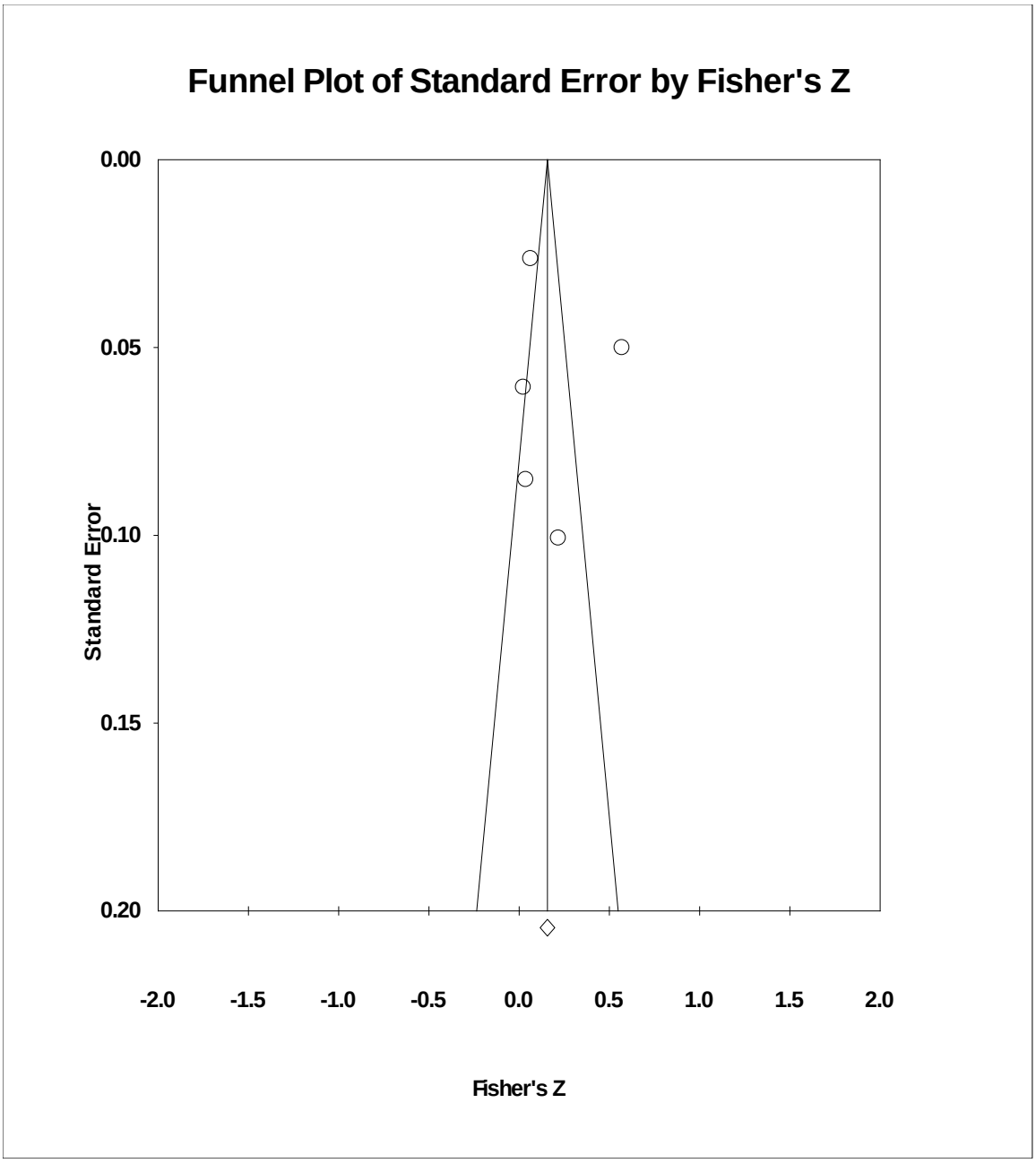


Figure 6. Funnel plot of standard error by Fisher's Z for effects of support giving and social relationships

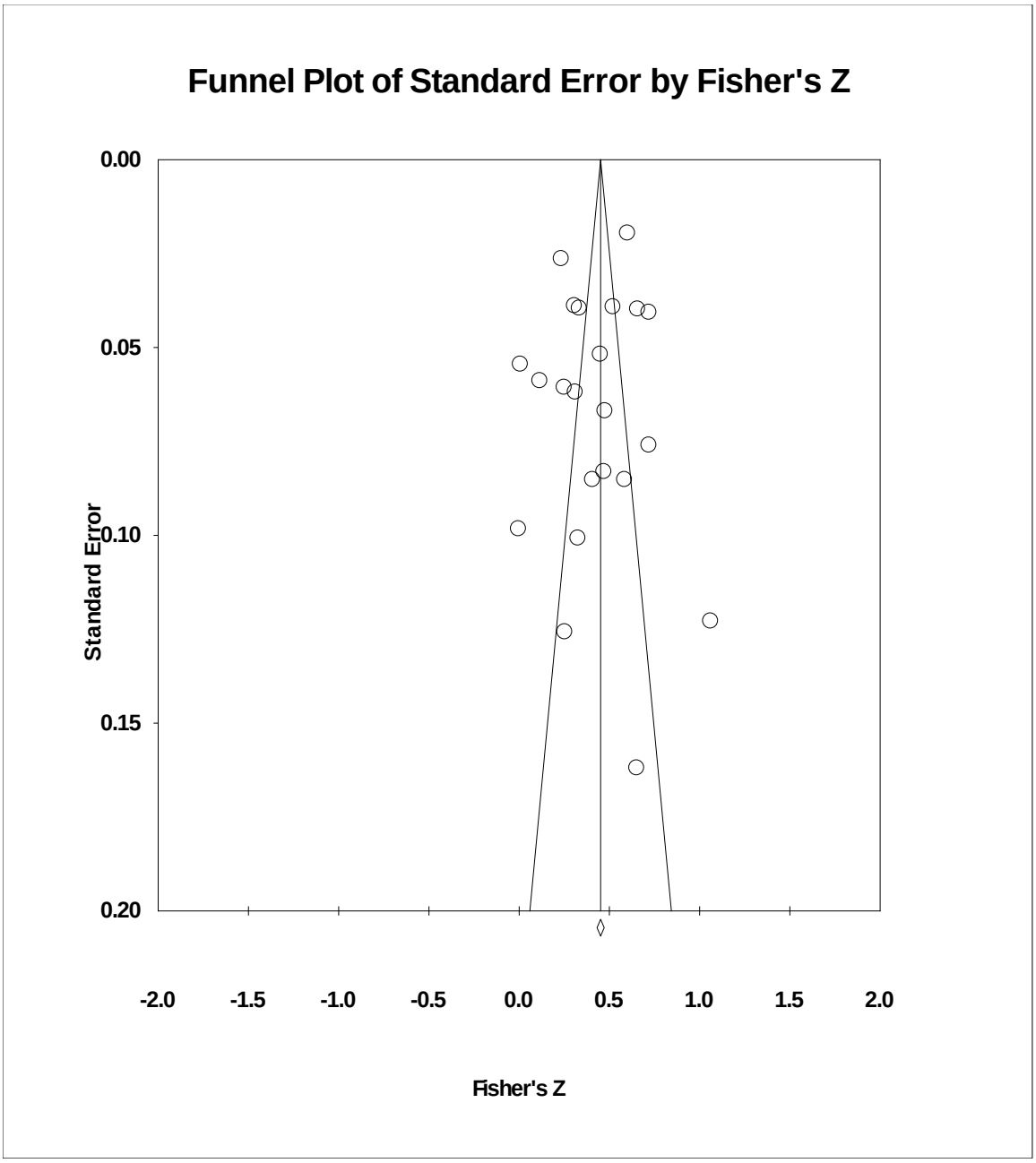


Figure 7. Funnel plot of standard error by Fisher's Z for effects of support giving and social resources

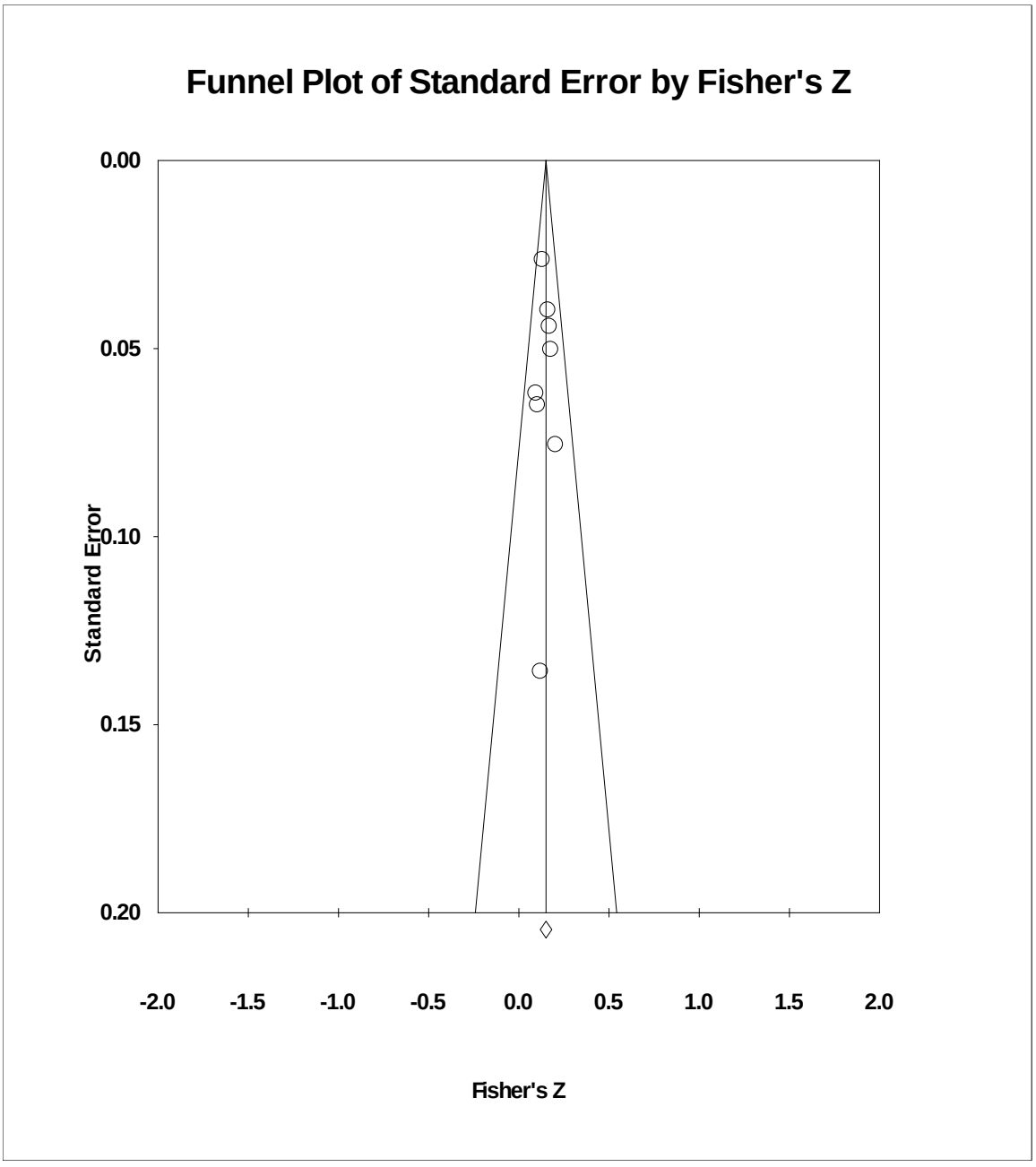


Figure 8. Funnel plot of standard error by Fisher's Z for effects of support giving and personal resources

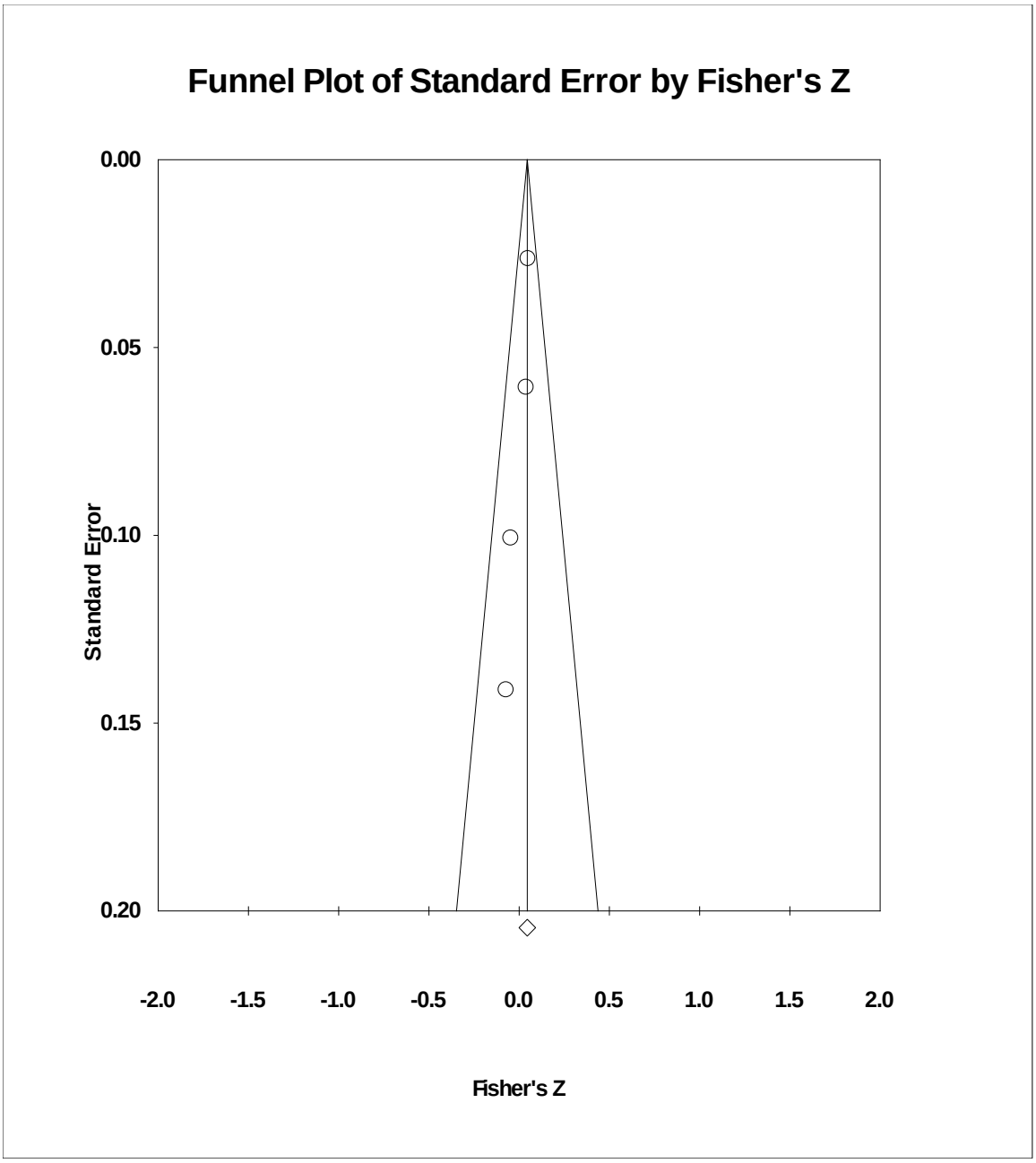


Figure 9. Funnel plot of standard error by Fisher's Z for effects of social relationships and social resources

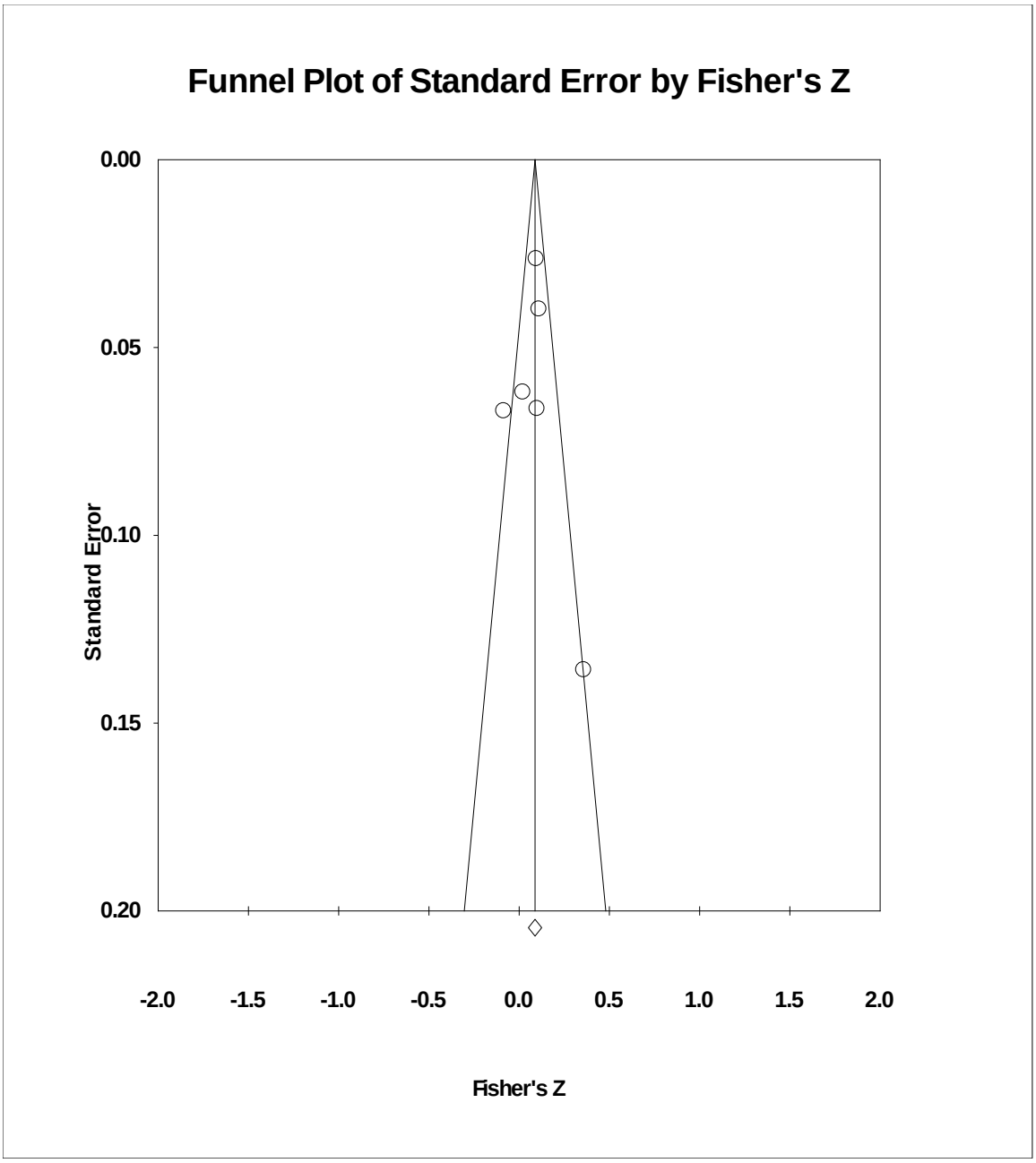


Figure 10. Funnel plot of standard error by Fisher's Z for effects of social resources and personal resources

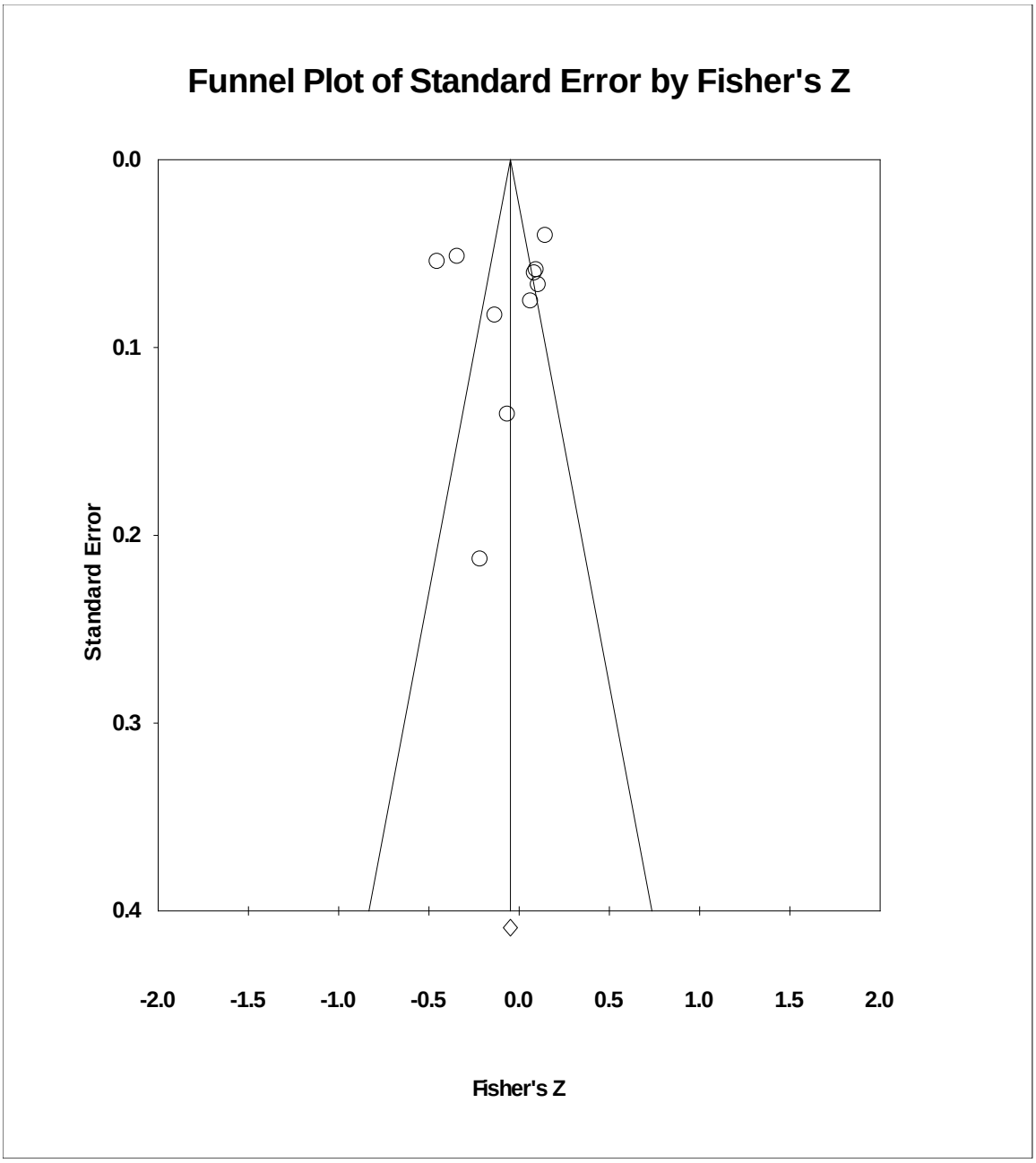


Figure 11. Funnel plot of standard error by Fisher's Z for effects of social resources and stress