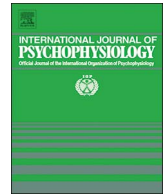




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## (Too) Anxious to help? Social support provider anxiety and cardiovascular function

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## ABSTRACT

Provider factors, such as anxiety, may be important in understanding effects of received social support (SS), which are less consistently positive than those of perceived SS. Due to the dyadic nature of support, anxiety on the part of the provider was predicted to influence the effectiveness of received SS. This laboratory study examined effects of SS provider anxiety within unacquainted dyads on cardiovascular reactivity during acute stress. 148 participants were assigned to support roles, and each dyad was randomized to low or high provider anxiety. Results include that SS provider anxiety resulted in greater blood pressure reactivity and less recovery toward baseline diastolic blood pressure within the dyad. Overall, it appears provider anxiety contributes to less effective SS for recipients and that health costs may accompany providing and receiving support under non-optimal conditions.

## 1. Introduction

A considerable body of research has linked social support to physical health (Uchino, 2004). In a recent meta-analysis, greater social support was associated with reduced risk of mortality (Holt-Lunstad et al., 2010). Despite this evidence, not all aspects of support appear to have consistently beneficial influences on health outcomes. Received social support—support actually given to an individual, in contrast to support that is perceived to be available, but has not been given—has been less reliably linked with positive outcomes in the larger literature examining mental and physical health (Barrera, 1986; Nurullah, 2012; Selcuk and Ong, 2013; Song and Chen, 2014; Taylor, 2011) even when controlling for functional and physical health status to prevent confounding due to the possibility that support demands increase with illness severity (Forster and Stoller, 1992). In fact, as many as half the studies exploring received support found it to be linked to increased mortality rates, though the precise reasons for such associations remain unknown (Uchino, 2009).

These epidemiological data are also consistent with a number of studies examining whether receiving support in the laboratory can attenuate cardiovascular reactivity<sup>1</sup> during stress (Kamarck et al., 1990; Roberts et al., 2015; Uchino et al., 2011). These lab-based studies are grounded in the reactivity hypothesis, wherein repeated exposure to

stressors produces a strain on the cardiovascular system in the form of increased or protracted reactivity (Manuck, 1994; Uchino et al., 2011). Over time, the combined effects of this repeated acute stress reactivity appear to be associated with greater risk of cardiovascular disease (Chida and Steptoe, 2010). Considered together, existing research provides compelling evidence for links between receiving or providing social support and health (Lam and Dickerson, 2013). Importantly, although there is some evidence in these lab-based studies consistent with the buffering model of support, there are also significant variations in and important moderators of such links (Thorsteinsson and James, 1999; Uchino, 2004; Uchino et al., 2011). These findings are in line with more recent research demonstrating the variable effects of received social support on reactivity in laboratory settings (Gramer and Reitbauer, 2010; O'Donovan and Hughes, 2008; Taylor et al., 2010; Uchino et al., 2011).

Pietromonaco et al. (2013) argue that a dyadic approach is needed to better understand links between interpersonal relationships and health. Though strong evidence ties social relationships to physical health, received social support appears to be highly situational in nature (Uchino, 2009). One implication of this is that examining the support recipient alone is insufficient to understand the complex dyadic processes by which social support transactions—and consequent health outcomes—may be shaped. Because of the highly interpersonal nature

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<sup>1</sup> Throughout this manuscript, “cardiovascular reactivity” is used to refer to cardiovascular stress responses, operationalized as change from baseline values.

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of received social support, it is impossible to fully understand such transactions at a reductionist, individual level focusing solely on the support recipient. In the context of social support, provider factors may have concurrent or downstream effects not only on providers themselves, but on recipients as well. Sophisticated work is now demonstrating that even in relatively brief, artificially constrained interactions, partners appear to exert influences on one another's physiology in ways that cannot be understood on an individual level (Butner et al., in press). This dyadic interplay is one reason that attention to provider-related factors has been proposed as one key to understanding the inconsistent relationship between received support and health (Uchino, 2009).

One provider factor that has been hypothesized to influence dyadic support processes, but that has received virtually no attention, is support provider anxiety. In their paper *Social Support for Bereavement*, Lehman et al. (1986) suggested that anxiety experienced by the provider of social support may interfere with the effectiveness of received support, perhaps “resulting in support attempts that are automatic or ritualized...” (p. 443). Emotional confounding from anxiety may result in ‘miscarried helping,’ wherein genuine attempts to provide support are counterproductive (Coyné et al., 1988; Fales et al., 2014); Gottlieb (2000) similarly suggests support providers preoccupied with their own anxiety-producing problems may be unable to effectively support others. If an individual is called upon to provide support when experiencing anxiety, suboptimal support may take a toll on both recipients and providers, resulting in negative physiological outcomes such as increased cardiovascular reactivity.

While provider anxiety has been hypothesized to be a factor in the effects of received social support, there is virtually no research directly investigating the possibility. Existing research (e.g., Iida et al., 2008) examines whether negative mood impacts whether social support is provided, but not how anxiety influences the effectiveness of provided support, to say nothing of its possible links to cardiovascular reactivity and long-term health outcomes. This is also important because many individuals find that providing support can be anxiety-provoking and stressful in its own right (Taylor, 2011).

The role of anxiety in the support context is highlighted by research indicating its influence on skill performance across a number of domains and populations (Beidel et al., 1999; Englert and Bertrams, 2012; Macher et al., 2012; Owens et al., 2012). This work suggests that anxious social support providers may be too distracted by worrying or self-focused attention to notice cues from the support recipient, leading to less friendly, less effective, or even detrimental, received support (Clark and Wells, 1995). In addition, anxiety may render the giving of support more taxing for the providers. Findings from caregiving research indicate when demands strain an individual's capacity to give support, providers themselves may experience negative health outcomes (Selcuk and Ong, 2013; Sharpe et al., 2005). However, other research suggests providing support may have positive health effects (Brown et al., 2003). It may be that, consistent with the caregiving literature, providers giving support under nonoptimal conditions (as in the present study) incur physiological costs.

The present study aimed to investigate the role of provider anxiety on the effectiveness of received social support in terms of physiological outcomes in both providers and recipients. Cardiovascular reactivity and recovery were examined, as previous research has indicated social support appears to have protective health effects during cardiovascular stress responses (Holt-Lunstad and Uchino, 2015; Thorsteinsson and James, 1999). Thus, a main effect of provider anxiety was predicted in that participants in the heightened provider anxiety condition would evince greater cardiovascular reactivity and less subsequent cardiovascular recovery, with these effects possibly being greater in recipients receiving support from a provider in the high provider anxiety condition (i.e., provider anxiety X support role interaction).

## 2. Method

### 2.1. Participants and design

Participants were 148 individuals (78 female, 70 male; see Supplementary Table 4) compensated financially or with course credit. Inclusion criteria called for good general health free of medical conditions with a cardiac element (e.g., no hypertension or cardiovascular medications. See Cacioppo et al., 1995). Using random.org, participants were randomly assigned to a 2 (Provider anxiety: low, high) × 2 (Support dyad: provider, recipient) design with provider anxiety as a between-dyad factor and support role as a within-dyad factor. Because existing social ties differ in degree of intimacy, length of relationship, and relationship quality, the present study examined unacquainted dyads. Upon arrival in the laboratory, participants were asked whether they recognized each other from a shared class or were otherwise acquainted. No such acquaintance was reported by members of any dyad.

### 2.2. Procedure

Participation included one laboratory session lasting approximately 90 min. Researcher 1 (who was blinded to condition) obtained informed consent from all individual participants included in the study, and conducted all interactions with participants except the manipulation itself. Participants were then randomly assigned to either the support provider or support recipient role, and providers within dyads randomly assigned to a low provider anxiety (control) group or heightened provider anxiety condition. To control for potential confounds in mixed gender dyads, support dyads were same-sex matched, enabling a more focused test of the hypothesis. Height and weight were measured using a standard beam scale and height rod, and participants completed a demographics questionnaire.

Participants were fitted with a blood pressure cuff and cardiographic electrodes, after which participants returned to their seats. At this point, participants were separated by a partition and asked to relax quietly without speaking to each other for 10 min while baseline measures of cardiovascular function were obtained (see Supplementary Table 5 for a timeline of measures and procedures).

Following the physiological baseline measurements, the Threat/Challenge Appraisals, State Anxiety Scale, Trait Anxiety Scale, State Self-Esteem Scale, and Self-Assessment Manikin were obtained from both members of the dyad. After these measures were collected, support providers were taken into another room and, based on group assignment, given either relatively neutral instructions or the anxiety manipulation via evaluative threat induction (see Cacioppo et al., 1995). Researcher 2 read the appropriate script to the support provider (this was the only interaction researcher 2 had with participants). Support recipients and researcher 1 remained in another room, and were thus blinded to the manipulation). More specifically, providers in the high anxiety condition were told their performance and competence would be evaluated by both the experimenters and support recipients. Research has demonstrated that such social evaluations are effective manipulators of anxiety and physiological reactivity (Dickerson and Kemeny, 2004; Smith et al., 1997). In the low provider anxiety condition, providers were simply told to give support, but assured that, because the focus of the study was on how the recipients dealt with stress, they should not feel anxious or evaluated. During this time, support recipients remained in the first room to complete the Recipient Problem Rating instrument.

Support providers and recipients then returned to the same room for the support discussion task and were given the appraisal scale. Support recipients were then asked to (a) describe the event, (b) talk about his/her thoughts and feelings regarding this situation/event, and (c) discuss how they handled the situation/event and/or how they might have changed anything for 1 min each. After each such disclosure point, support providers had 1 min to provide what they deem to be

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