



Specific dimensions of perceived support and ambulatory blood pressure: Which support functions appear most beneficial and for whom? [☆]



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ABSTRACT

Perceived support has been related to lower cardiovascular morbidity and mortality. However, little is known about the specific functional components of support responsible for such links. We tested if emotional, informational, tangible, and belonging support predicted ambulatory blood pressure (ABP) and interpersonal interactions (e.g., responsiveness), and if such links were moderated by gender. In this study, 94 married couples underwent 12 h of ABP monitoring during daily life which included a night at home with their spouse. They completed a short-form of the interpersonal support evaluation list that provides information on total (global) support, as well as specific dimensions of support. Results revealed that global support scores did not predict ABP during daily life. However, separating out distinct support components revealed that emotional support was a significant predictor of lower ambulatory systolic and diastolic blood pressure, primarily for women. Finally, emotional support predicted greater partner responsiveness and self-disclosure, along with less perceived partner negativity although these results were not moderated by gender. These data are discussed in terms of the importance of considering specific support components and the contextual processes that might influence such links.

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1. Introduction

Social support is associated with beneficial health outcomes, including reduced rates of mortality and morbidity (Cassel, 1976; Cobb, 1976; Cohen, 1988; Holt-Lunstad et al., 2010; House et al., 1988; Seeman, 1996; Uchino, 2004). In the most compelling evidence to date, a meta-analysis of 148 studies and over 300,000 participants found that aspects of social support predicted survival with an effect size comparable to or larger than traditional medical predictors, such as smoking and exercise (Holt-Lunstad et al., 2010). These effects were not moderated by initial health status, age, or cause of death. Social support is also specifically linked to lower mortality risk due to cardiovascular disease (Barth et al., 2010; Berkman et al., 1992; Orth-Gomer et al., 1993; Kawachi et al., 1996) which is important because cardiovascular disease is the leading cause of death in most industrialized countries (Xu et al., 2010).

Despite this epidemiological evidence, relatively less is known about the mechanisms that might be responsible for such links. Ambulatory blood pressure (ABP) is one promising biological mechanism that may explain links between social support and cardiovascular disease. ABP protocols typically examine cardiovascular functioning in the “real world” and hence have relatively high ecological validity. Importantly, ABP is a robust predictor of cardiovascular disease risk even after considering clinic resting blood pressure levels (Bjorklund et al., 2004; Perloff et al., 1983; Pickering et al., 1985).

However, few studies have examined if social support predicts ABP and these studies are heterogeneous in terms of findings. In one study, Linden et al. (1993) found perceived social support to predict lower ABP for women but not for men, whereas Brownley et al. (1996) found that perceived support predicted lower ABP primarily in high hostile individuals (Brownley et al., 1996). Another study found social support was related to lower ABP only at night (Steptoe et al., 2000). Finally, several studies report no significant link between global social support and ABP (Holt-Lunstad et al., 2008; Steptoe, 2000; Vella et al., 2008).

Several important conceptual issues arise when considering the links between social support and ABP that may help explain these diverse findings. First, social support can be differentiated into distinct functional components (Barrera, 2000; Cohen et al., 1985). These functional components consist of emotional (self-esteem), informational (appraisal), tangible (or instrumental), and belonging support (Cohen

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et al., 1985; Wills and Shinar, 2000). Emotional support entails empathy and positive feedback regarding self-worth. Informational support involves provision of information or advice, which may also be referred to as appraisal support, because the support might involve provision of information that contributes to re-appraisals of a situation as less stressful or threatening (Cohen et al., 1985). Tangible support comes in the form of material aid, whereas belonging support includes opportunities for social inclusion and recreation.

Importantly, most prior studies in this area have examined global support. This is a significant issue because it has been argued that some components of support are beneficial across situations and hence may be more closely linked to ABP (Cohen and McKay, 1984; Cohen and Wills, 1985; Cutrona and Russell, 1990; Wills, 1991). In particular, emotional support and informational support are hypothesized to be more likely to have positive influences on health outcomes because people can always benefit from reassurances of their self-worth or useful information (Cohen and Wills; Cohen, 1988). However, only one previous study of which we are aware compared specific functional components of support and their links to ABP (Brownley et al., 1996). In this particular study, emotional support was not included in the measurement of functional components, yet we know that emotional support is most often predictive of positive-health related outcomes (Heller et al., 1986; Wills, 1991). For example, King et al. (1993) examined the effects of perceived emotional, informational, and tangible support on recovery from coronary artery bypass grafting (CABG). Their data indicated that emotional support was the only form of social support that proved to be consistently predictive of recovery from CABG over the one year study. In another study, high levels of emotional support predicted lower mortality in older adults whereas tangible support actually predicted greater mortality (Penninx et al., 1997; also see Berkman et al., 1992). Thus, one aim of this study was to examine if different functional components of support would provide a more sensitive test of links to ABP during daily life.

A second aim of this study was to examine potential gender differences in links between functional support components and ABP. Social support processes and outcomes may differ in men and women (Kiecolt-Glaser and Newton, 2001; Shumaker and Hill, 1991; Flaherty and Richman, 1989). More specifically, a broader literature suggests that emotional support is a particularly important functional component of social support for women (Burlleson, 2003). Females receiving high levels of emotional support from family and peers exhibit lower blood pressure reactivity during stress and increases in psychological well-being (Slavin and Rainer, 1990; Wilson and Ampey-Thornhill, 2001; Wilson et al., 1999). Whether due to socialization, social roles, or biological differences, women tend to prefer, seek out, and respond more positively to emotional support (Burlleson, 2003; Flaherty and Richman, 1989; Gilligan, 1982; Shumaker and Hill, 1991; Wills, 1985).

Although not a primary aim due to our emphasis on health-relevant biological pathways, we also examined if functional components of support predicted interpersonal processes when couples were at home together. Such data may provide a “snapshot” into the lives of individuals relatively high versus low on social support. Perceived support has been related to positive interpersonal processes such as greater intimacy through self-disclosure, partner responsiveness, and the interpretation of social interactions (Laurenceau et al., 1998; Lakey and Cassady, 1990; Reis, 2007). However, most of this work has not focused on distinct support components or utilized diary experience sampling. Importantly, examining these processes in the context of functional support components furthers our understanding of how perceived social support relates to the interpretation of daily interpersonal interactions. For example, emotional support may be a particularly relevant component as it is characterized by validation, positivity, and responsiveness.

The current study thus expands our understanding of social support processes in a naturalistic setting, with measures of ABP, functional

Table 1
Upper triangle of correlation matrix for ISEL subscales for men and women.*

Variable	Men				Women			
	1	2	3	4	1	2	3	4
Informational	1.0	0.35	0.29	0.11	1.0	0.35	0.45	0.22
Belonging		1.0	0.53	0.49		1.0	0.65	0.35
Tangible			1.0	0.45			1.0	0.34
Emotional				1.0				1.0

* All correlations were significant at $p = .0001$.

components of support, gender, and interpersonal processes. Participants in our study completed a one day ABP assessment in which a blood pressure reading was randomly taken once during every 30 minute period. Based on the aims of the study, we expected that individuals with greater informational and emotional support would exhibit lower ABP during daily life and more positive interpersonal exchanges. We further expected that emotional support would be associated with lower ABP in women compared to men. We also expected that women higher in emotional support would evidence more positive interpersonal processes.

2. Methods

2.1. Participants

As part of a larger program project, 97 healthy heterosexual couples were recruited through advertisements placed in local newspapers, workplace newsletters, and flyers distributed around the community. We used the following criteria to select healthy participants based on our prior work (Cacioppo et al., 1995): no existing hypertension, no cardiovascular prescription medication use, no history of chronic disease with a cardiovascular component (e.g., diabetes), and no recent history of psychological disorder (e.g., major depressive disorder). Participants were all legally married and living together with a mean age of 29.6 (see Table 1). Most were White (83%), college educated (62.4%), and had an income over \$40,000 per year (66%). Three couples who did not follow the study protocol were eliminated from the study, resulting in a total of 94 couples. Participants were compensated \$75 (or extra course credit) for their time.

2.2. Study protocol

Eligible participants arrived at the laboratory on the morning of a typical work day. Height and weight were assessed using a Health-o-Meter scale in order to calculate body mass index to be used as a covariate. Demographic information was collected including age, income, and education and participants completed the Interpersonal Support Evaluation List (Cohen et al., 1985).

As part of the larger study protocol, participants completed a one day ABP assessment, typically from 8 am to 10 pm ($M = 14.01$ h, $SD = 0.97$) which included working hours and an evening at home with the spouse on the same day.¹ The ABP monitor was set to take a random reading once within every 30 minute window. This random interval-contingent monitoring procedure minimizes participants' anticipation of a blood pressure assessment that might lead them to alter their activities. Following each ABP assessment, individuals were instructed to complete questions (ADR, see below) programmed into a palm pilot device using the Purdue Momentary Assessment Tool (Weiss et al., 2004). Participants were instructed to complete the ADR within 5 min of each cuff inflation.

¹ The current paper focuses on perceived functional support. A focus on the quality of the specific relationship between spouses and ABP is the subject of other papers (Sanbonmatsu et al., 2011; Birmingham et al., in preparation).

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