Accepted Manuscript – Journal of Social and Personal Relationships**Interpersonal Communication and Psychological Well-Being Among Couples Coping With Sensory
Loss: The Mediating Role of Perceived Spouse Support**

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Abstract

Couples who are willing to discuss sensory loss-related issues typically report better well-being, while couples who avoid such discussions tend to report poorer well-being. Inspired by the relationship intimacy model, the present study examined whether the link between couples' sensory loss-related communication and well-being can be explained by perceived spouse support; and whether this mediation mechanism is stable over time. Adults with sensory loss and their spouses (N = 206 individuals) completed an online survey and were followed up six-months later. A multi-group actor-partner interdependence mediation model was used to test the mediation mechanism as well as its stability over time. Results showed that the association between couples' willingness to communicate about the sensory loss and psychological well-being was mediated by perceived spouse support for adults with sensory loss only. Furthermore, this mediation effect remained stable over the six-month period. These results support prior research that the manner in which couples communicate about the sensory loss is important for their well-being. However, because perceived spouse support was not found to mediate the association for spouses, future studies should investigate other factors as potential mediating mechanisms among spouses of adults with sensory loss.

Keywords: Communication style, dual-sensory loss, dyadic analysis, hearing loss, interpersonal perceptions, psychological well-being, social support, vision loss.

Sensory loss is often a slowly progressive and chronic condition which primarily affects one's ability to communicate. In order to deal with this challenge, both adults with sensory loss (AWSLs) and their spouses¹ need to adjust to the loss (Heine & Browning, 2002). Research examining the impact of sensory loss on AWSLs and their spouses has shown that many experience psychosocial difficulties such as social isolation, increased dependency, and relational and psychological distress which challenge their ability to adjust (for a review, see Lehane, Dammeyer, & Elsass, 2017). While these findings demonstrate that couples coping with sensory loss are in need of support, little is known about how couples adjust to the loss and potential areas for intervention. Thus, identifying factors that either contribute to or alleviate this distress may be useful.

Interpersonal Communication and Well-Being

Theoretical perspectives and empirical evidence suggest that couples' communication styles are one such factor. Although self-disclosure of everyday experiences plays an important role in most couples' relationships, the connection between communication and well-being is especially important when one partner becomes ill (Badr & Acitelli, 2005). For instance, several studies provide evidence for the importance of interpersonal communication for couples' well-being in the context of sensory loss (Hallberg & Barrenäs, 1993; Lehane, Elsass, Hovaldt, & Dammeyer, 2018; Yorgason, Piercy, & Piercy, 2007), as well as a number of other serious health conditions such as cancer, Multiple Sclerosis, Alzheimer's and Parkinson's disease (Arden-Close, Moss-Morris, Dennison, Bayne, & Gidron, 2010; Clare, 2002; Hodgson, Garcia, & Tyndall, 2004; Manne, Badr, Zaider, Nelson, & Kissane, 2010). Nevertheless, sharing concerns and worries with one's spouse about an illness can be difficult and spouses often avoid disclosing information that they fear may upset, discourage, or unnecessarily burden their partner (Govender, Maistry, Soomar, & Paken, 2014; Hallam, Ashton, Sherbourne, Gailey,

¹ Note that the term spouse is used to describe caregiving partners irrespective of marital status.

& Corney, 2007; Langer, Brown, & Syrjala, 2009). This tendency for spouses to withhold their true concerns is referred to as protective buffering. Although the intention of engaging in protective buffering is often to reduce distress, it has been shown to have adverse psychological consequences for both the individual engaging in this strategy and their spouse (Langer et al., 2009). Ultimately, irrespective of illness type, research suggests that demonstrating a willingness to discuss illness-related experiences with one's spouse facilitates well-being (Manne & Badr, 2008).

The Relationship Intimacy Model

Although the link between couples' communication styles and well-being is well-documented, less well understood is why couples' communication styles matter for psychological well-being. Researchers need to identify the pathway connecting couples' communication styles to well-being to understand why communication may lead to better or worse outcomes, and to design appropriate interventions. One prominent theoretical perspective is the relationship intimacy model (RIM; Manne & Badr, 2008).

The RIM was initially proposed as a means to understand the relational processes involved in couples' psychosocial adaptation to cancer. According to the model, communication between partners can either contribute to or alleviate psychological distress through its effect on relationship intimacy, defined as feeling close to and cared for by one's partner. Thus, in the context of illness, communication has the potential to both enhance and compromise one's relationship. Relationship-enhancing communication, which includes reciprocal self-disclosure and partner responsiveness, is posited to influence psychosocial adjustment by enhancing feelings of closeness and the perception of being cared for by one's partner, respectively; whereas relationship-compromising communication, such as avoidance, criticism, pressure-withdrawal, or protective buffering, is suggested to hinder the development of intimacy and compromise couples' well-being.

The hypotheses of the RIM regarding the respective beneficial and deleterious effects of relationship enhancing and compromising communication styles have received much support in literature on couples coping with illness (Chaudoir & Fisher, 2010; Lehane et al., 2018; Manne et al., 2004, 2014), as has the hypothesized mediation effect of intimacy (Manne & Badr, 2010; Manne, Badr, & Kashy, 2012; Manne et al., 2010; Manne et al., 2015; Yoo, Bartle-Haring, Day, & Gangamma, 2014). However, there are challenges that need to be considered when using the RIM that have not previously been explicated.

Challenges in using the RIM. Intimacy is a concept that is vaguely defined and its definition and measurement often overlap with communication-related variables. Traditionally, intimacy and self-disclosure were not distinctly separated and the definition of intimacy incorporated a focus on interpersonal communication (Culp & Beach, 1998; Manne & Badr, 2008; Schaefer & Olson, 1981; Yoo et al., 2014). Although more recent definitions of intimacy are process-oriented and view self-disclosure as a necessary step prior to experiencing intimacy (Reis & Shaver, 1988), commonly used measures of intimacy still include a focus on communication (e.g., The PAIR Inventory; Schaefer & Olson, 1981). As a result, mediation models using communication variables as indicators and intimacy as a mediator can be difficult to interpret and the likelihood of criterion contamination and false positives in the mediation effects increases. This is even more relevant when the outcome of interest is also an aspect of the intimate relationship such as relationship satisfaction (e.g., Manne et al., 2015; Yoo et al., 2014). In order to avoid this, items referring to communication can be removed from measures of intimacy or other conceptually similar measures that do not rely on communication-related items can be selected instead. For the purpose of this study, we opted to focus on the feeling cared for aspect of intimacy and used perceived social support from one's partner as our mediator.

Intimacy and social support. In the RIM, the definition of intimacy is largely inspired by Reis and Shaver's interpersonal process model of intimacy (Reis & Shaver, 1988). In this process model, relationship enhancing communication styles are suggested to facilitate intimacy when a couple's interactions lead them to feel understood, validated, accepted, and cared for (Manne & Badr, 2008). This view of intimacy aligns closely with that of perceived social support which incorporates acceptance, affection, and affirmation of personal worth, and does not include communicated-related items in its measurement (Sarason, Sarason, Shearin, & Pierce, 1987). Consequently, perceived social support from one's partner can be considered a suitable alternative for measuring the feeling cared for aspect of intimacy as described in the RIM.

The results of prior research using perceived social support as a mediator between interpersonal communication and psychological adjustment also align well with the hypotheses of the RIM. Specifically, social support has been found to mediate the link between breast cancer patients' topic avoidance and psychological distress (den Heijer et al., 2011; Donovan-Kicken & Caughlin, 2011); it has been shown to mediate the association between spouses' willingness to communicate about their partner's sensory loss and psychological well-being (Lehane et al. 2018), and, in a study of spouse caregivers of adults with Alzheimer's disease, change in satisfaction with social support accounted for improvements in mental health following a communication skills intervention (Roth, Mittelman, Clay, Madan, & Haley, 2005). Thus, existing evidence suggests that perceived social support from one's partner should mediate the link between interpersonal communication and psychological well-being as has been suggested by the RIM.

Hypotheses

Consistent with existing evidence and the RIM, we hypothesized that perceived spouse support would mediate the association between couples' willingness to communicate about the sensory loss and

psychological well-being (H1). Similarly, we hypothesized that perceived spouse support would also mediate the association between protective buffering and psychological well-being (H2).

An additional aim of the current study was to investigate the stability of the hypothesized mediation mechanism over time. Investigating stability and change can be viewed as two sides of the same coin. However, the benefit of modelling stability includes the identification of temporally robust mechanisms in couples' experiences. As little is known about factors associated with psychological well-being in AWSLs or their spouses, determining how robust the identified associations in this group are is important to inform future research. Modelling temporal stability, as opposed to expecting change, also makes sense in the context of this group whereby the condition is chronic and has typically been present for a long period of time (Rovner, Zisselman, & Shmueli-Dulitzki, 1996). Consequently, we hypothesized that the mediating effect of perceived spouse support would not change over a six-month period (H3).

Method

Participants

Adults living with hearing, vision or dual-sensory loss and their spouses were recruited for this study. To be eligible to participate, each partner had to be 18+ years of age, only one partner could have been diagnosed with hearing and/or vision loss, and both partners needed to complete the baseline survey. A total of 246 couples initially expressed interest in the study and completed the project sign-up sheet. Of those that signed up, three couples withdrew their interest in the study and three more were excluded as neither partner had been diagnosed with sensory loss. Of the 240 remaining couples, 46 couples did not complete the survey, 72 couples were excluded as only one partner completed the survey, and a further 19 couples were excluded as both partners had a diagnosis of sensory loss. A total of 206 participants (103 couples) completed both surveys at time one (T1).

Of the 103 couples recruited at T1, at least one partner in 89 of the couples completed the time two (T2) follow-up survey, six-months later (60 dyads; 17 AWSLs; 12 spouses; 72% retention rate). Known reasons for non-response at T2 included: relationship break-up, email address failure, requested withdrawal from the study, and illness. Sample characteristics are presented in Table 1.

Procedure

Survey data was collected as described in Lehane, Dammeyer, and Wittich (2017). Specifically, the project was advertised using a variety of online media including Facebook (advertising, project page, group posting), Twitter, Instagram (project page, advertising), Reddit, a project website, and professional email lists. The project was advertised one month prior to launch and throughout the duration of the T1 data collection period (July-September 2016). The advertisements typically contained a short project description, an image of a couple, and a link to the project sign-up sheet. The sign-up sheet contained a detailed description of the study, a space to enter email addresses, and a screening question to identify whether one, both, or neither partner had been diagnosed with a sensory loss. Couples were designated a code and were each sent an email with their code and the survey link. Reminder emails were sent approximately one, two, and three weeks post sign-up. Once a survey was completed, participants received a confirmation of participation email and their code was entered into a lottery to win a \$150 voucher. T2 took place six months later (December '16 – March '17) and followed the same procedure. To maintain interest in the study, newsletter updates on the project were provided via email and social media at the end of each month.

Ethical Issues

Usability tests were performed on all project materials to confirm accessibility and to ensure that adults with vision loss could participate independently. All participants were provided with the project information and contact details of the researchers. Consent was required to participate in the

survey. The project was reviewed and approved by the institutional review board at the Department of Psychology, University of Copenhagen, Denmark.

Measures

Demographics. All participants provided information on age, race, gender, marital status, relationship length, cohabitation status, education, employment, and degree of hearing and vision loss. AWSLs further provided information on sensory loss onset time (i.e., to calculate whether the sensory loss was first diagnosed prior to or during the relationship) and onset type (congenital, sudden, gradual, or mixed).

Willingness to communicate. The Couples' Illness Communication Scale (CICS) (Arden-Close et al., 2010), a measure of couples' willingness and comfort communicating about an illness, was chosen to represent relationship enhancing communication. The wording was modified so that the illness referred to 'sensory loss'. A sample item includes '*I feel comfortable discussing issues related to my/my partner's sensory loss with my partner*'. The CICS consists of four items rated from 1 (strongly disagree) to 5 (strongly agree). Higher total scores indicate a greater willingness to communicate about the sensory loss. The CICS was reliable in this study (AWSLs: $\alpha = .74$; spouses: $\alpha = .70$).

Protective buffering. The Protective Buffering Scale (PBS; Suls, Green, Rose, Lounsbury, & Gordon, 1997), a measure of protective buffering, was selected to measure relationship compromising communication. The scale contains six items rated from 1 (never) to 5 (very often). Participants were asked how often they engage in the following behaviors: '*deny or hide your anger*', '*deny or hide your worry*', '*not disagree with your spouse/partner*', '*give in more in arguments*', '*act more positive than you feel*', and '*avoid talking about things*'. Higher total scores indicate a greater tendency to withhold one's feelings and concerns from one's partner. The protective buffering scale was reliable in this study (AWSLs: $\alpha = .74$; spouses: $\alpha = .82$).

Perceived spouse support. In the current study, an adapted version of the brief Social Support Questionnaire (SSQ; Sarason et al., 1987) was used to measure the feeling cared for aspect of intimacy as described in the RIM. The scale was adjusted to refer to one's partner only. The scale consists of six items rated from 1 (strongly disagree) to 5 (strongly agree). A sample item includes '*I can count on my partner to care about me, regardless of what is happening to me*'. Higher scores indicate a greater degree of perceived support from one's spouse. The brief-modified SSQ was reliable in this study (AWSLs: $\alpha = .87$; spouses: $\alpha = .89$).

Psychological well-being. The WHO-five well-being index (WHO-5; Bech, 2012) was chosen to measure psychological well-being. The WHO-5 contains five items scaled from 0 (at no time) to 5 (all of the time) including how often in the past two weeks an individual has felt '*cheerful and in good spirits*', '*calm and relaxed*', '*active and vigorous*', '*fresh and rested*', and '*that their daily life was filled with things that interest them*'. A total score cut-off point of 13 is suggested whereby scores of 0 to 12 indicate a need for clinical assessment for depression and higher scores indicate healthy well-being. The WHO-5 was reliable in this study (AWSLs: $\alpha = .90$; spouses: $\alpha = .89$).

Statistical Analyses

All hypotheses were tested in a structural equation modeling framework (SEM). We used an Actor-Partner Interdependence Mediation Model (APIMeM; Ledermann, Macho, & Kenny, 2011) to test whether perceived spouse support mediates the link between couples' communication styles (H1: willingness to communicate; H2: protective buffering) and psychological well-being (see Figure 1). The APIMeM conducted in this study consisted of 16 possible mediations paths as each communication style (willingness to communicate/protective buffering) has both actor and partner effects on psychological well-being (see Figure 1). Actor effects can be explained as the effect of one's own indicator variable on own outcome variable while partner effects are the effect of one's own

indicator variable on other's outcome variable (Kenny, Kashy, & Cook, 2006). Indirect effects in the APIMeM are referred to on the basis of whether they involve actor only, actor and partner, or partner only effects (see Ledermann et al., 2011). All demographic variables were tested as control variables in the model, however, only the variables that were associated with an independent variable and significantly predicted at least one mediator or dependent variable were retained (Grimes & Schulz, 2002).

Finally, we aimed test our last hypothesis regarding the temporal stability of the mediation mechanism (H3). Common longitudinal models cannot be used to test this as such models generally examine how variables at T1 predict same (or other variables) at T2, and are not well suited to test whether a mediation model at T1 is or is not stable at T2. A solution to this problem is to use time as a moderator. The problem with this approach is that we have 16 paths in our mediation model and including time as moderator would mean that we would have to include 16 interactions. A less conventional but much more efficient solution is to test time as a moderator by computing a multi-group model, where time is the group (group 1 = T1, group 2 = T2) (Deng & Yuan, 2015; Schoemann, 2016). This is possible because groups in a multi-group model can be understood as moderators (i.e., a significant difference in the slope between the groups would indicate that group moderates the link between two variables). Thus, a multi-group approach is a feasible approach to test for all 16 interactions.

We constrained each path of the mediation model stepwise to be equal across the groups (i.e., across the two time points) and used the chi-square difference test to determine whether or not a path changed significantly between T1 and T2. If a constrained path produced a significant model change, we allowed the path to be estimated freely in the following models; otherwise we would keep the

constraint in the model. This approach allowed us to detect whether time had an effect on the direct and indirect effects of the mediation model.

We relayed on common fit indices to test whether the models fit the data well: chi-square test (χ^2), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA) (Schermelleh-Engel, Moosbrugger, & Müller, 2003). A good model fit was indicated by a non-significant χ^2 value, a CFI value of .95 or higher, and a non-significant RMSEA value of .06 or lower (Hu & Bentler, 1999). All predictor variables were standardized and standard errors were bootstrapped using 5000 samples. A full-information maximum likelihood estimator was used to account for missing values (Allison, 2003). Descriptive statistics, bivariate correlations, and group comparisons were conducted in SPSS 22.0. Multi-group APIMeM models were conducted in R (version 3.4.1; R Core Team, 2014) using the SEM package lavaan (version 0.5-23.1097; Rosseel, 2012).

Results

Preliminary Analyses and Group Comparisons

As expected, paired samples t-tests revealed no significant differences in any of the study variables for AWSLs or for spouses between T1 and T2 (p -value range = .07-.72; Cohen's d range = .04-.18). In accordance with the WHO-5 cut-off point, 29.7% of AWSLs and 23% of spouses had poor well-being at T1, this was 28.6% and 29.2% at T2, respectively. Bivariate correlations are presented in Table 2.

In light of the sample heterogeneity regarding whether the sensory loss was diagnosed before or during a couple's relationship (see Table 1), and the potential clinical importance of this factor, we examined whether group differences across the study variables could be found based on onset time. Results showed that the spouses of AWSLs who were diagnosed before the initiation of the relationship were more willing to discuss the sensory loss compared to those whose partner was diagnosed during

their relationship [$t(97) = 2.92, p < .01$; Cohen's $d = .59$]. In addition, spouses of AWSLs who were diagnosed during their relationship reported higher levels of protective buffering compared to spouses whose partner was diagnosed prior to the relationship [$t(97) = -2.83, p < .01$; Cohen's $d = .58$]. No other associations were identified.

Multi-Group APIMeM

The fully constrained multi-group APIMeM fit the data well wherein all correspondent paths across time were restricted to be equal, supporting our assumption that there were no changes over the six month period. Therefore, we report each effect only once as the effects across time are not significantly different. The direct, indirect, and total effects of the time-constrained model representing the six-month period are presented in Table 3.

Hypothesis 1. Significant actor-actor mediation was found for AWSLs only ($\beta = .70, p < .05$). This supports our hypothesis that perceived spouse support would mediate the link between couples' willingness to communicate about the sensory loss and well-being for AWSLs but did not support our hypothesis that it also would for spouses.

Hypothesis 2. No significant mediation by perceived spouse support was found for AWSLs or for spouses contradicting our hypothesis that perceived spouse support would mediate the association between protective buffering and psychological well-being.

Hypothesis 3. Finally, as mentioned above, the fully constrained model fit the data well ($\chi^2 = 26.61, df = 24, p = .32$; CFI = .99; RMSEA = .03, $p = .63$), indicating that there was no change in any of the direct or indirect effects between T1 and T2. This supports our third hypothesis that the model would not differ significantly over the six-month period.

Response and Attrition

Spouses of AWSLs who reported a lower willingness to communicate about the sensory loss [$t(154) = -3.66, p < .001$; Cohen's $d = .59$] were less inclined to participate at T1. Comparisons of T1 scores showed that spouses who dropped out of the study reported lower levels of perceived spouse support [$t(97) = -2.94, p < .01$; Cohen's $d = .64$] at T1. No systematic differences were identified for AWSLs.

Discussion

This study extends on prior research by examining perceived spouse support as a mechanism through which couples' sensory loss-related communication influences each partner's psychological well-being, and the stability of this mechanism over time. Our first hypothesis was that perceived spouse support would mediate the association between couples' willingness to communicate about the sensory loss and psychological well-being. The results supported only one mediation effect, and only for AWSLs. Specifically, AWSLs' perception of their willingness to engage in sensory loss-related communication predicted their own well-being through their perception of support from their spouse. Our second hypothesis was that perceived spouse support would mediate the linkage between protective buffering and well-being. Although a trend was identified indicating actor-actor mediation for AWSLs, it was not statistically significant. Consequently, no mediation by perceived spouse support was identified. Our final hypothesis suggested that the aforementioned mediation results would remain stable over time. This hypothesis was fully supported as all paths, direct and indirect, remained stable over the six-month period. In what follows, we discuss our results, implications for future research and clinical practice, and our study limitations.

Couples' Willingness to Communicate

In support of prior work, couples' willingness to discuss sensory loss-related issues showed both actor and partner associations with perceived spouse support (Cutrona, 1996; Manne & Badr,

2008). However, in contrast to the RIM, couples' willingness to communicate about the sensory loss was only consistently associated with the well-being of AWSLs. Similarly, the results of our mediation analyses revealed only one significant mediation path—actor-actor mediation for AWSLs. We propose some potential explanations for these findings.

First, prior research has indicated that AWSLs and their spouses may have different motivations for engaging in disability-related conversations (Chaudoir & Fisher, 2010), which may clarify why couples' willingness to communicate about the sensory loss was only linked to the well-being of AWSLs in this study. Specifically, because spouses are often reported as a primary source of support (Hassinen, Haynes, Timonen, & Lappalainen, 2013), AWSLs' willingness to discuss their concerns with their spouse may be directly motivated by a desire to enhance their level of support and general well-being. For spouses, however, their motivation for initiating sensory loss-related conversations may be more practical in nature. For instance, from research on other patient groups we know that discussions initiated by spouse caregivers often involve pressure to alter the patient's disease management practices rather than attempts to gain emotional support (Goldsmith, Lindholm, & Bute, 2006). Thus, spouses' attempts to communicate about the sensory loss may not necessarily impact couples' psychological well-being. Additionally, from research on cancer, it should also be noted that a high amount of self-disclosure by spouses is not necessarily positive for couples' psychological adjustment (Hagedoorn et al., 2011) and may instead indicate a tendency for spouses to dwell on the illness (Badr, 2017).

In order to understand why mediation was found for AWSLs and not for spouses, we discuss the relative importance that social support may have for each partner in the context of sensory loss. Specifically, sensory loss, whether congenital or acquired, has been found to negatively impact adults' sense of security within relationships causing them to feel less worthy or valuable as romantic partners

(Devenney & O'Neill, 2011; Hassouneh-Phillips & McNeff, 2005; Hildreth & Oyer, 1976; Kef & Bos, 2006). As a consequence, compared to spouses, AWSLs may have a greater need for verbal reassurance and a sense of being cared for by their spouse in order to alleviate disability-related insecurities and maintain healthy well-being. Accordingly, the relatively greater importance of social support for the well-being of AWSLs likely explains why mediation was present for them but not for their spouses.

Protective Buffering

In support of prior research, protective buffering by AWSLs negatively predicted their own and their spouses' well-being; while, contrary to prior research, protective buffering by spouses only predicted their own well-being. Interestingly, this does support the findings of Hallam et al. (2007) who reported that avoidance by spouses was not associated with the distress level of AWSLs. The authors suggested that distress in AWSLs may be more closely linked to their own coping mechanisms than those of their spouse. This is also in line with the actor-dominant pattern of associations found in the present study. Although a trend was identified indicating actor-actor mediation for AWSLs, it did not reach statistical significance.

In order to understand why this is the case, we refer to a study examining the relative impact of protective buffering on the well-being of relationally satisfied versus relationally distressed couples. Specifically, Manne et al. (2007) investigated whether relationship satisfaction would moderate the effect of protective buffering on well-being among couples' coping with breast cancer. It was found that protective buffering undermined the well-being of couples whose relationships were characterized by high levels of satisfaction, but did not have an effect on the well-being of less satisfied couples. Manne and colleagues suggested that satisfied couples tend to rely more on one another for support and adjustment following the diagnosis of a serious illness, whereas less satisfied couples tend to seek

support from others outside of the relationship such as family members or friends. This can also be seen in literature on sensory loss as one study found that AWSLs, and women in particular, may be more likely to rely on other family members for emotional support (Lee & Brennan, 2002). As such, similar to what was suggested above, associations between protective buffering, perceived support, and well-being may be weaker when support from those other than one's intimate partner is relied upon for illness adjustment (Manne et al., 2007). Consequently, in the current study, our model may be subject to moderation effects, whereby significant mediation by perceived support may have been evident among relationally satisfied couples only.

Model Implications

Although we have presented some possible explanations for the findings of this study, there are also two more general considerations that are worth bearing in mind. First, because only one mediation effect of perceived spouse support was statistically significant, this may indicate the presence of other, perhaps non-relational, mechanisms through which couples' sensory loss-related communication impacts psychological well-being. For instance, according to the social cognitive processing model (Lepore, 2001), cognitive factors are posited to underlie the connection between couples' communication styles and well-being. Specifically, it is suggested that holding back worries and concerns from one's partner or refraining from discussing illness-related concerns reduces the potential for cognitive reappraisal (e.g., acceptance and positive reframing) and increases the risk for illness intrusion (recurring negative thoughts about the illness). In turn, this is thought to exacerbate feelings of distress (Lepore, 2001). Although the social cognitive processing model has yet to be examined in the context of sensory loss, connections between interpersonal communication, acceptance, and well-being have previously been demonstrated (Yorgason et al., 2007). Future research could benefit from the addition of cognitive mediators in order to discern for whom (e.g. males/females/AWSLs/spouses),

and to what extent, the connection between sensory loss communication and well-being depends upon relational or cognitive factors.

In addition, that our mediation hypotheses were largely unsupported may partly be explained by the chronic, non-terminal nature of sensory loss. For instance, prior research using the RIM has typically recruited patients diagnosed with or recovering from cancer. In the cancer context, there exists a specific diagnosis and treatment period, and the possibility for patient mortality or recovery. It can therefore be expected, and indeed it has been shown (Gallagher, Parle, & Cairns, 2002; Hodges, Humphris, & Macfarlane, 2005), that individuals undergoing cancer treatment and their spouses may experience acute moments of distress and rely on one another for emotional support. Under such circumstances, it would be expected that holding back concerns and feelings, or perceiving that one's partner is holding back (Langer et al., 2009), may exacerbate distress through its deleterious effect on the perception of support from one's spouse (den Heijer et al., 2011; Donovan-Kicken & Caughlin, 2011). Unlike cancer, however, the majority of AWSLs experience a gradual loss of function over time and many spouses enter into romantic relationships knowing that their partner will lose his/her hearing and/or vision (see Table 1). Thus, it could be argued that, because many concerns regarding the sensory loss are unlikely to be resolved, holding back concerns may serve a protective purpose by lessening the couples' inclination to dwell on the impact of the sensory loss. Similarly, frequently engaging in sensory loss-related communication may not necessarily be beneficial for the perception of support or well-being if the same chronic issues are constantly reiterated. Although this has yet to be examined among couples living with sensory loss, a recent intervention trial aiming to promote self-disclosure among couples coping with prostate cancer found that encouraging couples to disclose illness-related concerns can have deleterious effects on well-being if it brings to light additional concerns previously unrecognized by each partner (Manne et al., 2011). Thus, further research is needed to identify, among

others, the recommended frequency of sensory loss-related communication, what topics are advisable to disclose, and for whom mutual self-disclosure is beneficial.

Clinical Implications

Although many clinically relevant questions still remain, this lack of clarity is not limited to the field of sensory loss, but reflects a more general need to understand the role interpersonal communication plays in couples' illness/disability adjustment (Badr, 2017; Goldsmith & Domann-Scholz, 2013). While the results of this study support the existence of a link between couples' sensory loss-related communication and well-being, the underlying mechanisms supporting this association need to be further elucidated before recommendations can be made for psychosocial intervention.

Nevertheless, given that partners' reports of communication, support, and well-being were intercorrelated and remained stable over time—indicating interdependence and temporal robustness, the current findings indicate that both partners, as opposed to AWSLs only, should be included in rehabilitation programs. From a clinical perspective, while recommendations regarding the use of sensory loss-related communication cannot be made, professionals working with distressed couples may benefit from assessing when and why partners engage in protective buffering, and the underlying beliefs and emotions driving this behavior. For instance, therapy styles focused on how couples cope with stress such the Couples Coping Enhancement Training (CCET; Bodenmann & Shantinath, 2004) may be a promising avenue for future intervention. In addition, spouses of individuals whose sensory loss was diagnosed during the relationship may be at greater risk of engaging in protective buffering and feel less comfortable or willing to communicate about the sensory loss. Although the reason for this has yet to be investigated, it may be the case that couples who were together prior to the diagnosis

experience a more collective loss. Again, an investigation of partners' motivations underlying the use of protective buffering would be helpful in understanding how to support these couples.

Strengths and Limitations

One of the main strengths of the current study is its dyadic focus, in that, both dyad members were recruited and the data was analyzed from a dyadic analytic perspective examining not only how one participant's perceptions and behaviours were associated with their own outcomes, but also that of their partner. Recruiting dyads, while more complicated, provides a more thorough picture of the influence of interpersonal communication on couples' well-being. A second strength of the current study was its built-in replication; however, future studies would benefit from testing the model over a longer period of time than six months.

The current study is not without limitations. First, because of the mentioned issues with measuring intimacy, this study cannot be considered a test of the relationship intimacy model in the context of sensory loss. Second, the sample consisted mainly of Caucasian, heterosexual, well-educated couples that have been married or cohabiting for a relatively lengthy period of time. Thus, it is unclear how well these findings would generalize to minority couples, couples that are less educated, and those in shorter relationships. Third, as all measures were self-report, they are likely biased by personality features. Future studies should aim to corroborate self-report data with ecological momentary assessments in order to improve on this limitation. Fourth, the protective buffering scale suffers from the assumption that partners do experience some level of anger or worry about the sensory loss—which may not be the case; thus, couples may have reported lower levels of protective buffering as a result of not feeling angry or worried about the sensory loss. Future research should aim to investigate each partners' feelings towards the sensory loss in addition to protective buffering to create a better

understanding of the emotions underlying protective buffering and to what extent it occurs. Fifth, that the study was conducted as an online survey and was advertised in online forums can also be viewed as a limitation given that individuals who are visiting online forums may be particularly distressed (Smedema & McKenzie, 2010). Sixth, the measures of hearing and vision loss were self-rated, meaning, it is difficult to decipher how close a representation the severity of the loss reported in this study is of the participants' actual objective loss. Although previous studies have found self-report to be a moderately reliable indicator (Gomez, Hwang, Sobotova, Stark, & May, 2001), future studies should include objective measures such as clinician-assessed audiograms, visual acuity and/or visual field measurements. Finally, systematic differences were found between spouses who remained versus those who dropped out of the study, and this disparity was reflected in the correlations between T1 and T2. Specifically, compared to dropouts, spouses who remained were likely doing better in their relationship. While this disparity was statistically accounted for in the APIMeM, future research should examine more broadly factors associated with dropout among spouses of AWSLs and its implication for study findings.

Conclusion

Despite the limitations of the current study, our findings can be argued to have useful implications for research and rehabilitation. It is the first to examine perceived spouse support as a mechanism through which couples' sensory loss-related communication influences well-being in a dyadic context; and to investigate the stability of this mechanism over time. Although the results of this study support the importance of couples' sensory loss-related communication for psychological well-being, the mechanisms underlying this association need further study. Future research is needed to clarify the roles of, among others, relational insecurity, motivation to disclose, cognitive mechanisms, relationship satisfaction, and the emotions underlying couples' communication styles.

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Figure 1. The Actor-Partner Interdependence Mediation Model (APIMeM).

Note: AWSLs = adults with sensory loss. For the purpose of clarity, control variables, correlations between the independent variables, and correlated error terms are not included in the figure.

Table 1
Sample Characteristics (N = 103 couples)

	AWSLs	Spouses
Mean age $\pm$ SD (range), years	47.93 $\pm$ 15.17 (18-86)	48.07 $\pm$ 14.49 (19-81)
Gender, %		
Male	47.6	51.5
Female	52.4	48.5
Race %		
American Indian/Alaska Native	0.0	1.0
Asian	1.9	6.8
Black/African American	1.0	1.9
Hispanic/Latino	1.9	4.9
White/Caucasian	92.2	85.4
Mixed race	2.9	0.0
Relationship Orientation, %		
Heterosexual	95.1	-
Homosexual	4.9	-
Education, %		
Second level	12.6	18.4
Vocational training	16.5	17.5
Third level undergraduate	38.8	35.9
Third level graduate	32.0	28.2
Employment, %		
Self-employed	8.7	15.5
Full-time	29.1	41.7
Part-time	13.6	9.7
Student	6.8	4.9
Retired	15.5	19.4
Early retirement/disability support	19.4	3.9
Unemployed	6.8	4.9
Marital status, %		
Married/civil union	75.7	-
In a relationship	24.3	-
Length of relationship, %		
0 – 5 years	24.3	-
5 – 10 years	11.7	-
10+ years	64.1	-
Co-habitation status, %		
Living together	93.2	-
Living apart	6.8	-
Hearing loss severity, %		
Totally deaf	10.7	-
Profound loss	15.5	-
Severe loss	21.4	-

Moderate loss	12.6	-
Mild loss	1.9	-
No hearing loss	37.9	-
Vision loss severity, %		
Totally blind	7.8	-
Profound loss	16.5	-
Severe loss	17.5	-
Moderate loss	15.5	-
Mild loss	15.5	-
No vision loss	27.2	-
Onset type, %		
Congenital	13.6	-
Sudden	11.7	-
Gradual	60.2	-
Mixed	14.6	-
Onset time, %		
Before relationship	64.1	-
During relationship	35.9	-

Table 2

Means, standard deviations, and correlations for predictor and criterion variables

Time 1	Descriptives			Correlations							
	AWSLs	Spouses	<i>t</i> (<i>d</i>)	WTC		PB		PSS		PWB	
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)		Actor	Partner	Actor	Partner	Actor	Partner	Actor	Partner
WTC	16.52 (3.20)	15.14 (3.51)	2.92 (.41)	-	.29	-.22	-.17	.41	.25	.06	.08
PB	16.29 (3.67)	16.30 (4.10)	-0.02 (.003)	-.36	-.36	-	.04	-.41	-.14	-.21	-.35
PSS	25.50 (3.79)	24.71 (4.16)	1.41 (.20)	.58	.26	-.41	-.20 [†]	-	.39	.18 [†]	.14
PWB	15.15 (4.93)	15.42 (4.85)	-0.39 (.06)	.27	.05	-.29	-.13	.23	.10	-	.42
Time 2											
WTC	16.05 (3.09)	15.83 (3.05)	0.44 (.07)	-	.43	-.21 [†]	-.30	.37	.51	.29	.30
PB	16.86 (3.14)	15.44 (4.55)	2.19 (.36)	-.61	-.22 [†]	-	.13	-.57	-.33	-.23 [†]	-.35
PSS	25.62 (3.84)	24.80 (4.91)	1.12 (.19)	.69	.36	-.52	-.21	-	.60	.33	.36
PWB	15.36 (4.61)	14.90 (4.72)	0.60 (.10)	.32	.29	-.39	-.04	.39	.06	-	.18

Note. WTC = willingness to communicate, PB = protective buffering, PSS = perceived spouse support, PWB = psychological well-being. *M* = mean, *SD* = standard deviation, *t* = *t*-value, *d* = Cohen's *d*. Boldface indicates a significant result at the $p < .05$ level, [†] indicates $p < .10$. Bivariate correlations between the same variables across partners are presented on the main diagonal of the correlation table; correlations of AWSLs's variables with their own (actor) and their spouse's (partner) variables are presented below main diagonal, correlations of spouses' variables with their own (actor) and their spouse's (partner) variables are presented above main diagonal. Correlations are based on complete cases.

Table 3

Actor-Partner Interdependence Mediation Model (APIMeM) results

Direct Effects	β	<i>SE</i>	<i>Z</i>	<i>p</i>
<i>Actor</i>				
WTC → PSS (AWSLs)	.499	.073	6.857	< .001
WTC → PSS (spouses)	.230	.076	3.038	.002
PB → PSS (AWSLs)	-.215	.070	-3.075	.002
PB → PSS (spouses)	-.418	.071	-5.857	< .001
PSS → PWB (AWSLs)	1.406	.570	2.468	.014
PSS → PWB (spouses)	.280	.447	.626	.532
WTC → PWB (AWSLs)	.239	.504	.473	.636
WTC → PWB (spouses)	.028	.391	.073	.942
PB → PWB (AWSLs)	-.992	.511	-1.942	.052 [†]
PB → PWB (spouses)	-.734	.431	-1.702	.089 [†]
Gender → PSS (AWSLs)	.177	.112	1.579	.114
Gender → PWB (AWSLs)	-1.459	.708	-2.060	.039
<i>Partner</i>				
WTC (AWSLs) → PSS (spouses)	.212	.098	2.170	.030
WTC (spouses) → PSS (AWSLs)	.028	.061	.452	.651
PB (AWSLs) → PSS (spouses)	-.031	.091	-.342	.732
PB (spouses) → PSS (AWSLs)	-.068	.047	-1.452	.146
PSS (AWSLs) → PWB (spouses)	.427	.667	.640	.522
PSS (spouses) → PWB (AWSLs)	-.922	.575	-1.602	.109
WTC (AWSLs) → PWB (spouses)	-.463	.573	-.808	.419
WTC (spouses) → PWB (AWSLs)	.402	.509	.791	.429
PB (AWSLs) → PWB (spouses)	-1.878	.491	-3.823	< .001
PB (spouses) → PWB (AWSLs)	-.088	.388	-.227	.821
Gender (AWSLs) → PSS (Spouses)	.182	.151	1.209	.227
Gender (AWSLs) → PWB (Spouses)	.543	.735	.740	.460
<i>Indirect Effects</i>				
<i>Actor-Actor</i>				
WTC Actor-Actor (AWSLs)	.702	.312	2.249	.024
WTC Actor-Actor (spouses)	.064	.111	.580	.562
PB Actor-Actor (AWSLs)	-.302	.167	-1.804	.071 [†]
PB Actor-Actor (spouses)	-.117	.188	-.623	.533
<i>Actor-Partner</i>				
WTC Actor-Partner (AWSLs)	.213	.338	.631	.528
WTC Actor-Partner (spouses)	-.212	.162	-1.308	.191
PB Actor-Partner (AWSLs)	-.092	.159	-.577	.564
PB Actor-Partner (spouses)	.385	.239	1.614	.107
<i>Partner-Actor</i>				

WTC Partner-Actor (AWSLs)	.059	.105	.562	.574
WTC Partner-Actor (spouses)	.039	.094	.411	.681
PB Partner-Actor (AWSLs)	-.009	.050	-.176	.860
PB Partner-Actor (spouses)	-.096	.083	-1.158	.247
<i>Partner-Partner</i>				
WTC Partner-Partner (AWSLs)	-.195	.174	-1.121	.262
WTC Partner-Partner (spouses)	.012	.050	.234	.815
PB Partner-Partner (AWSLs)	.029	.097	.298	.766
PB Partner-Partner (spouses)	-.029	.059	-.495	.620
<hr/> Total Effects <hr/>				
<i>Actor-Actor</i>				
WTC Actor-Actor (AWSLs)	.940	.478	1.969	.049
WTC Actor-Actor (spouses)	.093	.377	.246	.806
PB Actor-Actor (AWSLs)	-1.294	.495	-2.616	.009
PB Actor-Actor (spouses)	-.851	.371	-2.296	.022
<i>Actor-Partner</i>				
WTC Actor-Partner (AWSLs)	-.250	.473	-.528	.598
WTC Actor-Partner (spouses)	.190	.481	.395	.693
PB Actor-Partner (AWSLs)	-1.970	.484	-4.072	< .001
PB Actor-Partner (spouses)	.297	.341	.872	.383
<i>Partner-Actor</i>				
WTC Partner-Actor (AWSLs)	-.404	.592	-.682	.495
WTC Partner-Actor (spouses)	.441	.524	.842	.400
PB Partner-Actor (AWSLs)	-1.887	.495	-3.815	< .001
PB Partner-Actor (spouses)	-.184	.387	-.475	.634
<i>Partner-Partner</i>				
WTC Partner-Partner (AWSLs)	.043	.544	.079	.937
WTC Partner-Partner (spouses)	.040	.395	.102	.919
PB Partner-Partner (AWSLs)	-.964	.518	-1.862	.063 [†]
PB Partner-Partner (spouses)	-.763	.441	-1.733	.083 [†]

Note. WTC = willingness to communicate, PB = protective buffering, PSS = perceived spouse support, PWB = psychological well-being, AWSLs = adults with sensory loss. Actor-Actor effects involve own communication, own perceived support, and own well-being. Actor-Partner effects involve own communication, own perceived support, and other's well-being. Partner-Actor effects involve own communication, other's perceived support, and other's well-being. Partner-Partner effects involve own communication, other's perceived support, and own well-being. Analyses were conducted controlling for AWSL gender (1 = male; 2 = female). Boldface indicates a significant result at the $p < .05$ level, [†] indicates $p < .10$.