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The Importance of Examining Both the Amount and Balance of Social Support: A Study on the Relationship Between Social Support and Subjective Well-Being of Older Japanese Adults

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Abstract

Previous studies have highlighted that the balance between social support individuals receive and that they provide plays a crucial role in their well-being. However, these studies predominantly focused on the balance without distinguishing situations where individuals receive and provide abundant support from situations where they receive and provide limited support. The present research ephasizes the importance of concurrently considering the amount and balance of social support. With this goal, we compared models focusing solely on balance to those considering both amount and balance, utilizing data from older Japanese adults (n = 1324). The models focusing solely on balance yielded mixed findings: positive relationships between balance and subjective well-being emerged only when variables indicating balance were created in a particular manner. In contrast, the models examining both amount and balance provided more reliable and comprehensive insights. First, the amount of support received and provided independently had a positive relationship with subjective well-being. Second, balance was not related to subjective well-being: individuals receiving or providing abundant support (i.e., unbalanced) reported similar levels of well-being to those receiving and providing abundant support (i.e., balanced). Furthermore, they reported higher levels of well-being than those receiving and providing limited support (i.e., balanced).

Keywords: Social support, equity, equality, reciprocity, well-being, mental health

Introduction

Social support plays a crucial role in well-being. Previous research has shown that not only the amount of support received (e.g., Gariépy et al., 2016; Uchino et al., 2018) and provided (e.g., Eisenberger, 2013; Inagaki & Orehek, 2017) but also the balance between them was positively related to well-being (e.g., Chen et al., 2021; Erving & Irby-Shasanmi, 2018). However, while some studies reported positive relationships between the balance of support and well-being, others found that individuals with balanced support did not necessarily experience greater well-being than others (e.g., Li et al., 2011; Wang & Gruenwald, 2019). We suggest that these mixed findings would be because the previous studies on the balance of support overlooked the amount of support, failing to distinguish situations where individuals receive and provide abundant support from situations where they receive and provide limited support. In this paper, we first review the literature on how well-being is related to the amount of support received, the amount of support provided, and the balance between them. We then underscore the importance of concurrently examining the amount and balance of support. Additionally, we apply this approach to our dataset to provide new insights into the relationships between social support and well-being.

Amount of support received and well-being

As one study defined social support as "an exchange of resources[1] between two individuals perceived by the provider or the recipient to be intended to enhance the well-being of the recipient" (Shumaker & Brownell, 1984, p. 11), a considerable number of empirical studies have revealed that the amount of social support individuals received is positively related to their well-being. For example, a study on adults in Norway demonstrated

that the extent to which individuals received emotional support (i.e., whether they had friends to whom they could speak confidentially) had a negative relationship with depressive symptoms (Grav et al., 2012). This cited study also found a negative relationship between the amount of instrumental support received (i.e., whether individuals had friends who could help them when needed) and depressive symptoms. Similarly, another study on adults in Canada showed negative relationships between social support, including emotional, instrumental, and informational support, and depressive syndrome (Patten, 2001; see Gariépy et al., 2016 for a review on the relationship between received support and depression).

The amount of support received also has positive relationships with physical health (for a review, see Uchino et al., 2018). For instance, one study revealed that those who received more social support showed lower and more stable blood pressure across age categories (Uchino et al., 1999). This cited study used an inventory to measure the amount of social support (including emotional, instrumental, informational, and appraisal support) respondents felt they received daily. Furthermore, the amount of support received positively affects longevity (for a review, see Shor et al., 2013). A study on older adults in Taiwan found that the amount of emotional and instrumental support that individuals received (e.g., the amount of love and financial assistance they could expect from their significant others) tended to lower the risk of subsequent mortality (Liang et al., 1999).

Amount of support provided and well-being

Social support is beneficial not only for recipients but also for providers (for reviews, see Eisenberger, 2013; Inagaki & Orehek, 2017). For instance, several empirical studies demonstrated that providing instrumental support, specifically money, fostered positive

affect (e.g., Dunn et al., 2008; see also Aknin et al., 2020, for replication reports). Moreover, a study on older adults in the US showed that the amount of emotional support provided (e.g., whether respondents reassured someone feeling uncertain about something) was more related to positive affect than the amount of support received (Thomas, 2010).

Another study on adults in the US revealed that the amount of emotional and instrumental support that individuals provided in everyday life (i.e., the extent to which they believed that they cheered up someone feeling down and that they helped someone in trouble) was negatively associated with stress-related brain activity (Inagaki et al., 2016). The amount of support provided is also related to longevity. A study using data from older couples in the US found that those who provided more instrumental support to friends, relatives, and neighbors (i.e., those who had helped with tasks such as errands in the past 12 months), and those who provided more emotional support to their spouse (e.g., those who made their spouse feel loved and cared for) showed less mortality over five years (Brown et al., 2003).

Balance of support and well-being

While these studies have primarily examined the amount of social support received or provided, some studies have directed their attention toward the balance between the amount of support received and provided (i.e., whether the amount of support received/provided is not far greater than the amount of support provided/received). The rationale behind such studies is based on the equity theory. The equity theory, which defines equity as a constant ratio between outcomes and inputs for all parties involved in an exchange, posits that individuals tend to experience dissatisfaction when they perceive inequity (Adams, 1965). In other words, this theory predicts that individuals would feel frustrated if the amount of social

support they receive from others (i.e., outcomes) is far greater than that they provide to others (i.e., inputs). Similarly, individuals would feel dissatisfied if the amount of support provided (i.e., inputs) is far greater than that received (i.e., outcomes). In line with these predictions, studies on the balance of social support revealed that those who balanced received and provided support, without feeling exploited or indebted, tended to experience higher levels of well-being compared to those who disproportionately received or provided support (e.g., Braun et al., 2018; Chen et al., 2021; Erving & Irby-Shasanmi, 2018).

One study, using data from adults in the US, showed that those who were relatively balanced in the amount of emotional (i.e., the number of hours spent per month to comfort and listen to others) and instrumental support (i.e., the number of hours spent per month to provide unpaid assistance such as with childcare) they provided compared to that they received had a lower risk of mortality over 23 years (Chen et al., 2021). Another study on adults in Germany also demonstrated overall positive relationships between balanced support and relationship satisfaction (Braun et al., 2018). Braun et al. (2018) measured balanced support by asking, for example, “When you put everything you do for your neighbors on one side and everything you get from your neighbors on the other side, what do you think the balance scale will do?”

Overall, the balance of social support seems to play a crucial role in well-being. However, some studies obtained mixed results. Examples include a study on adults in the US (Wang & Gruenwald, 2019). This cited study found that those who were balanced in the amount of emotional and instrumental support they provided (e.g., the extent to which people around them could talk about their worries to them or rely on them for help) compared to that they

received reported more positive affect, less anxiety, less depression, and less stress than those who provided more support than they received (i.e., under-benefitted). However, the well-being of those balanced was not always greater than that of those over-benefitted, which is against the equity theory. A similar result was found in another study on adults in China (Li et al., 2011). The study demonstrated that older adults who perceived that the amount of emotional support they received from friends (e.g., the extent to which their friends cheered them up when they were down) was higher than that they provided reported greater life satisfaction than those who were balanced, while this was not the case for young adults.

An intuitive reason for these mixed findings may be the variations stemming from the type of social support and the characteristics of the samples. However, we emphasize that a more fundamental problem is involved here. Previous studies on the balance of social support primarily focused on the balance and overlooked the amount of support received and provided. Thus, what they regarded as balanced support encompassed situations where individuals receive and provide ample support and situations where individuals receive and provide limited support. Specifically, when examining the effect of social support, some used an ordinal variable measuring the extent of balanced support (with higher values indicating balanced support and lower values indicating over-benefitted or under-benefitted; Braun et al., 2018). Others measured the amount of support received and that provided, which they transformed into a categorical variable with three levels: balanced, over-benefitted, and under-benefitted (Chen et al., 2021; Erving & Irby-Shasanmi, 2018; Li et al., 2011; Wang & Gruenwald, 2019).

Not distinguishing the state of receiving and providing much from that of receiving and

providing little has at least two drawbacks. First, it tends to yield mixed findings regarding the effect of balance because whether the effect becomes positive or negative depends on the ratio of those who received and provided ample support to those who received and provided little support. Positive effects of balance will likely be found when this ratio is high, given previous studies showing positive effects of the amount of support received and provided (e.g., Gariépy et al., 2016; Inagaki & Orehek, 2017). Second, suppose studies solely focusing on the balance of support find positive relationships between balanced support and well-being. Such a result can lead to the interpretation that receiving and providing little (i.e., balanced support) is more beneficial for well-being than receiving little and providing plenty or receiving plenty and providing little (i.e., unbalanced support).

Present research

In addition to emphasizing the importance of concurrently considering the amount and balance of social support, we propose a specific approach to realize this aim. Specifically, we suggest examining the main effects and interaction effect of two variables that represent the amount of support received and provided. The main effects of received and provided support reveal how the amount of support individuals receive and that they provide independently contributes to well-being. The interaction effect, which is defined as "the joint effect of two or more independent variables on a dependent variable above and beyond the sum of their individual effects" (American Psychological Association, n.d.), reveals how the balance between received and provided support affects well-being. In the rest of this section, we depict examples of the main and interaction effects of social support on well-being. We then present an overview of our methodology for investigating these main and interaction effects.

Figure 1 consists of four images illustrating examples of the main effect of received support, the main effect of provided support, and the interaction effect between them on well-being. In Figure 1(A), significant main effects are observed, indicating that the amount of support received and provided independently contributes to well-being. However, there is no significant interaction effect, suggesting that the balance of support does not play an important role in this case. In contrast, the interaction effect is significant, while the main effects are not in Figure 1(B). This implies that only the balance of support, rather than the amount of support, is crucial for well-being. Thus, individuals who receive and provide ample support and those who receive and provide limited support tend to experience greater well-being than those who receive ample and provide little and those who receive little and provide ample. Figures 1 (C) and (D) are examples where the interaction effect is significant but it does not indicate the importance of balanced support. In Figure 1(C), a significant interaction effect indicates that either the high level of received support or the high level of provided support is sufficient to achieve high well-being. Conversely, in Figure 1(D), either the low level of received support or the low level of provided support makes it impossible to achieve high well-being. As these four examples in Figure 1 depict, examining the main and interaction effects provides a comprehensive understanding of how social support relates to well-being. It allows us to go beyond simply understanding whether or not the amount or balance of support plays an important role.

We predicted that the main effects of the amount of support received and provided would be positive since previous research has repeatedly demonstrated that well-being was positively related to the amount of support received (e.g., Gariépy et al., 2016; Uchino et al.,

2018) and provided (e.g., Eisenberger, 2013; Inagaki & Orehek, 2017). In contrast, we did not have a specific prediction regarding the interaction effect between received and provided support because previous research showed mixed results regarding the relationship between balanced support and well-being (e.g., Chen et al., 2021; Erving & Irby-Shasanmi, 2018; Li et al., 2011; Wang & Gruenwald, 2019).

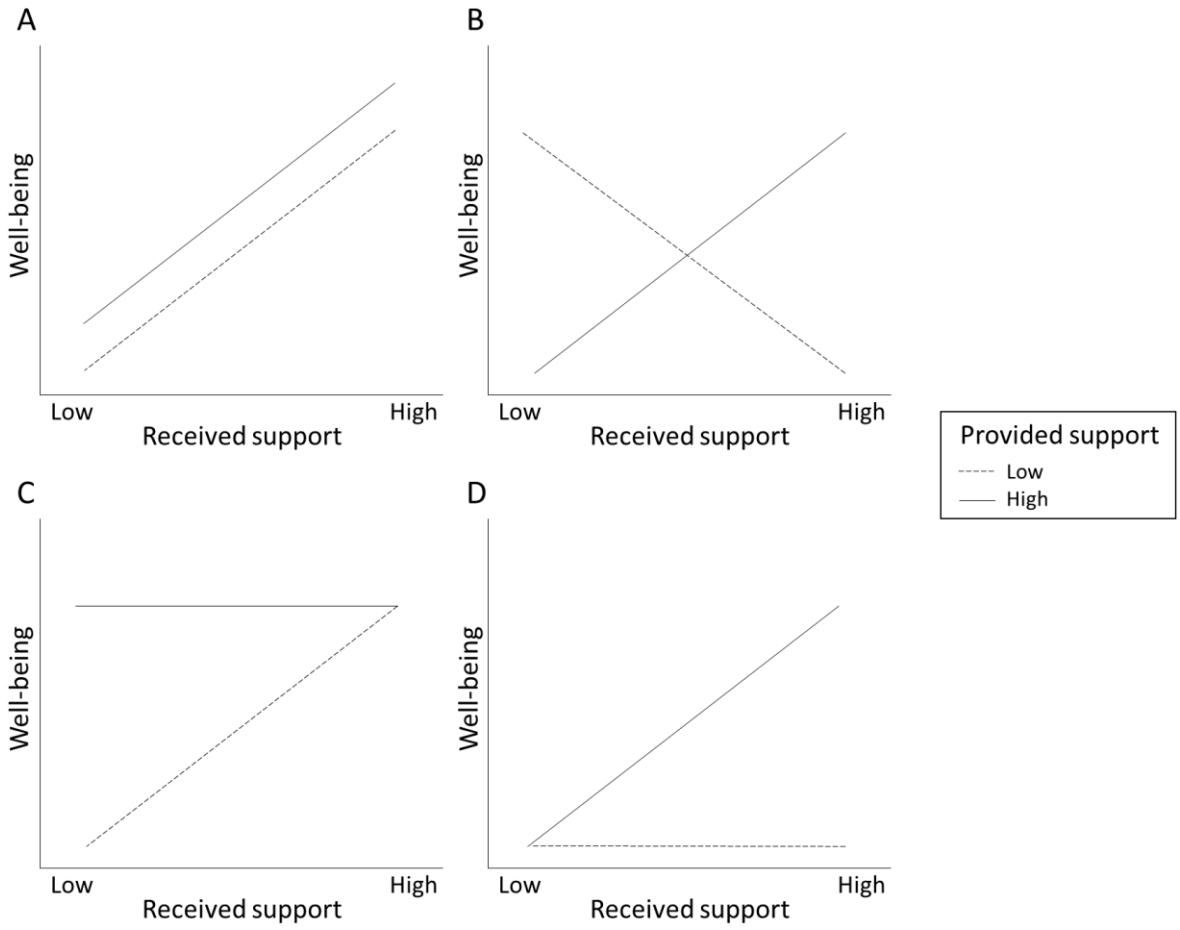
To demonstrate the advantages of investigating both the main and interaction effects of received and provided support, we used data from the National Survey of the Japanese Elderly (NSJE; Japanese Aging and Health Dynamics Study, n.d.) (n = 1324). This dataset was selected due to its substantial sample size and nationwide coverage across Japan. In addition, it was considered the most suitable dataset for the research objective because it contained questions measuring the amount of support individuals received and provided in everyday life.

We conducted linear regression analyses to assess the effect of social support on well-being, comparing three models. The first model, referred to as Model O, examines the main and interaction effects of two ordinal variables representing the amount of support received and provided. Thus, this model concurrently considers the amount and balance of social support. The other two models, referred to as Models C-S and C-D, replicate previous studies that focused solely on the balance of support. As noted above, several studies used a categorical variable indicating the balance between received and provided support, which consisted of three levels: balanced, over-benefitted, and under-benefitted (Chen et al., 2021; Erving & Irby-Shasanmi, 2018; Li et al., 2011; Wang & Gruenwald, 2019). When creating such a categorical variable, some of them subtracted the value for provided support from the

value for received support (e.g., Li et al., 2011). When the value was zero, it was coded as "balanced." Other studies divided the value for provided support by the value for received support (e.g., Wang & Gruenwald, 2019). When the value was within one standard deviation above and below the mean, it was coded as "balanced." In Models C-S and C-D, we used a categorical variable that was created by subtraction and division, respectively. By comparing these three models, we aimed to demonstrate that Model O provides more comprehensive and reliable insights into the relationships between social support and well-being than the other models.

Figure 1

Examples of the main effects of received and provided support and the interaction effect between them



Note. A: A case in which the main effects of received and provided support exist, but the interaction effect between them does not. B: A case in which the main effects do not exist, but the interaction effect exists. C and D: Cases in which the main and interaction effects exist.

Methods

Data sources

We used data from the NSJE, which is publicly available at the Social Science Japan Data Archive, Center for Social Research and Data Archives, Institute of Social Science, the University of Tokyo. This national survey has collected information on Japanese adults aged 60 or over, including their economic conditions, social participation, and physical and mental health. The eighth wave of the survey, which was conducted in 2012, included a sample of 1450 individuals who had not participated in any previous wave. We used this cross-sectional data, excluding data from those who responded by proxy (i.e., whose information was provided not by themselves but by another person because the sampled person was unavailable for some reason).

The final sample size was reduced to 1324 individuals. They ranged in age from 60 to 92 years ($M = 71.63$, $SD = 7.72$). Women and men comprised 50.9% and 49.1% of the sample, respectively. Those married constituted 73.6%, and those working constituted 36.1% of the sample. The respondents had 2.03 children on average ($SD = 0.96$, ranging from zero to seven). The average household size was 2.74 people ($SD = 2.74$, ranging from one to nine), and the average educational attainment was 11.54 years ($SD = 2.78$, ranging from zero to 17). The average household income was 3.58 million yen ($SD = 2.99$, ranging from 0.6 to 20). Those with any functional limitation comprised 10.2 % of the sample.

Measures

Social support

The survey measured the amount of emotional support received and provided. Emotional

support that the respondents received from others (*received support*) was assessed with two scales. The first question on the first scale was, "Do you have someone who listens to you?" If respondents answered "no" to this question, it was coded as 1 (indicating "not at all"). If they answered "yes," they were then asked a follow-up question: "How much does the person who listens to you most listen to you?" This was rated on a 4-point scale ranging from 2 (indicating "not well") to 5 (indicating "very well"). The second scale used to measure received support was similar to the first scale but with different questions. The questions in this scale were: "Do you have someone who shows you care and compassion?" and "How much does the person who shows you care and compassion most demonstrate care and compassion to you?" As these scales were positively correlated (r = .57, p < .001), we averaged them to create the variable representing the amount of support received.

Emotional support that the respondents gave to others (*provided support*) was assessed with two questions: "How much do you listen to those close to you when they want to talk about their worries and troubles?" and "How much do you think you would encourage or comfort those close to you when they are going through a hard time?" These were rated on a 5-point scale ranging from 1 (indicating "not at all") to 5 (indicating "very well"). Responses to these questions were positively correlated (r = .70, p < .001), and we averaged them to create the variable representing the amount of support provided. These scales measuring support received and provided were adopted from the Americans' Changing Lives study (House, 2018).

Subjective well-being

The survey included two scales measuring subjective well-being. The first scale was a

short version of the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), which measured *depressive symptoms*. This scale consisted of nine items (α = .73). Specifically, it asked how often the respondents had experienced nine symptoms during the past week. Examples of these symptoms were "I felt sad" and "My sleep was restless." They were rated on a 4-point scale ranging from 0 (indicating "rarely or none of the time, or less than one day") to 3 (indicating "most or all of the time, or 5–7 days").

The second scale was a short version of Life Satisfaction Index A (LSI-A; Neugarten et al., 1961), which measured *life satisfaction*. This scale consisted of three items (α = .63): "These are the best years of my life," "As I look on my life, I am fairly well satisfied," and "I expect some interesting and pleasant things to happen to me in the future." These three items were rated on a 3-point scale, where 0 equals "disagree," 1 equals "neither disagree nor agree," and 2 equals "agree."

Sociodemographic and other covariates

Sociodemographic covariates included *gender* (1 = female, 0 = male) and *age*, which have been examined as potential moderators of the relationship between social support and well-being (Siedlecki et al., 2014; Taylor, 2011). *Marital status* (1 = married, 0 = not married, including divorced, widowed, and never married), *the number of children*, and *household size* (i.e., the number of family members living together) were used as covariates since the existence of social relationships is said to be associated with well-being (Lucas & Dyrenforth, 2006). We also used *working status* (1 = working, 0 = not working, including retired and currently looking for work) as a covariate because it would relate to the existence of social relationships. Furthermore, previous research has pointed out the relationship between

working status and well-being in later life (Hao, 2008).

Educational attainment (i.e., the number of years the respondent went to school) and *household income* were used as covariates regarding socioeconomic status (SES), as SES is associated with the perception of social support (Taylor & Seeman, 2000) and well-being (Luo & Waite, 2005). Household income was rated on a 9-point scale ranging from 1 ("less than 1.2 million Japanese yen") to 9 ("more than 20 million Japanese yen"). We recoded this variable as the midpoint of each income category. The highest income category ("more than 20 million Japanese yen") was coded as 20 million Japanese yen because the midpoint of this category is unknown.

As a covariate regarding physical health, we used *functional limitation*, which was measured with the six items of the Activities of Daily Living Scale (Katz, 1983) and four items of the Instrumental Activities of Daily Living Scale (Lawton & Brody, 1969). These scales asked respondents how hard it was to perform daily activities without assistance, such as bathing, dressing, shopping, and housekeeping. Each item was rated on a 5-point scale ranging from 1 ("not difficult at all") to 5 ("too difficult to perform"). Most respondents (89.8%) reported that all the activities presented on the scales were not difficult to perform. Hence, we built a dummy variable that equals 1 for those who felt any difficulty and 0 for those who felt no difficulty.

Analyses

We employed linear regression analyses to examine the relationships between social support and subjective well-being. We used two dependent variables, depressive symptoms and life satisfaction, to check the generalizability of our findings. The independent variable

depended on the models. In Model O, the independent variables were received and provided support. Using these two ordinal variables (which were mean-centered), we examined the main effect of received support, the main effect of provided support, and the interaction effect between them. In Models C-S and C-D, the independent variable was a categorical variable called *balance of social support*. To create this categorical variable, we subtracted the value of provided support from the value of received support for Model C-S. If the resulting value was zero, it was categorized as "balanced." If it was negative and positive, it was categorized as "under-benefitted" and "over-benefitted," respectively. For Model C-D, we divided the value of received support by the value of provided support. If the resulting value was within one standard deviation above and below the mean, it was categorized as "balanced." If it was one standard deviation below and above the mean, it was categorized as "under-benefitted" and "over-benefitted," respectively. When we compared these models, we also compared models with covariates and those without covariates. We called models without covariates Models O1, C-S1, and C-D1, and models with covariates Models O2, C-S2, and C-D2. All analyses were performed using the R software (R Core Team, 2020).

Results

Depressive symptoms

Table 1 presents the results of regression analyses with the dependent variable being depressive symptoms. Models C-S1, C-S2, C-D1, and C-D2 indicated that those who experienced balanced support reported fewer depressive symptoms than those who felt under-benefitted. However, the models did not show a significant difference in depressive symptoms between the balanced and over-benefitted individuals, except for Model C-D1 (i.e.,

when we created the categorical variable by division and did not consider covariates).

Models O1 and O2 showed negative main effects of received and provided support, indicating that respondents receiving and providing more support reported fewer depressive symptoms. The interaction effect between received and provided support was significant in Model O1, as illustrated in Figure 2. A simple slope analysis revealed the sufficiency of either the high level of received support or the high level of provided support to reduce depressive symptoms. Specifically, more received support contributed to fewer depressive symptoms when the level of provided support was low, but it did not when the level of provided support was high (B = –0.89, SE = 0.14, p < .001; B = –0.54, SE = 0.13, p < .001; B = –0.20, SE = 0.18, p = .269, respectively, for mean – 1 *SD*, mean, and mean + 1 *SD* levels of provided support). Similarly, more provided support contributed to fewer depressive symptoms when the level of received support was low, but it did not when the level of received support was high (B = –0.80, SE = 0.15, p < .001; B = –0.45, SE = 0.13, p < .001; B = –0.09, SE = 0.17, p = .604, respectively, for mean – 1 *SD*, mean, and mean + 1 *SD* levels of received support).

Table 1

Regression analyses assessing the effect of social support on depressive symptoms

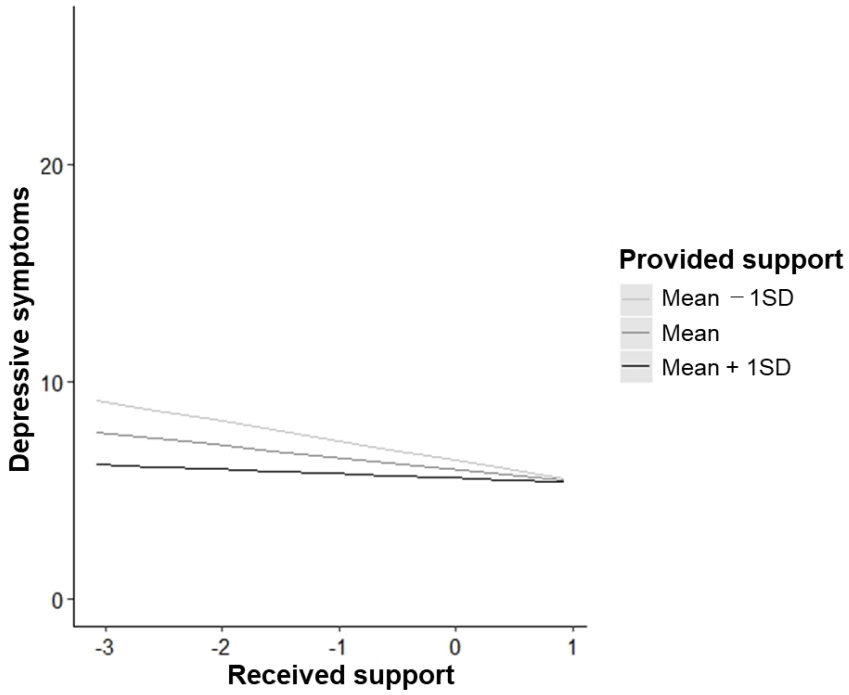
	Model C-S1 [b]		Model C-S2 [b]		Model C-D1 [c]		Model C-D2 [c]		Model O1 [d]		Model O2 [d]	
	B	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*
Intercept	5.70 ***	0.20	7.77 ***	1.54	5.83 ***	0.11	8.28 ***	1.52	5.95 ***	0.11	7.18 ***	1.50
Social support												
Received support									-0.55 ***	0.13	-0.56 ***	0.13
Provided support									-0.46 ***	0.13	-0.44 **	0.14
Received support × Provided support									0.40 ***	0.11	0.22 †	0.11
Balance of social support [a]												
Under-benefitted	0.68 *	0.29	0.76 **	0.29	1.91 ***	0.44	1.83 ***	0.47				
Over-benefitted	0.36	0.26	0.35	0.27	1.16 **	0.39	0.70	0.43				
Covariates												
Gender (1 = woman)			0.13	0.24			0.17	0.24			0.40 †	0.24
Age			0.00	0.02			-0.01	0.02			0.00	0.02
Marital status (1 = married)			-0.81 **	0.29			-0.78 **	0.29			-0.65 *	0.29
Number of children			-0.17	0.11			-0.17	0.12			-0.13	0.12
Household size			-0.19 *	0.08			-0.20 *	0.08			-0.18 *	0.08
Working status (1 = working)			0.01	0.26			0.00	0.26			0.05	0.26
Educational attainment			-0.05	0.05			-0.05	0.05			-0.02	0.04
Household income			-0.01	0.00			-0.01	0.00			-0.01	0.00
Functional limitation (1 = feeling difficulty)			2.72 ***	0.42			2.75 ***	0.42			2.74 ***	0.41
R^2	0.00		0.10		0.02		0.11		0.07		0.14	

*** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .10$

Note. *B* are unstandardized coefficients and *SE* are standard errors. [a] Balanced support was set as the reference level. [b] In Models C-S1 and C-S2, we examined the effect of the balance of social support, using a categorical variable that was created by subtracting provided support from received support. [c] In Models C-D1 and C-D2, we examined the effect of the balance of social support, using a categorical variable that was created by dividing received support by provided support. [d] In Models O1 and O2, we examined the effect of the amount and the balance of social support, using ordinal variables of received and provided support.

Figure 2

The interaction effect between received and provided support on depressive symptoms



Life satisfaction

We obtained similar results when the dependent variable was life satisfaction (Table 2 and Figure 3). First, Models C-S1, C-S2, C-D1, and C-D2 revealed that those who experienced balanced support reported higher life satisfaction than those who felt under-benefitted. However, the models showed no significant difference in life satisfaction between the balanced and over-benefitted individuals, except for Model C-D1 (i.e., when we created the categorical variable by division and did not consider covariates). Second, Models O1 and O2 revealed positive main effects of received and provided support on life satisfaction.-Third, Model O1 showed a significant interaction effect between received and provided support, and a simple slope analysis revealed the sufficiency of either the high level of received support or the high level of provided support to

achieve high life satisfaction. Specifically, the extent to which received support contributed to life satisfaction was higher when provided support was low than when it was high (B = 0.46, SE = 0.06, $p < .001$; B = 0.32, SE = 0.06, $p < .001$; B = 0.18, SE = 0.08, p = .022, respectively, for mean – 1 *SD*, mean, and mean + 1 *SD* levels of provided support). Likewise, the extent to which provided support contributed to life satisfaction was higher when received support was low than when it was high (B = 0.36, SE = 0.07, $p < .001$; B = 0.21, SE = 0.06, $p < .001$; B = 0.07, SE = 0.08, p = .347, respectively, for mean – 1 *SD*, mean, and mean + 1 *SD* levels of received support).

Table 2

Regression analyses assessing the effect of social support on life satisfaction

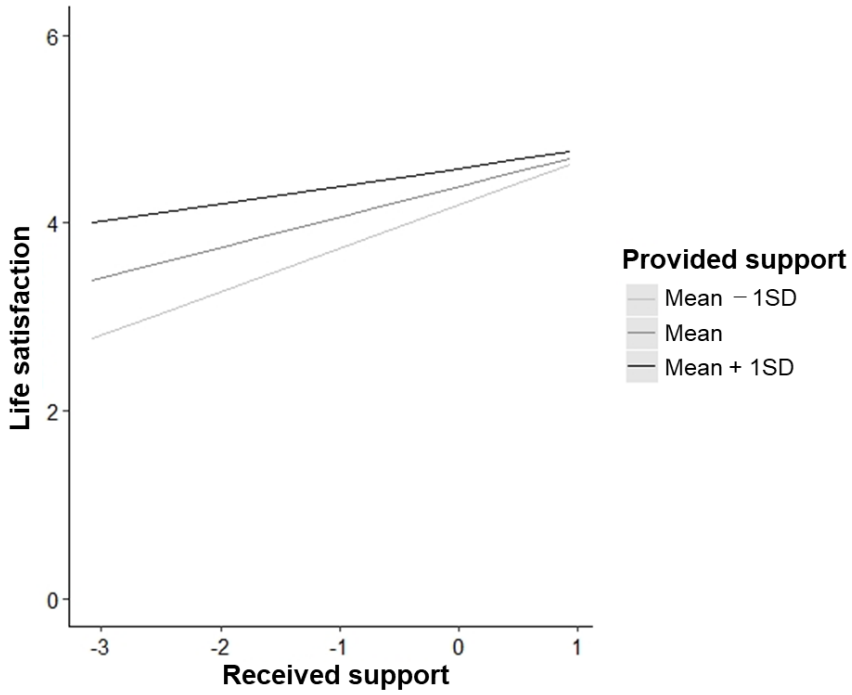
	Model C-S1 [b]		Model C-S2 [b]		Model C-D1 [c]		Model C-D2 [c]		Model O1 [d]		Model O2 [d]	
	B	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*
Intercept	4.49 ***	0.09	1.70 *	0.71	4.44 ***	0.05	1.48 *	0.69	4.38 ***	0.05	2.03 **	0.68
Social support												
Received support									0.32 ***	0.06	0.37 ***	0.06
Provided support									0.22 ***	0.06	0.18 **	0.06
Received support × Provided support									-0.16 **	0.05	-0.10 †	0.05
Balance of social support [a]												
Under-benefitted	-0.29 *	0.13	-0.39 **	0.13	-0.85 ***	0.20	-1.10 ***	0.21				
Over-benefitted	-0.12	0.12	-0.11	0.12	-0.45 *	0.18	-0.26	0.20				
Covariates												
Gender (1 = woman)			0.49 ***	0.11			0.46 ***	0.11			0.34 **	0.11
Age			0.02 *	0.01			0.02 **	0.01			0.02 *	0.01
Marital status (1 = married)			0.47 ***	0.13			0.46 ***	0.13			0.41 **	0.13
Number of children			0.13 *	0.05			0.13 *	0.05			0.11 *	0.05
Household size			0.06 †	0.04			0.07 †	0.04			0.06	0.04
Working status (1 = working)			-0.02	0.12			-0.02	0.12			-0.04	0.12
Educational attainment			0.03	0.02			0.02	0.02			0.01	0.02
Household income			0.01 ***	0.00			0.01 ***	0.00			0.01 **	0.00
Functional limitation (1 = feeling difficulty)			-1.49 ***	0.19			-1.51 ***	0.19			-1.48 ***	0.19
R^2	0.00		0.13		0.02		0.14		0.08		0.19	

*** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .10$

Note. *B* are unstandardized coefficients and *SE* are standard errors. [a] Balanced support was set as the reference level. [b] In Models C-S1 and C-S2, we examined the effect of the balance of social support, using a categorical variable that was created by subtracting provided support from received support. [c] In Models C-D1 and C-D2, we examined the effect of the balance of social support, using a categorical variable that was created by dividing received support by provided support. [d] In Models O1 and O2, we examined the effect of the amount and the balance of social support, using ordinal variables of received and provided support.

Figure 3

The interaction effect between received and provided support on life satisfaction



Discussion

Previous research repeatedly demonstrated positive relationships between the amount of social support received and well-being (e.g., Gariépy et al., 2016; Uchino et al., 2018); between the amount of support provided and well-being (e.g., Eisenberger, 2013; Inagaki & Orehek, 2017); and between the balance of support and well-being (e.g., Chen et al., 2021; Erving & Irby-Shasanmi, 2018). However, previous research seldom investigated all these together. Especially focusing only on the balance of support is problematic because it makes it unable to distinguish between situations where individuals receive and provide much support and where they receive and provide limited support. Probably because of this limitation, previous research focusing only on the balance of support obtained mixed results; while some studies reported that those balanced

experienced greater well-being than others (e.g., Chen et al., 2021; Erving & Irby-Shasanmi, 2018), other studies found that this was not the case when those balanced and those over-benefitted were compared (e.g., Li et al., 2011; Wang & Gruenwald, 2019).

To underscore the importance of examining both the amount and balance of social support, we compared models that we suggest to be optimal (i.e., models that examined the main effects of ordinal variables indicating the amount of support received and provided and the interaction effect between them; Models O1 and O2) and models that several previous studies used (i.e., models that examined the effect of a categorical variable with three levels: balanced, over-benefitted, and under-benefitted; Models C-S1, C-S2, C-D1, and C-D2). The latter models showed mixed results, as in the previous studies that focused only on the balance of support and used a categorical variable with the three levels (e.g., Chen et al., 2021; Erving & Irby-Shasanmi, 2018; Li et al., 2011; Wang & Gruenwald, 2019). Specifically, the results showed that balanced individuals reported the fewest depressive symptoms and the highest life satisfaction only when the variable indicating the balance of support was created in a certain way and when covariates were not considered (Model C-D1). The other models (Models C-S1, C-S2, and C-D2) showed no significant difference in subjective well-being between balanced individuals and over-benefitted individuals. These results revealed that focusing only on the balance of support is unreliable, especially when researchers created a categorical variable to examine the effect of the balance. Consistent with this finding, it has been said that converting ordinal or continuous variables into categorical variables undermines the reliability of research because it includes the arbitrary choice of a cutpoint (Harrell, 2020).

The models that investigated both the amount and balance of social support (Models O1 and O2) provided two major findings. First, it demonstrated positive effects of the amount of support received and provided on subjective well-being, which corroborates previous studies revealing

positive relationships between the amount of support and well-being (e.g., Eisenberger, 2013; Gariépy et al., 2016; Inagaki & Orehek, 2017; Uchino et al., 2018). Second, the results revealed the sufficiency of either the high level of received support or the high level of provided support to experience considerable subjective well-being. Therefore, balanced support (including situations where individuals receive and provide plenty and situations where individuals receive and provide little) was not necessarily more beneficial than unbalanced support (including situations where individuals receive plenty and provide little and situations where individuals receive little and provide plenty).

As these results indicate, there are several advantages of considering both the amount and balance of social support by examining the main and interaction effects of the two ordinal variables of received and provided support. First, this approach avoids the arbitrary manipulations that can occur when converting variables. Second, this approach provides more comprehensive insights into the effects of social support. It takes us beyond understanding whether or not the amount or balance of support is important. Using this approach, we can find how the amount of support received, the amount of support provided, and their balance individually contribute to well-being.

The limitation of the current research is that we used data on older Japanese adults, and our findings might not be applicable to other samples. Future work needs to conduct cross-cultural studies since previous research reported cultural differences, for example, in how people exchange social support (e.g., Chen et al., 2012; Kim et al., 2008) and relationships between social support and well-being (e.g., Brannan et al., 2013; Khallad & Jabr, 2016). It is also important to examine other age groups, including young adults, adolescents, and children, as previous research demonstrated age differences in social support and well-being (e.g., Chu et al., 2010; Siedlecki et al., 2014). Another limitation of the present research is that it did not consider the variation of social support, such as resources involved (e.g., emotional, instrumental, informational, and

appraisal) and the relationship between those who exchange support (e.g., partners, relatives, friends, coworkers, and neighbors) (House, 1981; Taylor, 2011). Finally, the present research used cross-sectional data and could not establish a cause-and-effect relationship between social support and well-being. It is necessary to conduct experimental studies to provide practical insights on how to enhance well-being.

Despite these limitations, our research achieved its aim of highlighting the necessity of examining both the amount and balance of social support. It also demonstrated that researchers' choice of variables can challenge seemingly valid findings, including positive relationships between the balance of social support and subjective well-being. We encourage future research to meticulously select variables regarding social support to provide comprehensive and reliable insights into its role in everyday life.

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Conflict of Interest Statement

The authors declare that there is no conflict of interest.

Data Availability Statement

The data used in the present study, "National Survey of the Japanese Elderly <Wave8>, 2012, Tokyo Metropolitan Institute of Gerontology, University of Michigan, the University of Tokyo," is publicly available at the Social Science Japan Data Archive, Center for Social Research and Data Archives, Institute of Social Science, the University of Tokyo (https://ssjda.iss.u-tokyo.ac.jp/Direct/gaiyo.php?eid=1476; see https://ssjda.iss.u-tokyo.ac.jp/Direct/gaiyo.php?lang=eng&eid=1476 for the English page).

Ethics Statement

The National Survey of the Japanese Elderly was approved by the Institutional Review Board of

the Tokyo Metropolitan Institute of Gerontology.

Endnotes

[1] Although there are various terminologies for the categorization of resources exchanged in social support (e.g., Barrera & Ainlay, 1983; Cohen & Wills, 1985; Furman & Buhrmester, 1985; House, 1981), we adopt House (1981)'s terminologies based on a previous literature review (Malecki & Demaray, 2003). House (1981) categorized social support into emotional, instrumental, informational, and appraisal support, and defined each type as follows (see also Langford et al., 1997). Emotional support involves affective assistance such as caring, empathy, love, and trust. Instrumental support consists of assistance that directly resolves another's problem, which includes providing financial or material aid and helping someone do their work. Informational support involves information provided to help another resolve a problem. Appraisal support encompasses expression that evaluates the acts or statements made by another. House (1981) emphasized that emotional support is the most important and representative type of social support because it is included in any other type of support.

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