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Article

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Everyday Social Support for Health Behaviours in Older Adults during Times of Challenge: Evidence from Daily Life Assessments

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Abstract

The COVID-19 pandemic challenged older adults' health behaviours, making it even more difficult to engage in healthy diets and physical activity than it had been prepandemic. A resource to promote these could be social support. This study uses data from 136 older adults (M_{age} = 71.39 years, *SD* = 5.15, range: 63–87) who reported their daily fruit and vegetable consumption, steps, and health-behaviour-specific support from a close other every evening for up to 10 consecutive days. Findings show that on days when participants reported more emotional support than usual, fruit and vegetable consumption and step counts were higher. Daily instrumental support was positively associated with step counts, only. Participants receiving more overall emotional support across the study period consumed more fruit and vegetables; no parallel person-level association was found for overall steps. There were no significant interactions between dyad type and support links for our outcomes.

Résumé

La pandémie de COVID-19 a perturbé les habitudes des personnes âgées, et entraîné pour eux plus de difficultés qu'auparavant à adhérer à un régime alimentaire sain et à des activités physiques. Le soutien social peut être une ressource pour promouvoir ces habitudes de vie. Cette étude puise dans les données recueillies auprès de 136 personnes âgées (âge moyen = 71,39 ans, écart-type = 5,15; fourchette = 63–87 ans), qui ont rendu compte chaque soir jusqu'à dix jours consécutifs de leur consommation de fruits et de légumes, de leur nombre de pas et du soutien à leurs habitudes de vie saine qu'ils ont reçu de la part d'un proche. Les résultats montrent que les jours où les participants ont déclaré avoir reçu davantage de soutien affectif que d'habitude, leur consommation de fruits et légumes et leur nombre de pas étaient plus élevés. Le soutien instrumental quotidien était seulement associé à de plus grands nombres de pas. Les participants qui ont reçu davantage de soutien affectif tout au long de la période de l'étude ont consommé davantage de fruits et légumes; aucune association parallèle n'a été établie à l'échelle personnelle pour le nombre de pas total. Nos résultats n'ont révélé aucune interaction significative entre le type de dyade et les liens de soutien.

Introduction

Older adults have a high chronic disease risk including diabetes and cardiovascular conditions (Fiest et al., 2011; Halter et al., 2014). Some risk factors, such as age, cannot be changed; others are modifiable. Specifically, engaging in health promoting behaviours like healthy nutrition and physical activity reduces chronic disease risk, helps manage chronic disease, and improves quality of life (Biddle et al., 2000; Blanchflower et al., 2013; Govindaraju et al., 2018; He et al., 2006). Yet, many older adults do not consume sufficient fruit and vegetables, and they engage in too little physical activity (Colley et al., 2011; Riediger & Moghadasian, 2008). These two health behaviours became even more challenging for older adults during the pandemic (e.g. limited access to recreational centres and a need to be extra cautious about in person contact as is the case in supermarkets due to an elevated risk of complications from COVID-19; Applegate & Ouslander, 2020; Carr, 2021; Flanagan et al., 2021; Ruiz et al., 2021). Nonetheless, social

resources, including social support or assistance from a network member, have been associated with increased health behaviours (Berli et al., 2021; Bloom et al., 2017a; Rugel & Carpiano, 2015). Thus, it was important to investigate social support for health behaviours in older adults during the pandemic. Doing so using daily diary methodology generates ecologically valid evidence on the health promoting role of social support by capturing the underlying processes as they occur in older adults' everyday lives.

Everyday social support for health behaviours

There is an increasing recognition that health behaviours occur in a social context and that they are shaped by social others (Conklin et al., 2014; Khan et al., 2013; Martire et al., 2013; Pietromonaco & Collins, 2017). For example, many people find it more enjoyable to share a meal with a partner or go on a walk with a friend than engaging in these behaviours alone (Chong et al., 2014; Fulkerson et al., 2014). However, the pandemic created barriers to doing so. Evidence shows that physical activity went down and sedentary time went up relative to prepandemic times (Flanagan et al., 2021; Ruiz et al., 2021). Although social distancing changed the way people interacted during the pandemic, social relationships continued to be an important source of joy and comfort (Whitehead & Torossian, 2021). Social support may have been a key factor for overcoming barriers to health behaviours. For instance, an older adult with an adult child may have asked them to help with grocery shopping to avoid exposure to the virus. Or, an older adult may have asked a friend to go on a socially distant, joint walk to be physically active without risking exposure to the virus.

Social support has been associated with higher fruit and vegetable consumption, a key aspect of a healthy diet, in older adults prepandemic using cross-sectional, longitudinal, as well as daily diary methodologies (Bloom et al., 2017a; Reyes Fernández et al., 2015; Romero-Ortuno et al., 2011; Rugel & Carpiano, 2015; Shaikh et al., 2008). Social support can take different forms, including instrumental (e.g., hands-on, tangible support) and emotional support (e.g., encouragement; Barrera, 1986; Coyne & DeLongis, 1986). Instrumental social support has been positively associated with elevated consumption of fruit and vegetables; older adults may have more access to fruit and vegetables if receiving tangible support, for instance through support with grocery shopping or cooking (Bloom et al., 2017; Stephens et al., 2013). Emotional support, which can involve behaviours such as appreciating one's efforts to maintain a healthy diet, has also been found to be associated with higher engagement in this health behaviour (Vesnaver & Keller, 2011). A review of over 35 studies, the majority cross-sectional, found that general social support, including emotional encouragement, was one of the strongest psychosocial predictors of fruit and vegetable intake (Shaikh et al., 2008). Longitudinally, emotional and instrumental support have also been associated with a low-fat diet over a 12-month period (Scholz et al., 2013). Finally, a daily diary study with 129 heterosexual older adult couples living with diabetes found that a combination of different types of support (including general emotional and instrumental) was associated with increases in adherence to a healthy diet. Specifically, on days when spouses provided more support than usual, individuals living with diabetes better adhered to a healthy diet that day than the prior day (Stephens et al., 2013).

More social support has also been associated with more physical activity, defined as bodily movement requiring energy expenditure (Berli et al., 2018; Khan et al., 2013; Martire et al., 2013; World Health Organization, 2022). Many studies focusing on physical activity target moderate to vigorous physical activity using activity monitors or self-reported questionnaires (Craig et al., 2003; Rodrigues et al., 2022; Schrack et al., 2016). Given that older adults engage in relatively less vigorous physical activity (and in more leisure time physical activity; Davis & Fox, 2007), it has been proposed that steps may be better suited to quantify physical activity in this age group (Grimm et al., 2012). A review of 27 papers revealed that both more emotional and more instrumental support were associated with more physical activity levels in healthy, older adults, though the support was not assessed in a health behaviour-specific way (Lindsay Smith et al., 2017). Daily diary studies with young adult samples show that on days when more general support (using composites of emotional and tangible support) was reported, more minutes of accelerometry-based physical activity were recorded (Berli et al., 2018, 2021). Finally, specific to older adults, a daily diary study with 70 older adults living with the effects of diabetes and their partners found that when participants received high levels of general support from their partners, energy expenditure measured via activity monitors was higher on the following day (Khan et al., 2013).

Sources of social support for health behaviours

Most research on social support in adulthood focuses on support from spouses (Berli et al., 2018; DeLongis et al., 2004; Franks et al., 2006; Martire et al., 2013; Rook & Ituarte, 1999; Stephens et al., 2013). Certainly, spouses often are the first line of defence; however, it may be important to investigate the extent to which social support findings from spouses generalize to other close relationship types. This is important given that social relationships in old age are diverse for a variety of reasons including that some older adults do not (or no longer) have a spouse to turn to (Brown & Lin, 2012; Rook & Charles, 2017). There is also significant evidence that nonkin ties are important sources of social support for older adults (Blieszner, 2009; Suanet et al., 2013).

In line with tenets from the Convoy Model which posits that individuals move through life surrounded by a convoy of social relationships of varying closeness that could provide support, we assume that social support can come from different types of relationships (Antonucci et al., 2014; Antonucci & Akiyama, 1987). There is evidence to suggest that support from friends and family can both benefit health behaviours (Conklin et al., 2014; Lindsay Smith et al., 2017). In fact, it may be more important to consider the quality of support than the type of relationship it is coming from. Doing so opens the door to a broader range of possible support partners. The present study builds on this literature and extends it by recruiting older adults with a close other not limiting close others to any particular relationship type (e.g. spouses, friends, siblings, grandchild); we take into account the possible moderating role of type of dyad on support – health behaviour associations.

Present study

The present study shed light on how older adults may benefit from instrumental and emotional support for two health behaviours during times of challenge. Specifically, we asked participants about their instrumental and emotional support for both health behaviours. This level of granularity allows us to apply findings specifically to the two targeted health behaviours. Furthermore, daily questionnaires allowed us to capture processes as they occurred in individuals' own environments, maximizing ecological validity and speaking to what distinguished a good day from a bad day (Bolger

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et al., 2003; Hoppmann & Riediger, 2009). We expected that on days when older adults reported receiving more health-behaviour-specific emotional and instrumental support, more fruit and vegetables were consumed, and more daily steps taken. Likewise, we hypothesized that more overall health-behaviour-specific emotional and instrumental support would be positively associated with overall levels of fruit and vegetable intake and step counts across the study period. We also examined the role of dyad type on health behaviours exploring if the expected time-varying associations between social support and health behaviours would differ by type of dyad (e.g., spouses and nonspouses). Finally, we also took into consideration the day of study, both partners' age and gender (Inglehart, 2002; Zacher & Rudolph, 2021) as well as changing pandemic circumstances (participation date).

Methods

This study was part of a larger project 'Allies in Health during COVID-19' (Zambrano Garza et al., 2024, Zambrano Garza et al., accepted). The study examined older adults' socio-motivational resources for health behaviours and well-being during the pandemic.

Participants

The sample consisted of 136 Canadian older adults (M_{age} = 71.39 years, *SD* = 5.15 range: 63–87, 87% White, 52% women, 71% some university education) who participated with a close other of their choice (study partner: *M* = 61.42 years, *SD* = 16.96, range: 18–84 years, 83% White, 72% women, 71% some university education). Most study partners were spouses but about a third of the sample was not (81 spouses, 18 friends, 7 siblings, 11 parent-child, 4 grandparent-grandchild, 14 other family member, 1 other). Participants were recruited using online platforms and social media (e.g., Craigslist). Senior and community organizations (e.g., community centres, libraries) across Canada helped disseminate study information. Advertisement materials included a link to the study's website with more information and the laboratory's phone number. Participants had to be able to communicate verbally, read newspaper-sized print, and have access to a computer or mobile device with internet connection. Close others needed to be 18 years or older, invested in the participant's health, close to the participant, and a potential source of support. Participation was contingent on the participation of the study partner due to the focus on social relationships. A total of 261 individuals reached out to the laboratory expressing interest in the study. Because the study was dyadic in nature, we needed to schedule information calls and screen not just the individual who had made first contact, but also their potential study partner, as per our ethics protocol. Consequently, the number of individuals screened exceeded the number of individuals reaching out. The most common reasons for non-participation (*N* = 110) were lack of an eligible partner, time constraints of either the older adult or their study partner, or inability to schedule a phone screening. This process resulted in 151 dyads composed of 302 individuals who were both interested in participating and eligible. Of these 151 dyads, seven dyads were scheduled but withdrew before participation due to time constraints. Of the 144 dyads who started the study, one dyad did not finish the baseline questionnaire and another dyad did not start the daily diary period. Two dyads did not report their age and were therefore excluded from analyses (due to the focus on older adults), resulting in 140 dyads. As this article targeted older adults, if both dyad members were over 65 years old, one of them was randomly excluded. We then excluded participants who submitted 1 daily diary or less (*n* = 1) and who did not have data on measures central to the current study (*n* = 3), leaving us with 136 individuals. For the physical activity models, 3 participants were excluded due to missing outcome data. If participants were missing data for control variables, they were estimated using the mean (one observation for partner's age) or median for binary variables (73 instances for missing data on whether activity monitor was used to report step counts and 2 for university education). Each participant received a $50 Amazon gift card as a token of appreciation. The study received approval by the Behavioural Research Ethics Board at the University of British Columbia, Vancouver, Canada (H20-01645), and participants provided informed consent prior to commencing the study.

Procedures

The study was conducted between June 2020 and June 2021. After a phone screening, dyads participated in a Zoom meeting with a research assistant who introduced the study details and trained them on study procedures including how to determine portion sizes (e.g., one serving of fruit being half a cup). After this meeting, participants were asked to provide information about their background, social relationships, individual difference measures, health, and well-being in an online questionnaire. After both study partners completed this questionnaire, they simultaneously started the repeated daily life assessment component of this study. Participants completed two online questionnaires per day, one in the morning and one in the evening, for up to 10 consecutive days. For the purpose of this study, only the evening questionnaires are used which is when the targeted constructs were assessed. The final sample completed an average of 92.6% of their evening questionnaires (*SD* = 1.46, range: 2–10).

Measures

Emotional support. Every evening, participants answered "To what extent did your study partner show appreciation for your efforts to stay on track with eating fruit and veggies today?" on a scale of 0 ("not at all") to 100 ("very much") and "To what extent did your study partner show appreciation for your efforts to stay on track with being physically active today?" on a scale of 0 ("not at all") to 100 ("very much").

Instrumental support. Every evening, participants answered "To what extent did your study partner do something to help you stay on track with eating fruit and veggies today?" on a scale of 0 ("not at all") to 100 ("very much") and "To what extent did your study partner do something to help you stay on track with being physically active today?" on a scale of 0 ("not at all") to 100 ("very much").

Servings of fruit and vegetables. Every evening, participants reported how many servings of fruit and vegetables they consumed that day.

Daily steps. Every evening, participants reported how many steps they took that day. If participants owned a smartphone or fitness tracking device, they were asked to report this number at the end of the day. If they did not own one (65%), they were asked to estimate their steps, with the example of a brisk walk being about 100 steps/minute (Tudor-Locke et al., 2018). Datapoints

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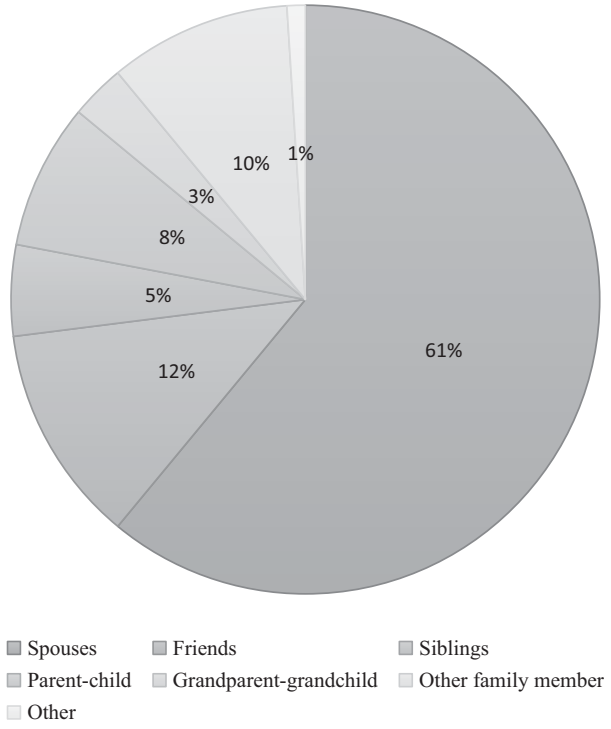

Figure 1. Dyad types within the sample by percentages.

representing less than 300 steps per day were excluded (Tudor-Locke et al., 2013).

Dyad type. Participants were asked to indicate their relationship with their study partner. Most dyads were spouses (81 dyads, Figure 1); a dyad variable was created based on whether study partners were spouses (1) or not (0).

Covariates. Gender (0 = man, 1 = woman) and age of both dyad members, day of study, and start date to account for time-varying COVID-19 restrictions. For the physical activity models, we also included whether the participant's step count came from a smartphone or fitness watch (0 = no, 1 = yes) and participants' self-rated health.[1,2,3]

Statistical analyses

Due to the hierarchically nested nature of the data, data were modelled at two levels: day and person. We examined the origins of variability for fruit and vegetable consumption (30% at the day and 70% at the person level) as well as steps (49% at the day level and 51% at the person level). For all analyses, age was grand-mean centred. Gender, dyad type, and step count source were dichotomous variables. Participation start date was centred to the study start date (range 0–366). All day-level variables were separated into within-person effects (person-centred) and between-person effects (grand-mean centred person means). Within-person effects (e.g., participant reported daily emotional support) capture intraindividual differences whereas between-person effects (e.g., overall emotional support) examine interindividual differences. Due to differences in scales in predictors and outcome for the fruit and vegetable models, support variables were rescaled for the models (divided by 10). Multilevel models using restricted maximum likelihood estimation were used. Models included a random intercept and random slopes for day-level support variables (emotional support within-person and instrumental support within-person). A simulation-based power analysis (Arend & Schäfer, 2019) indicated our sample size allowed us to detect small main effects at Level 1 (minimum detectable effect size (MDES) = .13; see Table 5 in Arend & Schäfer, 2019), Level 2 (MDES = .36; see Table 6 in Arend & Schäfer, 2019), and cross-level interactions based on medium random slope variance (MDES = .91; see Table 7 in Arend & Schäfer, 2019) with 80% power. We used R package lme4 (Bates et al., 2015; see supplemental materials for code).

Results

Descriptive statistics and correlations

Table 1 shows descriptive statistics and Tables 2 and 3 show correlations between the main study variables and daily fruit and vegetable consumption as well as daily steps. Emotional support for fruit and vegetable consumption had an average of 26.78 (*SD* = 35.95), for physical activity the average was 26.90 (*SD* = 35.02). Instrumental support for fruit and vegetable consumption had an average of 24.33 (*SD* = 34.58) whereas for physical activity the average was 22.56 (*SD* = 33.44). When differentiating between dyad types (Table 1S), emotional support for fruit and vegetable consumption in spouses had an average endorsement of 33.31 (*SD* = 37.82); for nonspouses, it was 16.71 (*SD* = 30.23), and instrumental support for fruit and vegetables in spouses had an average 32.42

Table 1. Means and standard deviations.

Variable	*M*	*SD*
1. Actor's age	71.39	5.15
2. Partner's age	61.42	16.96
3. Actor women	51%	
4. Partner women	72%	
5. Dyad (0 = nonspouse; 1 = spouse)	61%	
6. Day of study	5.43	2.86
7. Start day	168.92	95.90
8. Health	3.66	0.86
9. Emotional support for fruit and vegetable servings	26.78	35.95
10. Instrumental support for fruit and vegetable servings	24.33	34.58
11. Fruit and vegetables servings	5.46	2.61
12. Emotional support for physical activity	26.90	35.02
13. Instrumental support for physical activity	22.56	33.44
14. Daily steps	6446.81	4635.91
15. Step count source (0 = self-reported; 1= smartphone/fitness watch)	36%	

[1]Most participants had high intentions at baseline to engage in health behaviours (engage in physical activity: *M* = 4.33, eat several fruit and vegetables servings: *M* = 4.21, scale 1-5) and including morning intentions for engagement in the health behaviours as covariates did not change results reported.

[2]Including daily number of minutes spent interacting with study partners as covariates did not change results reported.

[3]Including SES as a covariate did not change results reported.

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Table 2. Correlations with fruit and vegetable consumption (N = 136)

Variable	1	2	3	4	5	6	7	8	9
1. Actor's age									
2. Partner's age	.30**								
3. Actor women	.00	−.01							
4. Partner women	−.17**	−.13**	−.42**						
5. Dyad (0 = nonspouse; 1 = spouse)	.04	.54**	−.47**	−.17**					
6. Day of study	−.00	.02	−.00	−.01	.02				
7. Start day	−.04	−.03	−.02	.08**	−.09**	−.02			
8. Emotional support	.04	.09**	−.08**	−.15**	.23**	−.07*	−.08**		
9. Instrumental support	.02	.12**	−.19**	−.02	.29**	−.04	−.06	.62**	
10. Fruit and vegetables servings	−.08**	.16**	.04	−.04	.09**	.03	−.03	.21**	.15**

Note: M and SD are used to represent mean and standard deviation, respectively. *indicates p <.05. **indicates p <.01.

Table 3. Correlations with self-reported physical activity (N = 133)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Actor's age											
2. Partner's age	.30**										
3. Actor women	.00	−.01									
4. Partner women	−.17**	−.13**	−.42**								
5. Dyad (0 = nonspouse; 1 = spouse)	.04	.54**	−.47**	−.17**							
6. Day of study	−.00	.02	−.00	−.01	.02						
7. Start day	−.04	−.03	−.02	.08**	−.09**	−.02					
8. Health	−.12**	.08**	.01	−.10**	.13**	.02	.02				
9. Emotional support	.04	.09**	−.10**	−.06	.18**	−.10**	−.04	.14**			
10. Instrumental support	.01	.09**	−.09**	−.04	.20**	−.07*	−.07*	.12**	.61**		
11. Daily steps	−.18**	.09**	−.14**	.08*	.11**	−.07*	−.13**	.29**	.21**	.19**	
12. Step count source (0 = self-reported; 1 = smartphone/fitness watch)	.09**	−.05	.00	−.03	−.07*	.00	.07*	−.14**	−.14**	−.13**	−.18**

Note: M and SD are used to represent mean and standard deviation, respectively. *indicates p <.05. **indicates p <.01

(SD = 37.59); for nonspouses, it was 11.60 (SD = 24.37). For physical activity, emotional support in spouses had an average score of 31.92 (SD = 36.10) and in nonspouses it was 18.93 (SD = 31.68).[4] Further descriptives are reported in Table 1S in the Supplemental Document, including dyad types and gender differences. On average, participants reported eating 5.46 servings of fruits and vegetables per day (SD = 2.61, range: 0–18). On average, participants reported taking 6,446.81 steps per day (SD = 4,635.91, range: 300–27,884[5]). Participants had an average self-rated health of 3.66 (range: lowest 1–5 highest).

Table 2 and 3 show intercorrelations. Older participants reported eating fewer fruit and vegetables (r = −.08, p < .01). Individuals with older study partners consumed more fruits and vegetables (r = .16, p < .01) and received more emotional support (r = .09, p < .01) and instrumental support (r = .12, p < .01) for their fruit and vegetable consumption. Individuals who received more emotional (r = .21, p < .01) and instrumental (r = .15, p < .01) support for fruit and vegetable consumption reported more fruit and vegetable servings. Women reported receiving less emotional support (for fruit and vegetables: r = −.08, p < .01, for physical activity: r = −.10, p < .01) and instrumental support (for fruit and vegetables: r = −.19, p < .01, for physical activity: r = −.09, p < .01). For physical activity, older participants took fewer daily steps (r = −.18, p < .01) and had lower self-rated health (r = −.12, p < .01); individuals with an older partner received more emotional (r = .09, p < .01), and instrumental (r = .09, p < .01) support. More daily steps were reported when more support was reported (emotional; r = .21, p < .01; instrumental; r = .19, p < .01). Dyad type (0 = nonspouse, 1= spouse) was significantly correlated with the main study variables in such a way that study partners who were spouses were perceived as providing more emotional and instrumental support (fruit and vegetable consumption: emotional; r = .23, p < .01; instrumental; r = .29, p < .01, daily steps: emotional; r = .18, p < .01; instrumental; r = .20, p < .01) than study partners who were not spouses. Also, participating with a spouse was positively associated with both health

[4]Welch's t-tests revealed significant differences across both types of support for both types of health behaviors for spouses and nonspouses, suggesting these groups differ.

[5]We also ran models excluding those 2 standard deviations above the mean (965 observations, 43 were excluded) results remain the same.

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Table 4. Results from multilevel models: support for daily fruit and vegetable consumption (N = 136, n = 1202)

	Model A Estimates (CI)	Model B Estimates (CI)
Intercept	6.33 (4.17 – 8.50) **	5.99 (3.75 – 8.22) **
Age actor	−0.08 (−0.16 – −0.01) *	−0.08 (−0.16 – −0.00) *
Age partner	0.04 (0.01 – 0.07) *	0.03 (0.00 – 0.06) *
Women actor	0.16 (−0.91 – 1.22)	0.08 (−1.01 – 1.17)
Women partner	−0.17 (−1.22 – 0.87)	−0.28 (−1.33 – 0.77)
Daily emotional support	0.07 (0.01 – 0.12) *	0.04 (−0.06 – 0.14)
Overall emotional support	0.02 (0.00 – 0.04) *	0.01 (−0.03 – 0.05)
Daily instrumental support	0.02 (−0.03 – 0.06)	−0.01 (−0.10 – 0.08)
Overall instrumental support	0.00 (−0.02 – 0.02)	−0.01 (−0.07 – 0.04)
Dyad	0.54 (−0.73 – 1.80)	−0.17 (−1.55 – 1.20)
Day of study	0.02 (−0.01 – 0.05)	0.02 (−0.01 – 0.05)
Start day	−0.00 (−0.00 – 0.00)	0.00 (−0.00 – 0.00)
Daily emotional support*Dyad		0.04 (−0.08 – 0.16)
Daily instrumental support*Dyad		0.04 (−0.07 – 0.14)
Overall emotional support*Dyad		0.02 (−0.03 – 0.06)
Overall instrumental support*Dyad		0.02 (−0.04 – 0.08)
Random effects		
σ^2 Residual	1.89	1.89
τ_{00} Individual intercept	4.51	4.46
τ_{11} Individual daily emotional support slope	0.02	0.02
τ_{11} Individual daily instrumental support slope	0.00	0.00
Marginal R^2 / conditional R^2	0.107 / 0.741	0.126 / 0.745

Note. *p<.05; **p<.01.

behaviours (fruit and vegetable consumption: r = .08, p < .01, steps: r = .11, p < .01).

Social support for health behaviours

To examine the predicted associations between social support and fruit and vegetable consumption, we modelled our outcome using participant age and gender, study partner age and gender, participant reported daily emotional support, overall emotional support, participant reported daily instrumental support, overall instrumental support, dyad type, day of study, and start day as predictors (Table 4, *Model A*). At the within-person level and in line with expectations, participants consumed more fruit and vegetables on days when their emotional support was higher than usual (b = .07, p = .013). At the between-person level, those participants who overall reported consuming more fruit and vegetables also reported receiving more emotional support (b = .02, p = .048). No similar effects were found for instrumental support. Participant (b = -.08, p = .035) and study partner age (b = .04, p = .010) were also significantly associated with fruit and vegetable consumption in opposite directions.

Parallel models were conducted for step counts. Specifically, to analyse associations with daily steps, we modelled our outcome using participant age and gender, partner age and gender, participant reported daily emotional support, overall emotional support, participant reported daily instrumental support, overall instrumental support, dyad type, day of study, and start day, step count source (whether it came from a smartphone/fitness watch or was calculated by the participant), and self-rated health (Table 5, *Model C*). Participants reported taking more daily steps on days when emotional support for physical activity (b = 145.99, p = .007) and instrumental support was up (b = 117.29, p = .023). Self-reported health (b = 1420.57, p < .001), participant age (b = −170.23, p = .002), partner age (b = 57.46, p = .006), participant gender (b = −2080.75, p = .007), dyad type (b = 1937.53, p = .032), day of study (b = −104.24, p = .003),[6] and start day (b = −7.91, p = .004) were also significant predictors of daily step counts.

Sources of social support for health behaviours

We also explored whether dyad type moderated the association between social support and health behaviours by modelling interaction effects (Table 4, *Model B* and Table 5, *Model D*). There was no moderating effect of type of dyad on time-varying or inter-individual differences in support – fruit-and-vegetable consumption links. Similar null findings emerged when examining additional ways of distinguishing dyads (living together versus not, kin versus not, or same-gender partners versus not).

For physical activity, there also was no moderating effect of type of dyad either. Similar to the fruit and vegetable consumption models, when examining different types of dyads (living together versus not, kin versus not, or same-gender partners versus not), no significant interactions emerged.

Discussion

The present study examined the role of everyday emotional and instrumental support as well as its source (i.e., the type of relationship individuals received support from) for two key health behaviours using up to 10 days of daily diary reports from a sample of 136 older adults. Consistent with previous studies, both types of support were positively correlated with fruit and vegetable consumption as well as step counts (Berli et al., 2018; Bloom et al., 2017). Our multilevel models paint a differentiated picture. Specifically, daily and overall emotional support were significantly associated with daily fruit and vegetable consumption whereas only daily, but not overall levels of emotional and instrumental support were positively associated with daily step counts. There were no significant moderating effects for dyad type and support on the targeted health behaviours.

[6]We also ran models that controlled for temporal autocorrelation and lagged effects and there were no differences from our reported results.

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Table 5. Results from multilevel models: support for daily steps (N = 133, n = 1101)

	Model C Estimates (CI)	Model D Estimates (CI)
Intercept	11924.51 (8894.27–14954.75)**	11901.60 (8844.26–14958.94)**
Age actor	−170.23 (−280.38 – −60.08)**	−171.37 (−282.51 – −60.24)**
Age partner	57.46 (16.69 – 98.23)**	57.60 (16.50 – 98.69) **
Women actor	−2080.75 (−3595.57 – −565.93)**	−2105.86 (−3645.35 – −566.36)**
Women partner	−41.84 (−1477.48 – 1393.81)	−50.64 (−1512.78 – 1411.50)
Daily emotional support	145.99 (40.57 – 251.41)*	100.46 (−79.69 – 280.62)
Overall emotional support	16.41 (−11.85 – 44.66)	17.13 (−32.92 – 67.18)
Daily instrumental support	117.29 (16.09 – 218.48)*	30.06 (−170.38 – 230.50)
Overall instrumental support	8.27 (−23.21 – 39.76)	2.55 (−53.61 – 58.70)
Step count source (1 = device)	−905.87 (−1701.14 – −110.61)*	−881.47 (−1681.38 – −81.57) *
Health	1420.57 (799.52 – 2041.63)**	1416.56 (789.93 – 2043.19)**
Dyad	1937.53 (170.32 – 3704.74)*	−1931.79 (−3717.69 – −145.89)*
Day of study	−104.24 (−172.38 – −36.11)**	−104.35 (−172.64 – −36.05)**
Start day	−7.91 (−13.34 – −2.47)**	−7.86 (−13.39 – −2.32)**
Daily emotional support*Dyad		73.40 (−148.37 – 295.18)
Daily instrumental support*Dyad		113.19 (−119.12 – 345.51)
Overall emotional support*Dyad		−0.13 (−61.07 – 60.81)
Overall instrumental support*Dyad		8.24 (−60.01 – 76.49)
Random effects		
σ^2 Residual	9736582.92	9750317.27
τ_{00} Individual intercept	7389196.18	7528642.60
τ_{11} Individual daily emotional support slope	40132.09	40574.30
τ_{11} Individual daily instrumental support slope	29206.62	29682.25
Marginal R^2 /conditional R^2	0.204 / 0.558	0.204 / 0.561

Note. *p<.05; **p<.0.

Social support for health behaviours

Consistent with our hypotheses, daily and overall emotional support were positively associated with fruit and vegetable consumption, but the predicted associations for instrumental support were not significant. In other words, findings suggest that on days when individuals reported more emotional support than usual, they also consumed more fruit and vegetables. Similarly, individuals who reported receiving more overall emotional support were found to have consumed more fruit and vegetables during time in study. A possible reason for this might be that instrumental support may be so engrained in older adults' daily life that it is no longer noticed. For example, in traditional marriages it might be the case that one partner is primarily responsible for buying groceries and cooking meals and that this form of instrumental support goes by unnoticed (Bloom et al., 2017; Hughes et al., 2004).

Daily emotional and instrumental support were significantly associated with step counts, but interindividual differences in support were not. This suggests that for daily step counts, what seems to matter most is how much support that person perceives on a given day in relation to their usual levels of support. This is consistent with other research which found that the lion's share of variability in physical activity is at the day level and that daily support is positively associated with daily physical activity (Berli et al., 2018; Broen et al., 2023; Khan et al., 2013). It is possible that the pandemic affected most people's physical activity in a similar way reducing variability between participants. Finally, it must be noted that although some participants reported their steps using physical activity tracking devices, the majority of the sample self-reported their physical activity.

It is important to consider why results differ across the two health behaviours; intra- and interindividual differences in emotional support were positively associated with daily fruit and vegetable intake whereas only time-varying associations emerged for social support-step count associations. This difference might arise from the COVID-19 pandemic, as public health mandates might have restricted physical activity more than healthy eating due to closures of recreation facilities. Essential businesses like food outlets remained open, thus highlighting the daily support received for this health behaviour (Larson et al., 2021).[7] Furthermore, another possible reason may be individuals' levels of health literacy, how they interpret each behaviour, and consequently,

[7]Indeed, follow-up analyses from t-tests comparing physical activity levels and levels of fruit and vegetable consumption before the pandemic and during

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the support they provide (Geboers et al., 2014). For example, fruit and vegetable consumption might be seen as a healthy behaviour, whereas daily steps might be seen as routine and therefore elicit no praise.

Sources of social support for health behaviours

Moderating effects of dyad type on health behaviours were not significant in our sample. Although this study built on past research examining social support for health behaviours by expanding the source of support beyond the spouse (Berli et al., 2018, 2021; Franks et al., 2006; Garay-Sevilla et al., 1995; Khan et al., 2013; Martire et al., 2013; Rook & Ituarte, 1999; Stephens et al., 2013), it is important to note that we did not have equal numbers of participants across different dyad types and that the levels of support reported significantly differed, which may affect power and thus our ability to detect an effect in those that did not participate with a spouse. Future studies should aim for equal representations of targeted types of relationships to be able to reliably tease apart potential group differences. Additionally, the literature suggests points to gender differences (e.g., for men the spouse is often the primary source of support, whereas for women social support comes from different relationship partners; Fuhrer & Stansfeld, 2002). In our sample, there were interesting gender differences in support depending on the actor and partner, but again, there were differences in the proportions of these groups. If gender is of interest, equal representation of gender of actors and partners should be a priority to be able to meaningfully tease apart these associations.

Strengths, limitations, and future directions

Although our study sheds light on positive associations between social support and health behaviours, we did not assess if social support was appreciated or needed. Future studies could include questions for participants regarding their feelings towards the support received. This could shed light on the usefulness of the support received while also considering if individuals actually appreciate and welcome this support, as it might be perceived as less sensitive by certain partners or could kindle relationship tensions (Rook & Charles, 2017).

We were able to distinguish between emotional support and instrumental support, but each support type was measured with only one item.[8] Further, we analysed interindividual differences with averages from instances of support reported across study days, it is important to highlight that frequencies and averages yield distinct insights. Future studies could implement experience-sampling methodology to analyse support transactions as they occur and take into account not only the nature of the support exchange but also how often it occurs.

Finally, although findings differ, we were able to conduct parallel analyses of two important health behaviours: fruit and vegetable consumption and physical activity. This was done using daily life assessments that have high ecological validity as they allow us to capture life as it is lived. Of note, measurements were based on self-reports and the majority of participants estimated their steps. This inherent weakness can be tackled in future studies by asking participants to take pictures of their food and to wear activity monitors for more objective measures.

[8]Findings did not differ when running analyses with a combined measure (both types of support averaged).

Conclusion

Older adults do not always eat healthily or engage in sufficient physical activity, core health behaviours known to lower chronic disease risk and managing existing conditions. The COVID-19 pandemic exacerbated existing challenges and created new ones. Social support has been shown to be an avenue to promote health behaviours, but most past research focuses on spouses (Berli et al., 2018, 2021; Khan et al., 2013; Martire et al., 2013; Stephens et al., 2013). It is important to consider different sources of social support as older adults' networks may be diverse (i.e., due to divorce or death); an improved understanding of support for these important health behaviours can help raise public awareness on the importance of social support and help community-based initiatives create campaigns that might benefit older individuals by incorporating and highlighting the influence of close relationships. This study examined two types of social support, emotional and instrumental support, as well as its links with two health behaviours, daily fruit and vegetable intake and step counts. Our results corroborate existing research by showing that emotional and instrumental support are positively associated with health behaviours. It is our hope that these initial findings on spousal and nonspousal dyads can be extended to shed more light on different sources of support that have the capacity to improve older adults' well-being and health.

Supplementary material. The supplementary material for this article can be found at http://doi.org/10.1017/S0714980824000412.

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