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Original Research Report

Is Available Support Always Helpful for Older Adults? Exploring the Buffering Effects of State and Trait Social Support

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Abstract

Objectives. Associations between social support and health are studied since decades. Yet, little is known about how they vary by state versus trait aspects of support and by adult age. At trait and state level, the current study investigates direct associations between social support and health and whether support buffers the daily negative affect (NA)-health association in 2 age groups.

Method. Seventy-nine younger and 88 older adults (OA) participated in 20 daily assessments of NA, health complaints (HC), and available support. On trait and state levels, 3 support facets—emotional, informational, and instrumental—were distinguished; social integration was assessed on the trait level.

Results. For OA, trait emotional support was associated with fewer HC. In both age groups, state informational support was related to more daily HC. Social integration buffered the daily NA-health association in younger adults (YA), whereas informational support amplified the same association in OA.

Discussion. We propose that 2 different mechanisms are relevant for younger and OA and at state and trait level. Although emotional support may be a resource for OA, informational support may enhance their daily complaints. YA seem to benefit from being socially integrated.

Key Words: Aging—Buffering—Day-to-day relations—Health—Social support.

In a population growing older, health-promoting resources, such as social support, are of increasing importance. As described in the main effects and stress-buffering mechanisms by Cohen and Wills (1985), social support is known to be directly and positively related to various health outcomes and to buffer adverse effects (e.g., stress) on health. In research on the social support—health link available social support is mostly investigated as a *trait*, that is, as a stable characteristic of a person (e.g., Uchino, 2009), and not as a *state*, that is, as an attribute that varies within individuals across contexts and time (e.g., Kim & Nesselroade, 2003; Lang, Featherman, & Nesselroade, 1997). Nesselroade (1991, 2001) argued that comprehensive descriptions of individuals not only require mean levels but also intraindividual variability of constructs. While some aspects of support, like social integration,

may be more trait-like (i.e., unlikely show short-term fluctuations), other aspects likely show state-like properties (e.g., whether emotional support is currently available).

Despite these short-term fluctuations, the link between support and health may change in the course of normal aging over several years or decades. Social relationships develop across the entire life span (Uchino, 2009). Beginning in childhood, support from a variety of relationships (parents, friends, partners, and so forth) helps to develop individual characteristics such as control beliefs, self-esteem, and the perceived availability of support. These characteristics in turn influence health behaviors and coping strategies that are relevant for health outcomes. The life-span perspective promotes the view that social support may be differentially related to health in different age groups as individuals experience change and variability over time (Nesselroade, 2001; Staudinger & Pasupathi, 2000).

In the present study, we empirically investigated both trait and state aspects of available social support. Specifically, we examined how different kinds of trait and state support are related to self-reported health in younger adults (YA) and older adults (OA). We investigated kinds of support that are commonly distinguished in the literature: *emotional support* (e.g., having someone to talk about problems), *instrumental support* (e.g., having someone who gives you a ride), and *informational support* (e.g., having someone who gives advice). *Social integration* captures the availability and size of one's network. As illustrated in Figure 1, we investigated direct associations between social support and health, and whether trait and state support dampens the within-person link between negative affect (NA) and health in YA and OA.

Social Support and Health

Whether social support is available to individuals or not makes a difference on a number of health outcomes. However, social support should be differentiated in *available* and *received* support (Uchino, 2009). Although *received* support (i.e., reports of supportive acts received from family or friends) is characterized as a "double-edged sword" showing mixed results (Revenson, Schiaffino, Deborah Majerovitz, & Gibofsky, 1991, p. 807), *available* social support (i.e., whether a person has someone who is able to provide support) is consistently related to better health outcomes. The stress-buffering model proposes that social support unfolds its beneficial effect via direct and buffering effects (Cohen & Wills, 1985). There is empirical evidence for both pathways: Available social support influences directly health or physiological functioning (for an overview, see Berkman, 2000; Cohen, 2004; Fauth, Gerstorf, Ram, & Malmberg, 2012; House, Landis, & Umberson, 2003; Uchino, 2006) and it seems to buffer (i.e., to dampen) age-related declines in physical health, associations between stressors and depressive symptoms, blood pressure, or inflammatory processes (Birditt, Newton, & Hope, 2014; Hashimoto, Kurita, Haratani, Fujii, & Ishibashi, 1999; Lachman & Agrigoroaei, 2010; Mezuk, Roux, & Seeman, 2010).

Differential Effects of Trait Versus State Social Support

Social support is mostly investigated as a stable characteristic of a person and measured once (e.g., Affleck, Tennen, Urrows, & Higgins, 1994; Ong & Allaire, 2005). Studies on daily fluctuations of support are mainly limited to received support (e.g., Gleason, Iida, Bolger, & Shrout, 2003; Scholz, Kliegel, & Luszczynska, 2012). So far, only few studies have investigated such fluctuations in *available* support showing similar positive direct associations with fluctuations in self-efficacy and health as studies investigating trait support (Kim & Nesselroade, 2003; Lang et al., 1997).

Concerning buffering effects, there is evidence that trait social support dampens daily associations between NA and blood pressure (Ong & Allaire, 2005), within-day associations of perceived stress and blood pressure (Bowen et al., 2013), weekly associations between stress and disease activity in patients with rheumatoid arthritis (Zautra et al., 1998), and the lagged relation of events on subsequent day's mood (Affleck et al., 1994).

Whether state support (i.e., the momentary availability) buffers such within-person associations has not yet been investigated. It is conceivable that available support has a different meaning in day-to-day processes than in trait social support ratings. On a trait level, the general availability of support is assessed, while on state level, persons are asked whether support is available at a given moment. Persons who generally feel supported may experience situations in which no one is available and vice versa. For example, even a person with many friends and relatives may be in a situation when no one is around because of other obligations. Or, due to visiting guests on a given day, several people could be available to babysit for a person, even though this person can only name a few individuals who are generally able to provide this instrumental support. A potentially crucial difference between trait and state available support may be, however, that available support on a particular day may not necessarily be helpful (i.e., a babysitter is not needed on that particular day), whereas a generally high availability of support may function as an emotional resource and enhance self-confidence. Thus, trait social support seems to be more likely to function as a buffer than state social support.

Aging and the Social Support–Health Relationship

Most empirical studies investigating age differences in the social support–health relationship indicate that social support may play an important role for health and well-being in old age (e.g., Krause, 2005; Sherbourne, Meredith, Rogers, & Ware, 1992). This is in line with socioemotional selectivity theory, which postulates that OA are increasingly likely to select their social interactions in ways that enhance their well-being (Carstensen, Fung, & Charles, 2003). Social

support may help OA to cope with a normatively declining health status and maintain a certain level of functioning. The availability of social support may indicate successful aging in the sense that resources were successfully activated (Baltes, 1987). Specifically, regarding the different kinds of available support, OA and YA are equally likely to profit from *social integration* and *informational support*. Social integration consists of the availability of persons who are able to provide support. Available informational support may help to deal with distressing situations by having someone to ask for advice. However, OA may be more likely to benefit from available emotional support than YA, as they seem to selectively engage in social interactions that enhance their well-being (Luong, Charles, & Fingerman, 2011). Especially, if emotional support enhances self-esteem, positive outcomes, and feelings of autonomy in old age should be encouraged (Antonucci & Jackson, 1987; Krause, 1997).

In contrast to this positive view, social support can also increase awareness for health deficits and lack of autonomy, thereby having negative effects (threat-to-self-esteem model; Fisher, Nadler, & Whitcher-Alagna, 1982; Rook, Mavandadi, Sorkin, & Zettel, 2007). More so for OA, instrumental support may be understood as a threat to their autonomy and self-esteem (Wallsten, Tweed, Blazer, & George, 1999). In old age, receiving help for activities of daily life may be attributed to health or cognitive deficits rather than thought of help as a strategy to successfully cope with many different tasks or to free time and energy.

The Present Study

The current study aimed at disentangling the relationships between support and health at the trait and state level and

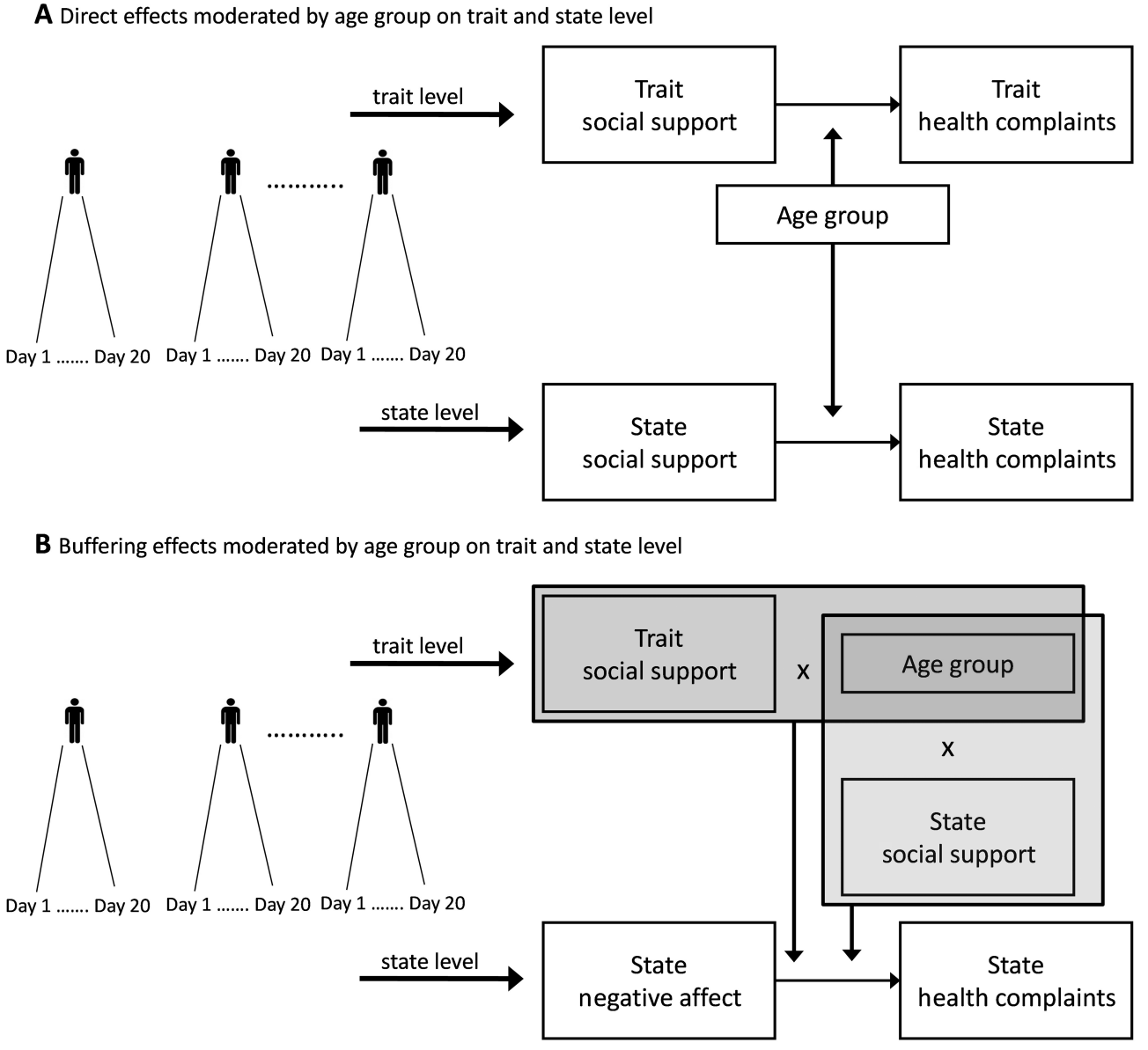

Figure 1. Illustration of the investigated direct effects (A) and buffering effects (B) on trait and state level.

in two age groups. The investigated direct and buffering effects on trait and state level moderated by age group are illustrated in Figure 1. Trait level represents between-person differences, while state level with daily assessments stands for within-person fluctuations.

Figure 1A depicts direct effects of social support on health complaints (HC) on state and trait level moderated by age group. We tested the following hypotheses for direct effects: (H1) Trait: We predicted that social integration, emotional support, and informational support will be associated with less HC, whereas instrumental support will be related to more HC. (H2) State: On the state level, our hypotheses were tentative, given the paucity of available evidence. The few empirical studies have shown positive effects of state available support on health and self-efficacy but did not assess different kinds of support. Therefore, we expected the same pattern of results for the direct effects as on the trait level. (H3) Age-group differences: Considering the special importance of positive social interactions and concerns regarding autonomy and self-esteem in old age, we hypothesize that the effects of *emotional* and *instrumental support* will be stronger in OA than in YA both, on trait and state level.

Figure 1B illustrates the buffering effects of trait and state support on the daily relationship of NA and HC moderated by age group. Persons reporting NA on one day are also more likely to report more HC on the same day and vice versa (e.g., Charles & Almeida, 2006; Leventhal, Hansell, Diefenbach, Leventhal, & Glass, 1996), primarily because (a) persons with more health symptoms are more likely to experience NA and (b) NA may draw attention to bodily perceptions and thereby increase experienced HC (cf. Gendolla, Abele, Andrei, Spurk, & Richter, 2005). Even though stress per se is not part of our study, our predictions are based on the mechanisms of the stress-buffering model (Cohen & Wills, 1985). Social support might buffer the negative consequences of NA on HC and vice versa. Social support may, for example, distract persons from their NA or be a coping strategy to enhance mood. This may reduce individuals' tendency to reflect upon their health status, and eventually lead to a lower prevalence of HC on a daily basis. For buffering effects, we had the following expectations: (H4) Trait: We expected that trait social integration and emotional support have the potential to dampen the NA–HC relationship. Trait instrumental support either will not change the daily NA–HC link or will amplify it. (H5) State: We hypothesized that state social support would not dampen the daily NA–HC relationship, as it refers to a transient experience and may be overridden by more stable beliefs about what individuals expect from their social environment. (H6) Age group differences: We predict stronger buffering effects of *emotional support* for OA than for YA on trait level, but no differences on state level.

Method

This study is part of a larger project, the COGITO Study, in which participants came to on average 101 daily assessments preceded and followed by pre- and post-testing (see Brose, Schmiedek, Lövdén, & Lindenberger, 2011; Schmiedek, Bauer, Lövdén, Brose, & Lindenberger, 2010; Schmiedek, Lövdén, & Lindenberger, 2010, for details). Two years later, participants were invited to a follow-up study. Of the original sample, 81% underwent another ten days with a repeat of the post-test, then 10 daily sessions, and finally one additional post-test session. Here, we focus on a daily questionnaire collected in the follow-up study during the 10 post-test and 10 daily assessments (i.e., 20 daily sessions).

Participants and Procedure

The sample consisted of 167 participants, 79 YA (49% women; 23–34 years) and 88 OA (51% women; 68–83 years). The 20 daily sessions were completed in about four weeks. Participants could come to the laboratory to complete their sessions daily from Monday to Saturday. The average lag between sessions was 1.6 days. At the beginning of each session, participants filled out a questionnaire about their well-being, health, social support, and other measures. Subsequently, they worked on different cognitive tasks, followed by questions on performance.

Measures

Daily questionnaires

Daily subjective health was assessed with a list of complaints. Four of these were formulated on the basis of the scales of the Giessen Subjective Complaints List, namely *headaches and limb aches*, *gastrointestinal complaints*, *cardiovascular complaints*, and *exhaustion* (Brähler, Hinz, & Scheer, 2008). In addition, *upper respiratory complaints* and symptoms of *restlessness* were included in the questionnaire. Participants were asked whether they experienced one of these complaints on that particular day and rated them on a 4-point Likert scale with 0 (*no, not at all*) to 3 (*yes, very much*). Wolff and colleagues (2012) showed that all complaints, with the exception of gastrointestinal complaints, formed a one-factor solution on the average within-person level, supporting the use of a summary score of complaints in within-person analysis. The average Cronbach's α across all 20 assessments was .64 (range: 54–71).

Daily NA was assessed with eight items derived from the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). Subjects rated how well the adjectives *distressed*, *upset*, *hostile*, *jittery*, *ashamed*, *nervous*, *irritable*, and *afraid* described their momentary mood on a 8-point scale from 0 (*does not apply at all*) to 7 (*applies very well*). The eight items were averaged to obtain one NA score. The average Cronbach's α across all 20 assessments was .89 (range: 85–92).

Daily available emotional, instrumental, and informational social support was assessed with one self-developed item, respectively. The three questions were formulated in the same way for all kinds of support, "How much emotional/informational/instrumental support is available to

you today if you would need it?" To illustrate the meaning of each kind of support examples were given. Participants rated the three items on a 5-point Likert scale with 0 (*none*) to 4 (*very much*).

Trait social support

The participants answered the German version of the Interpersonal Support Evaluation List (Cohen & Hoberman, 1983; Laireiter, 1996) with four subscales including 10 items. *Social integration* was measured with items like "I don't often get invited to do things with other people" (α = .83). *Emotional support* mainly addressed the self-esteem of the recipient (e.g., "I know someone who is proud of my achievements"; α = .73). Example items of *instrumental support* and *informational support* are "I don't know anybody who would loan me their car for a couple of hours" (α = .80) and "If I need a piece of practical advice for housekeeping, I know someone I can ask." The latter subscale included also advices concerning emotional problems (α = .85). The items were rated on a 4-point Likert scale from 0 (*does not apply at all*) to 3 (*applies very well*). Sum scores were used for analyses.

Importantly, the different kinds of support on state and trait level are measuring similar contents of support, namely: emotional, instrumental, and informational support. Social integration is assessed as a fourth trait support variable without a pendant on state level.

Data Analysis

Table 1 shows intraclass correlations (proportion of intraindividual variance to total variance) and design effects of all daily assessed variables. In accordance with Muthén and Sartorra (1995), with a design effect greater than two, a multilevel structure is appropriate, which was true for all variables. To account for the hierarchical structure of the data and to capture the day-to-day relationships, the data were analyzed with multilevel models using SAS PROC MIXED. Two levels of analysis were included, with the first level being the number of days. Stable individual characteristics, in turn, represent the second level.

Table 1. Intraclass Correlations and Design Effects of all Daily Assessed Variables

Variable	Younger adults		Older adults	
	ICC	deff	ICC	deff
Health complaints	.63	12.97	.31	6.89
Negative affect	.38	8.22	.30	6.70
State emotional support	.31	6.89	.30	6.70
State informational support	.44	9.36	.37	8.03
State instrumental support	.33	7.27	.44	9.36

Note. ICC = intraclass correlation; *deff* = design effect with *deff* = 1 + (c − 1) × ICC, with c as average cluster size (i.e., average number of daily assessments), with *deff* > 2 a multilevel analyses is appropriate.

The dependent variable in all models was the sum of the reported HC on a particular day. An autoregressive parameter accounting for the spacing of the days (i.e., the SPATIAL POWER function) and a linear trend of the HC were included in all models. Predictors on level one are the time-varying variables. NA and the different social support types were person-mean centered. To account for individual differences of intraindividual variability in these measures, the centered variables were divided by the intraindividual standard deviations for each individual (Ram & Gerstorf, 2009). The estimation of models without the correction for the individual standard deviations did not change the pattern of results.

On level two, age group and social support and the individual means of the time-varying variables were added as predictors. In all analyses, exact *p*-values are reported and values less than .05 are interpreted as significant.

In three multilevel models, the direct and buffering effects were tested including within-person moderation of the three state social support variables: *state available emotional support*, *state available informational support*, and *state available instrumental support*. In the equation, time-varying variables are denoted as state and the individual means of these variables as mean; the predictor *session* accounts for the linear trend:

$$\begin{aligned}
HC_{ij} = {} & \beta_0 + \beta_1(\text{session}_{ij}) + \beta_2(\text{age group}_i) \\
& + \beta_3(\text{NA_mean}_i) + \beta_4(\text{NA_state}_{ij}) \\
& + \beta_5(\text{support_mean}_i) + \beta_6(\text{support_state}_{ij}) \\
& + \beta_7(\text{NA_State}_{ij} \times \text{Age Group}_i) \\
& + \beta_8(\text{Support_State}_{ij} \times \text{Age Group}_i) \\
& + \beta_9(\text{Support_State}_{ij} \times \text{NA_State}_{ij}) \\
& + \beta_{10}(\text{Support_State}_{ij} \times \text{NA_State}_{ij} \times \textit{Age Group}_i) \\
& + u_{0i} + u_{1i}(\text{session}_{ij}) + u_{2i}(\text{NA_State}_{ij}) \\
& + u_{3i}(\text{support_state}_{ij}) \\
& + u_{4i}(\text{NA_State}_{ij} \times \text{Support_State}_{ij}) + r_{ij}.
\end{aligned}$$

The HC of a person *i* on occasion *j* is predicted by the following fixed effects: the intercept β_0, the linear trend β_1, age group (0 = YA and 1 = OA) β_2, the individual mean of NA β_3, the NA of person *i* on occasion *j* β_4, the individual mean of support β_5, the support of person *i* on occasion *j* β_6, the interaction of a person's NA on occasion *j* with age group β_7, the interaction of a person's support on occasion *j* with age group β_8, the interaction of a person's NA on occasion *j* and a person's support on occasion *j* β_9, the interaction of a person's NA on occasion *j*, a person's support on occasion *j*, and age group β_{10}. A significant interaction of support_state and NA_state would indicate a significant buffering effect; a significant two-way interaction of support_state or NA_state and

age group, or a significant three-way interaction of social support_state, NA_state, and age group would indicate age group differences in the direct or buffering effects, respectively. The following random effects are included in the equation: the person's deviation from (a) the average level of HC u_{0i}, (b) the average linear trend u_{1i}, (c) the average main effect of NA_state u_{2i}, (d) the average main effect of support_state u_{3i}, (e) the average interaction effect of NA_state and support_state u_{4i}, and r_{ij} as the person i's deviation from the individual level of HC at occasion j. Likelihood ratio tests with corrected χ^2-values (for parameter values that are placed at their boundary) were used to determine whether random effects were significant (Stoel, Garre, Dolan, & van den Wittenboer, 2006). Random coefficients were assumed to be normally distributed with a mean of zero and variances represented by σ^2_u and σ^2_r. All random effects were allowed to covary.

Four multilevel models with the different trait support measures (social integration, instrumental, informational, and emotional support) as predictors were estimated in the same way.

Results

Descriptive Statistics

Age-group differences in means and correlations of trait social support variables and mean intraindividual correlations of state social support variables are shown in Table 2. On average, OA reported significantly less NA, less informational support, and more emotional support than YA. Trait social support variables were in both age groups moderately to highly correlated, with correlations ranging from r = .52 to .80. The mean intraindividual correlations of the three state social support measures were small to moderate in both age groups (r's from .23 to .42).

Direct Effects at Trait and State Level

In Table 3, the estimates of the four models for trait social support measures as predictors are shown; in Table 4, the three models for state social support are summarized.

(H1) *Trait direct effects*. Against our hypothesis, the models did not show any overall direct effects of trait social support.

Table 2. Means of Negative Affect, Health Complaints, and the Social Support Measures and Correlations of Trait and State Social Support Measures

Mean levels

Variable	Younger adults		Older adults			
	Mean	*SD*	*Mean*	*SD*	*p* Value	Cohen's *d*
State emotional support	2.82	0.90	2.84	0.84	.88	−0.02
State instrumental support	2.80	0.79	2.81	0.75	.93	−0.01
State informational support	2.84	0.65	2.88	0.67	.70	−0.06
State negative affect	1.41	0.92	0.49	0.61	<.0001	1.20
State sum of health complaints	1.53	1.17	1.46	1.63	.75	0.05
Trait emotional support	20.22	3.82	21.36	3.03	.03	−0.33
Trait informational support	21.18	4.57	19.08	5.62	.01	0.41
Trait instrumental support	22.05	3.94	21.81	5.37	.74	0.05
Trait social integration	21.87	4.48	21.16	5.09	.34	0.15

Correlations of trait support measures

	Younger adults			Older adults		
	2	3	4	2	3	4
Emotional support	.52*	.66*	.67*	.48*	.53*	.52*
Instrumental support (2)	1	.59*	.61*	1	.64*	.78*
Informational support (3)		1	.80*		1	.66*
Social integration (4)			1			1

Mean correlations within individuals of state support measures

	Younger adults[a]		Older adults[a]	
	2	3	2	3
Emotional support	.30 (0.33)	.23 (0.38)	.30 (0.35)	.42 (0.36)
Instrumental support (2)	1	.26 (0.34)	1	.29 (0.34)
Informational support (3)		1		1

Notes. [a]Standard deviation of mean intraindividual correlations in brackets.
* $p < .05$.

Table 3. Multilevel Models With the Predictors Trait Social Integration, Instrumental, Informational, and Emotional Support and Sum of Health Complaints as Dependent Variable

Parameter	Emotional support		Social integration		Infromational support		Instrumental support	
	Estimate (*SE*)	*p* Value	Estimate (*SE*)	*p* Value	Estimate (*SE*)	*p* Value	Estimate (*SE*)	*p* Value
Fixed effects								
Intercept	0.12 (0.90)	.90	−0.47 (0.87)	.59	0.43 (0.80)	.59	−0.45 (0.93)	.63
Linear trend	−0.01 (0.01)	.08	−0.01 (0.01)	.08	−0.01 (0.01)	.08	−0.01 (0.01)	.08
Age	3.06* (1.30)	.02	1.46 (1.00)	.15	0.97 (0.91)	.28	1.46 (1.06)	.17
NA_M	0.56* (0.14)	<.0001	0.66* (0.14)	<.0001	0.59* (0.14)	<.0001	0.62* (0.14)	<.0001
NA_S	0.48 (0.28)	.08	0.88* (0.25)	.0004	0.66* (0.24)	.01	0.46 (0.29)	.11
Support_T	0.04 (0.04)	.34	0.06 (0.04)	.12	0.02 (0.03)	.56	0.06 (0.04)	.14
Age *NA_S	−0.36 (0.45)	.43	−0.90* (0.32)	.01	−0.73* (0.30)	.01	−0.44 (0.35)	.21
Age *Support_T	−0.13* (0.06)	.04	−0.05 (0.04)	.30	−0.03 (0.04)	.50	−0.05 (0.05)	.31
NA_S*Support_T	−0.01 (0.01)	.64	−0.02* (0.01)	.03	−0.01 (0.01)	.19	−0.01 (0.01)	.69
Age*NA_S*Support_T	0.01 (0.02)	.53	0.04* (0.01)	.01	0.03* (0.01)	.02	0.02 (0.02)	.29
Random effects								
Intercept	1.64* (0.24)	<.0001	1.65* (0.24)	<.0001	1.70* (0.24)	<.0001	1.67* (0.24)	<.0001
Linear trend	0.004* (0.001)	<.0001	0.004* (0.001)	<.0001	0.004* (0.001)	<.0001	0.004* (0.001)	<.0001
NA_S	0.14* (0.02)	<.0001	0.13* (0.02)	<.0001	0.13* (0.02)	<.0001	0.13* (0.02)	<.0001
Residual	1.32* (0.04)		1.33 (0.04)		1.32 (0.04)		1.32 (0.04)	

Notes. NA = negative affect; M = mean; S = state; SE = standard error; T = trait, kind of support in the model: see first row in columns.
*$p < .05$.

(H2) *State direct effects*. In contrast to our predictions, emotional and instrumental support had no significant direct effect on HC. Against our hypothesis, on days with more available informational support, more HC were reported ($\beta = 0.08$, $F(1,3130) = 4.38$, $p = .04$). This main effect accounted for 2% of the within-person variance of HC.

(H3) *Age-group differences in direct effects*. Trait emotional support showed a significant interaction with age group ($\beta = -0.13$, $F(1,161) = 4.42$, $p = .04$). In line with our predictions, only the slope for the OA was reliable, accounting for 7% of the between-person variance of HC ($\beta_{OA} = -0.12$, $F(1,86) = 4.95$, $p = .03$; $\beta_{YA} = -0.005$, $F(1,76) = 0.02$, $p = .89$). There was no significant interaction between the state social support measures and age group, indicating no age differences in the direct effects on state level.

Buffering Effects at Trait and State Level

In the following, we report whether support moderates the relationship between NA and HC at the state and trait level. At both levels, NA was a significant predictor of HC (Table 4). State NA accounted for 14% of the within-person variance of HC; mean NA accounted for 12% of the between-person variance.

(H4) *Trait-buffering effects*. In contrast to our expectations, we did not find any overall buffering effect of trait social support.

(H5) *State-buffering effects*. In accordance with our predictions, the interaction effects of all state support measures and state NA were not significant, indicating the absence of reliable buffering effects.

(H6) *Age-group differences in buffering effects*. There were no significant age differences in buffering effects on state level and two significant three-way interactions on trait level involving (a) social integration and (b) informational support.

(a) The three-way interaction of state NA, social integration, and age group ($\beta = 0.04$, $F(1,3132) = 6.82$, $p = .01$) was significant, as illustrated in Figure 2A. Together, age group and social integration explained 6% of the slope variance of state NA.

Separate analyses for the age groups further illuminate the meaning of this three-way interaction. The interaction of social integration and state NA was not significant in OA ($p = .09$). For the YA, the interaction of social integration and state NA was significant (accounting for 8% of the slope variance of state NA; $\beta_{integration*NA\_state} = -0.02$, $F(1,1463) = 4.20$, $p = .04$). As represented in Figure 2A, social integration buffered the association between state NA and HC for YA. Individuals with high levels of social integration (1 *SD* greater than the mean) had a weaker relationship between NA and HC than those with low levels (1 *SD* less than the mean).

(b) There was a significant three-way interaction of state NA, informational support, and age group ($\beta = 0.03$, $F(1,3132) = 5.29$, $p = .02$). Together, age group and

Table 4. Multilevel Models With the Predictors State-Available Emotional, Informational, and Instrumental Support and Sum of Health Complaints as Dependent Variable

Parameter	Emotional support		Informational support		Instrumental support	
	Estimate (*SE*)	*p* Value	Estimate (*SE*)	*p* Value	Estimate (*SE*)	*p* Value
Fixed effects						
Intercept	1.08* (0.45)	.02	1.21* (0.59)	.04	1.15* (0.48)	.02
Linear trend	−0.01 (0.01)	.06	−0.01 (0.01)	.08	−0.01 (0.01)	.07
Age group	0.36 (0.24)	.14	0.33 (0.24)	.18	0.37 (0.24)	.13
NA_M	0.52* (0.13)	.0001	0.48* (0.14)	.001	0.54* (0.13)	<.0001
NA_S	0.34* (0.05)	<.0001	0.35* (0.05)	<.0001	0.34* (0.05)	<.0001
Support_M	−0.05 (0.12)	.67	−0.08 (0.17)	.62	−0.08 (0.13)	.53
Support_S	−0.03 (0.04)	.46	0.08* (0.04)	.04	−0.02 (0.04)	.53
Age group*NA_S	−0.07 (0.07)	.30	−0.07 (0.07)	.33	−0.05 (0.07)	.44
Age group*Support_S	−0.03 (0.05)	.48	−0.09 (0.05)	.07	0.03 (0.05)	.50
NA_S*Support_S	−0.02 (0.04)	.60	−0.05 (0.04)	.25	−0.02 (0.04)	.56
Age group*NA_S*Support_S	0.01 (0.05)	.79	0.06 (0.06)	.36	0.01 (0.06)	.85
Random effects						
Intercept	1.78* (0.25)	<.0001	1.80* (0.25)	<.0001	1.76* (0.25)	<.0001
Linear trend	0.004 (0.001)	<.0001	0.004* (0.001)	<.0001	0.004* (0.001)	<.0001
NA_S	0.14* (0.02)	<.0001	0.12* (0.02)	<.0001	0.12* (0.02)	<.0001
Support_S	0.01* (0.01)	.03	0.02* (0.01)	.02	n.s.	.20
NA_S*Support_S	0.03* (0.01)	.01	0.06* (0.02)	<.0001	0.04* (0.01)	<.0001
Residual	1.28 (0.04)		1.25 (0.04)		1.29 (0.04)	

Notes. NA = negative affect; M = mean; SE = standard error; S = state; kind of support in the model: see first row in columns.
*$p < .05$.

informational support accounted for 9% of the slope variance of state NA.

In separate analyses for the age groups, the interaction of informational support and state NA was significant for the OA ($\beta_{informational*NA\_state}$ = 0.02, $F(1,1668)$ = 5.79, p = .02). Informational support accounted for 9% of the slope variance of state NA. For the YA, the interaction was not significant (p = .21). The finding is illustrated in Figure 2B. In contrast to our predictions, informational support amplified the association between state NA and HC for OA. Individuals with high levels of informational support had a stronger relationship between NA and HC than individuals with lower levels.

Discussion

Our study examined the relationship between social support and health in YA and OA. It extends the existing research by a simultaneous consideration of traits and states and by examining direct and buffering effects of different kinds of social support. Regarding direct relationships, OA with high trait emotional support reported fewer HC. More state informational support on one day was related to more reported HC on the same day. Two kinds of trait social support moderated the daily association between NA and HC. For YA, social integration functioned as a buffer. In OA, informational support amplified the association between NA and HC. There were no reliable buffering effects for the state support measures.

Direct Effects

We expected that persons with high emotional and informational support as well as low instrumental support report fewer HC both on trait and state level (H1 and H2). However, the expected detrimental direct effect of instrumental support did not occur. As discussed in the *Limitations* section, our sample may have been too physically fit to exhibit these effects. In particular on state level, available instrumental support on a given day may be more relevant for persons who rely on a specific amount of support, such as patient groups.

Reporting more trait emotional support (i.e., support that is directed to a person's self-esteem) was, as expected, related to reporting fewer HC, but only among OA. In YA, emotional support may be more relevant for domains such as well-being or self-confidence than for health. Similarly, state emotional support on a particular day may evoke feelings of warmth and embeddedness. This may influence daily well-being, but still may not have a particular relevance for the experience of symptoms

In contrast to our predictions, trait informational support was not related to HC and state informational support on one day was related to more HC on the same day. It is conceivable that on days with more symptoms, information about health is more likely to be sought from health professionals. The available information concerning health may also increase the awareness for symptoms related to specific diseases. This interpretation has to remain speculative because neither the source nor the topic of information was assessed in this study.

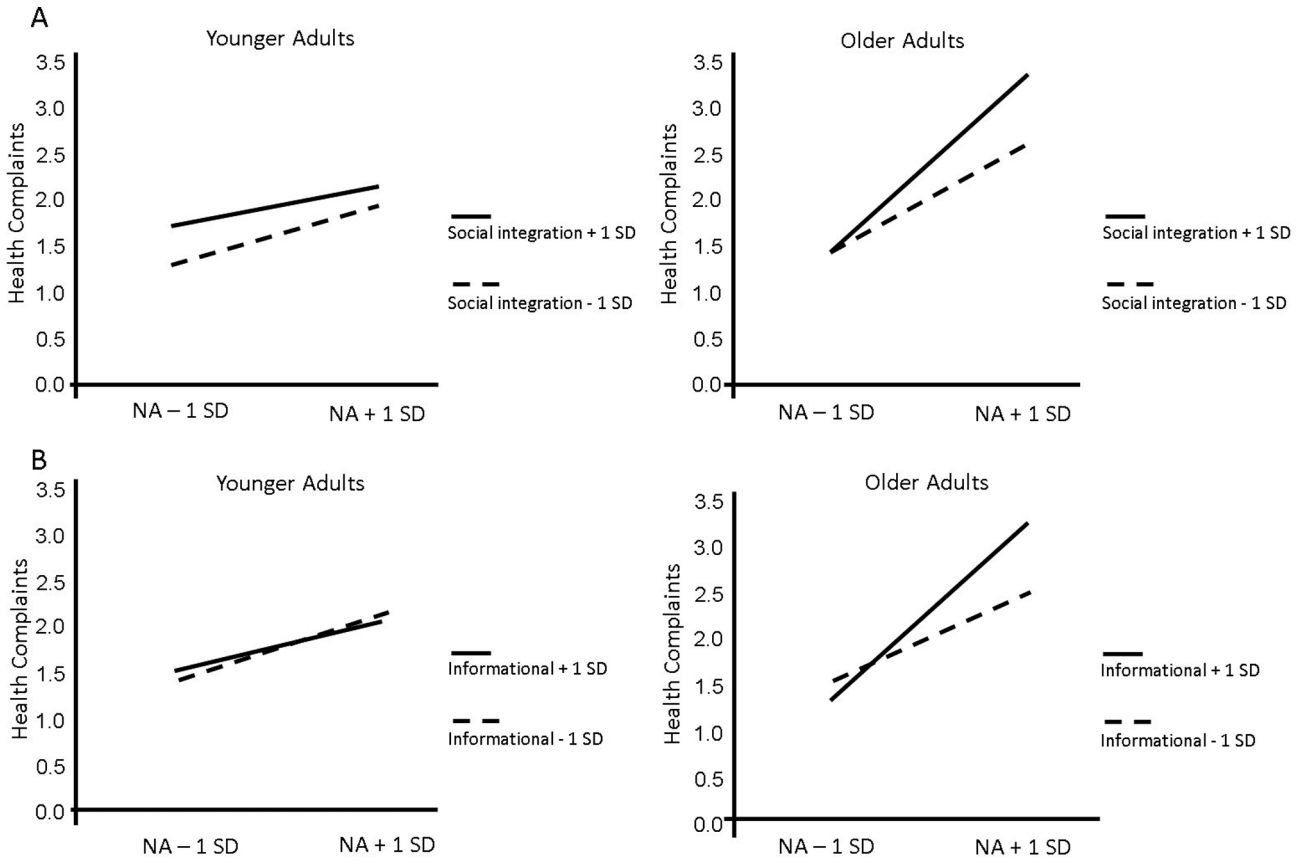

Figure 2. Illustration of the three-way interaction of age group, state negative affect, and social integration (A) or informational support (B); although the figure may suggest differently, in the case of social integration, the interaction between support and NA was only significant in younger adults when tested separately

Buffering Effects

On trait level, significant age-group-specific buffering effects for two types of trait social support were observed. In YA, the relationship between NA and HC was attenuated the more social integration individuals experienced. Social integration may distract individuals from their health and emotional problems. In contrast to our prediction, a *reverse* buffering effect was observed for informational support among OA. When OA had access to advice on problems, the daily association between NA and HC was strengthened. A trend in the same direction was observed for social integration (p = .09). It is conceivable that OA who have persons to turn to with their problems are more frequently asked how they feel. This can be interpreted in two directions. First, they may become more aware of their health and emotional problems and thus are more likely to report them. Second, social support may encourage OA to report complaints if they are used to receiving desired support that way. A comparable reverse buffering effect was also found for patients with breast cancer—day-to-day satisfaction with received support came along with more NA (Gremore et al., 2011). Similarly, the emotional concerns may be a cue for the support provider to ask about feelings that are consequently reported more frequently.

Our study was the first to investigate buffering effects of available support at the state level. As expected, state available support did not buffer the relation between NA and HC on the same day. This points to the differentiation between available and received support—the availability of support in a given moment may not be essential to cope with a stressor. At the state level, the stress-buffering model may be at work, where received support as a resource in stressful situations may be related to better health and well-being. To test this hypothesis directly, it would be informative to assess received support in close temporal proximity to the stressful event.

A State Versus Trait Perspective

Our findings clearly demonstrate differences between state and trait level of analyses. Whereas emotional support was important for HC in the OA on trait level, it was not on state level. Possibly on state level, well-being would be a more suitable outcome than health. State available social support may evoke a feeling of warmth and being cared for that may not be captured with HC or NA. While social support as a trait is a valuable resource for health, its fluctuations on state level may affect mood and behavior and thereby foster processes that change health in the long-run.

On days when more informational support was reported, individuals also reported more HC. Similarly, high trait levels of informational support seem to be detrimental, at least in OA (i.e., there was evidence for reverse buffering). Even though we cannot disentangle the direction of relationships here, there is some convergence in these results. The interpretation of the state effect that available information about diseases may increase awareness of complaints fits also to the idea that trait informational support reinforces complaining about emotional and health problems.

In sum, we did not find strong effects of state available support; however, there was a reliable amount of intraindividual variance in the support measures (see Table 1). Thus, our study clearly indicates that future research should consider a within-person level approach to study social support processes not only concerning received support (as done already in previous research, e.g., Gleason et al., 2003; Scholz et al., 2012) but also including available and other support types.

A Life-Span Perspective

A life-span perspective is crucial as relationships between social support and health change with age. The findings partly support and partly contradict the notion of particular importance of social support in older adulthood in previous studies (Carstensen et al., 2003; Krause, 2005; Sherbourne et al., 1992). We propose that there are two different mechanisms at work for YA and OA: For YA, social integration is a distraction from their problems. For OA, having persons to turn to draws their attention to complaints. However, support that enhances older persons' self-esteem is associated with less HC. In experimental work, Baltes (1988, 1995) showed that social partners tend to reinforce dependent behavior and ignore independent behavior in OA living in nursing homes. Both the present results and the experimental findings are consistent with the general recommendation that support given to older individuals should acknowledge their abilities rather than simply asking them how they feel. Thus, positive and negative effects of social support are strongly dependent on kind of support and age.

Limitations

Assessed with a well-validated questionnaire, the trait support measures may have been more reliable than the one-item state measures. More reliable state measures may yield significant effects that went unnoticed in this data set. However, the mean intraindividual correlations of state social support measures were small to moderate, indicating that at least different facets of support were measured with the items.

For instrumental support, we did not find any significant effects. Most participants in our study may have been too fit to need instrumental support to an extent that influences their physical well-being. Ninety-two percent of the OA and 53% of the YA participated in the Socio-Economic Panel (SOEP), a representative household panel in Germany (Wagner, Frick, & Schupp, 2007). Comparisons between the COGITO participants and their age peers among the SOEP participants in Berlin on self-rated health (SRH) and the number of doctor visits (DV) in the past three months revealed that the older COGITO adults rated themselves as healthier ($M(SD)_{SOEP}$ = 3.33(0.92), $M(SD)_{COGITO}$ = 2.61(1.03), t = 5.37, p < .0001, Cohen's d = –0.85), but reported a similar number of DV ($M(SD)_{SOEP}$ = 3.94(4.45), $M(SD)_{COGITO}$ = 3.26(3.54), t = 1.15, p = .25, Cohen's d = –0.16). The same pattern emerged for the YA, but due to the low participation rate, the results for the YA should be regarded with caution (SRH: $M(SD)_{SOEP}$ = 2.31(0.84), $M(SD)_{COGITO}$ = 1.98(0.90), t = 2.14, p = .03, Cohen's d = –0.39; DV: $M(SD)_{SOEP}$ = 3.08(2.63), $M(SD)_{COGITO}$ = 2.74(4.40), t = 0.58, p = .56, Cohen's d = 0.13). Future research should investigate the role of instrumental support at the state and trait level in a frailer sample of OA.

We also recommend a broader coverage of the health domain. Ong and Allaire (2005) showed a buffering effect of social connectedness on the daily relation between NA and blood pressure in a sample of OA. Additionally, the source of support (i.e., family or friends), not assessed in this study, may influence the effects of social support on health and well-being (Huxhold, Miche, & Schüz, 2014; Merz & Huxhold, 2010). Finally, the age differences observed in this study may partly reflect cohort effects. Social networks can bear different meanings for younger and older generations (cf. Shearer & Fleury, 2006). Future research should thus trace the development of social support–health relations longitudinally.

Conclusion

In this study, social support showed positive and negative associations with HC in YA and OA. For YA, social integration buffered the NA–HC relationship, whereas, for OA, informational support amplified the relation between NA and HC. Only in OA, persons with more trait emotional support reported less HC. In contrast to trait support, we did not find reliable evidence for buffering effects for state support. These results support the notion that different kinds of support have distinct effects. Furthermore, different mechanisms seem to be at work in YA versus OA and, importantly also, at state versus trait levels. Future research should trace these social support–health processes longitudinally and further investigate the distinction between trait and state aspects of support.

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