Maintaining autonomy despite multimorbidity: self-efficacy and the two faces of social support

Lisa M. Warner · Jochen P. Ziegelmann ·
Benjamin Schüz · Susanne Wurm ·
Clemens Tesch-Römer · Ralf Schwarzer

Published online: 10 February 2011
© Springer-Verlag 2011

Abstract Multimorbidity—the co-occurrence of multiple illnesses—is a frequent condition in older adults and poses serious threats to autonomy. In order to identify resources for autonomy despite multimorbidity, our longitudinal study tested main and interaction effects of personal and social resources (self-efficacy and social support) on maintaining autonomy. Three hundred and nine individuals (aged 65–85 years) with multiple illnesses completed measures of self-efficacy beliefs, received instrumental social support and perceptions of autonomy. Data were analyzed using structural equation modeling. Cross-sectionally, individuals with lower perceptions of autonomy received more support from their networks. Longitudinally, the relation of received support with autonomy was moderated by self-efficacy: Simple slopes analyses showed that social support compensated for lower levels of self-efficacy, whereas in individuals with higher self-efficacy the resources interfered. Receiving social support bolstered autonomy in lower self-efficacious individuals, but in highly self-efficacious individuals support threatened autonomy. This has implications for both theory and practice, as it suggests differential effects of social resources depending on personal resources.

Keywords Autonomy · Self-efficacy · Received instrumental social support · Multimorbidity · Old age

Introduction

Chronic illnesses have serious consequences for older people's lives. Difficulties in maintaining social roles or valued activities and increasing dependency on others threaten perceptions of autonomy. The challenge to maintain autonomy in old age is even greater for people with multiple chronic conditions (multimorbidity). Therefore, this study aims at identifying personal and social resources that help to maintain autonomy despite multimorbidity.

Perceived autonomy

Autonomy is a fundamental and universal psychological need (Ryan and Deci 2000). According to Ryan and Deci (2006), autonomy is primarily defined as the “experience of choice”. Such perceptions of autonomy are related to satisfaction with life, positive mood, vitality, and well-being (Hertz and Anschutz 2002; Matsui and Capezuti 2008; Reis et al. 2000; Zissi et al. 1998). However, the ability to experience choices in one's life is challenged by developmental tasks that inevitably accompany the aging process. Besides being confronted with the feeling of time running out and the experience of social stressors such as the loss of social roles (e.g., as a result of retirement), the most severe threats to autonomy in age are physical losses and biological impairments (Baltes and Silverberg 1994). With increasing age, chronic physical conditions often accumulate and result in multimorbidity—the co-occurrence of two or more chronic conditions at a time (van den Akker et al. 1998). Older people affected by multimorbidity

Communicated by Hans-Werner Wahl.

L. M. Warner (✉) · J. P. Ziegelmann · R. Schwarzer
Department of Psychology, Health Psychology, Freie Universität
Berlin, Habelschwerdter Allee 45, 14195 Berlin, Germany
e-mail: lisa.warner@fu-berlin.de

L. M. Warner · J. P. Ziegelmann · B. Schüz · S. Wurm ·
C. Tesch-Römer
German Centre of Gerontology, Berlin, Germany

report more frequent health care utilization, longer hospital stays, treatment complications, medication interactions and declines in mental quality of life (Fortin et al. 2004; Gijzen et al. 2001). However, the strongest threats to autonomy in chronically ill persons are rapidly accelerating functional limitations, which limit the freedom of acting on one's own and cause disability and dependence (Sibley et al. 2006). Such functional losses that accompany the aging process have for several decades been the primary focus of aging research. Only in the last years, this "one-way" perspective of aging has been replaced by an interactive viewpoint (Baltes 1995). Lifespan psychology has moved away from seeing the aging process as a phase primarily characterized by losses and suggests that persons and their environments constitute reciprocal systems of action (Wahl 1991). By adopting this interactive perspective, it becomes evident that the interplay of social and personal resources is crucial for understanding how autonomy can be maintained despite multimorbidity and the accompanying health problems. This interplay of personal and social resources is immanent in Ryan and Deci's (2006) definition of autonomy. According to Ryan and Deci, aging individuals are autonomous if they have a *choice* of actions, i.e., can decide on every day activities and the course of their lives, even if this requires help from others. This notion also emphasizes that autonomy is something that is perceived by an individual and goes beyond mere functional status.

The idea that autonomy is characterized by having a choice means that it can be adaptive for the maintenance of autonomy in old age to delegate actions that are *perceived* to be unrealistic to perform on one's own. The important point here is an individual's *perception* whether an action can still be performed unassisted or not. This belief in the capability to perform a specific action required to attain a desired outcome is known as perceived *self-efficacy*—an important personal resource factor.

Perceived self-efficacy

According to social cognitive theory (Bandura 1997), human motivation and actions are regulated extensively by forethought. One of the prime factors that affect behavior is perceived self-efficacy, that is, people's beliefs in their capabilities to produce certain effects by their actions. The construct is usually understood as being either task-specific or domain-specific and usually, specific self-efficacy beliefs predict specific outcomes best (Bandura 1997). However, some researchers have also conceptualized a generalized belief of self-efficacy that refers to a broad and stable sense of personal competence to master a variety of stressful situations (Schwarzer and Jerusalem 1995). General self-efficacy was found to be valid across various cultures (Luszczynska et al. 2005b) and to be rather stable

across time, which is the reason it is conceptualized to be a trait-like rather than a state-like construct (Chen et al. 2000). This broad self-efficacy concept may explain a wider range of human behaviors and coping outcomes when the context is less specific. It is useful when looking for resources of multiple behavior changes simultaneously (Luszczynska et al. 2004) or when studying the well-being or behavior of patients who have to adjust their life to multiple demands due to illness (Bonetti et al. 2001).

Even though it was found that general self-efficacy beliefs slowly decrease with age and with the incidence of chronic diseases (Endler et al. 2001; Steverink et al. 2005), individuals who have stronger general self-efficacy beliefs show better adjustment to medical conditions, e.g., cancer (Schwarzer et al. 2005), or rehabilitation from heart surgery (Schröder et al. 1998) and are less likely to develop disabilities (see Disablement Process Model; Fauth et al. 2007). General self-efficacy was further found to be related to the performance of health behaviors (Luszczynska et al. 2005a), to perceived functional ability in older and chronically ill adults and to control perceptions for multiple illnesses (Schüz et al., in press; Seeman et al. 1999). Hence, a general sense of self-efficacy can be considered a resource for the adaptation to multiple chronic conditions. Chronic conditions, however, often activate social networks that try to provide social support—regardless of whether it was requested—to ensure that the ill person receives the help the network members consider necessary (Smith and Goodnow 1999).

Social support

Social support refers to the function and quality of social relationships. Social support has been differentiated into instrumental (e.g., practically assisting with a problem, donating goods), informational (e.g., giving advice), and emotional (e.g., giving reassurance) support. Another important distinction is made between support *received* in the past and support *perceived* or *anticipated* as available in general (Schwarzer and Knoll 2007). *Received* support refers to an individual's recall of support obtained within a given time span in the past. In contrast, *anticipated* support is an individual's perception of support available if needed. Our study focuses on received social support only. However, it is essential to bear in mind that *received* support and *anticipated* support do not necessarily need to have much in common (Haber et al. 2007). Expecting support in the future resembles a personality disposition related to optimism and self-worth and is often positively related to health and well-being in older adults (Sarason et al. 1983), whereas support received in the past is based on the recall of actual personal experiences, and in particular instrumental support is an important resource for the maintenance of

autonomy in chronically ill patients (Proot et al. 2000; Proot et al. 2007; Williams et al. 1998). However, besides such positive effects, received social support can also have negative effects on both well-being and physical health in older and chronically ill adults (Brown and Vinokur 2003; Hays et al. 1997; Schwarzer and Leppin 1991; Seeman et al. 1996; Cohen et al. 2005). As both the aged and the chronically ill are often met with supporting behavior provided by others, even if they have not directly sought assistance, receiving support may even pose a threat to autonomy (Reich and Zautra 1995; Smith and Goodnow 1999; Zautra et al. 1995; Baltes and Wahl 1992). Therefore, further investigation of the circumstances that render receiving support a threat to autonomy is necessary.

Such two faces of received social support can be explained by several theories: The *mobilization hypothesis* postulates that receiving support does not cause losses of health and well-being, but that existing losses of physical or mental health cause social networks to provide more social support. This hypothesis explains cross-sectional findings of negative relations of received support and adjustment to illness, whereas it predicts time-lagged beneficial effects of receiving support to be found in longitudinal data (Silverstein et al. 1996; Barrera 1986; Schwarzer and Leppin 1991; Ringdal et al. 2007).

Besides the mobilization hypothesis describing methodological artifacts, however, there are theories that link received social support to *negative* outcomes: *Reactance theory* for example assumes that the major problem for recipients of help is a perceived restriction of freedom (Brehm and Cole 1966). *Social breakdown theory* assumes an increase of feelings of dependency and an erosion of personal competencies through being assisted in older ages (Bengtson and Kuypers 1985). Other authors assume that individuals first try to resolve problems on their own, and only if their personal resources are ineffective, they seek help from others. Accordingly, individuals can perceive received support as a marker of failed coping efforts, which will encourage recipients to adopt the external view that they are dependent on their networks (Revenson et al. 1983; Wethington and Kessler 1986). In summary, these theories assume that receiving external assistance may erode individuals' personal resources. However, research on the interplay of personal and social resources has shown that these approaches do not represent the whole picture. The mechanism between receiving support, personal resources and detrimental outcomes is not a one-way street as personal and social resources also interact with each other (Schröder 1997). Therefore, two further possible explanations for adverse effects of receiving support were postulated that stress the possible interactions of personal and social resources: The *interference* and the *compensation hypothesis* (Schröder 1997).

The *interference hypothesis* posits that it is crucial to take personal resources into account when trying to understand the impact of social resources (Schröder 1997). The hypothesis claims that receiving social support threatens the adjustment to illness in individuals higher in self-efficacy, in particular if this support was unrequested. Research has accordingly found that after heart surgery, patients higher in self-efficacy and social support reported higher illness-related sorrows as well as worse eating habits than those higher in self-efficacy but lower in social support (Schröder 1997). Similarly, physically disabled older recipients of help with high control beliefs preferred to receive less support than recipients with lower levels of perceived control (Newsom and Schulz 1998).

For individuals with lower self-efficacy, the *compensation hypothesis* predicts beneficial effects of receiving social support (Schröder 1997). The compensatory effect of social support is in line with Ryan and Deci's (2006) definition of autonomy that perceived lacks of personal resources can be compensated by social resources. Accordingly, individuals low in self-efficacy were more likely to engage in compensation in order to maintain autonomy and cope with health problems such as cancer (Aymanns 1992), rheumatoid arthritis (Reich and Zautra 1995), or recovery from heart surgery (Schröder 1997).

Aims of the study

In this study, autonomy is defined as the perception of being independent from others as well as the possession of freedom of choice in everyday life (Ryff, 1995). We assume that self-efficacy and received instrumental social support are core personal and social resources for the perceptions of autonomy in older individuals with multiple medical conditions. We predict that cross-sectionally, participants' perception of low autonomy is related to more social support (mobilization approach), whereas longitudinally it depends on the level of self-efficacy, whether receiving instrumental support helps to maintain autonomy (compensatory approach) or threatens autonomy (interference approach).

Method

Participants and procedure

Participants for the PREFER (Personal Resources of Elderly People with Multimorbidity: Fortification of Effective Health Behaviour) study were recruited from the third assessment wave of the German Ageing Survey (DEAS, Wurm et al. 2010), a population-representative survey of adults aged 40 and over, with a total *N* of 8,200. The third

wave of the DEAS took part from July to September 2008 and served as recruitment pool and baseline assessment (Time 0) for the PREFER study. DEAS participants were considered eligible to be contacted for the PREFER study if they were (a) 65 years or older, (b) suffered from at least two chronic physical conditions mentioned either in the Charlson Comorbidity Index (Charlson et al. 1994) or the Functional Comorbidity Index (Groll et al. 2005) and (c) had given consent to be contacted for further studies.

Of a total eligible $n = 443$ participants, $n = 309$ (69.7%) provided informed consent and made an appointment for the first point of measurement in PREFER (Time 1, March 2009). Participants were visited at their homes by trained interviewers, completed a 30-min personal interview and additionally completed a questionnaire with a prepaid return envelope. The second point of measurement (Time 2, June 2009) was a questionnaire only that was completed and sent back in a prepaid envelope by $n = 252$ (81.55% of Time 1). The period of 3 months was assumed to be sufficient to observe changes in perceptions of autonomy due to the rapidly changing health status of adults over the age of 65 with multiple chronic conditions (Fortin et al. 2004; Librero et al. 1999). Table 1 provides information on participants' age and sex. Participants had on average 5.49 chronic conditions ($SD = 2.86$).

Measures

Perceived autonomy was assessed with four items of the Perceived Autonomy in Old Age scale (Schwarzer 2008). A pilot study in $N = 110$ individuals aged 65 and older revealed the following four items to be best-discriminating: (a) I organize my life according to my own ideas, (b) I make my own decisions and don't allow others to protect me, (c) I live by my own choices now that I am old, (d) I cope with my daily life without outside help. Items are rated from (1) 'strongly disagree' to (4) 'strongly agree'. In the pilot study, the scale had a Cronbach's alpha of .91 and discriminant validity was demonstrated by low correlations with the

Overprotection scale $r = 0.11$ (Thompson and Sobolew-Shubin 1993), limitations in Activities of Daily Living $r = -0.14$ (Lawton and Brody 1969) and with the Satisfaction with Life scale $r = 0.07$ (Pavot et al. 1991). Also considering the moderate correlations of $r = 0.20$ and $r = 0.25$ with the EuroQoL EQ5D questionnaire (Greiner et al. 2003) in this study, the Perceived Autonomy in Old Age (Schwarzer 2008) scale operationalizes participants' subjective evaluation of independence and freedom of choice and clearly discriminates from related constructs as intended by the author. In this study, Cronbach's alpha for the four items of perceived autonomy in old age was 0.82 at Time 1 and Time 2 as well.

General self-efficacy was assessed at T0 with the German five-item short form of the general self-efficacy scale (Schwarzer and Jerusalem 1995). The items were (a) It is easy for me to stick to my aims and accomplish my goals, (b) I can usually handle whatever comes my way, (c) I can solve most problems if I invest the necessary effort, (d) When I am confronted with a problem, I can usually find several solutions, (e) If I am in trouble, I can usually think of a solution. Possible responses ranged from (1) 'strongly disagree' to (4) 'strongly agree'. The short scale had a Cronbach's alpha of 0.75. General self-efficacy was assessed at Time 0 only, as it is a stable trait rather than a state-like construct (Chen et al. 2000).

To assess *received instrumental support* at Time 1, two items from the Berlin Social Support Scales (Luszczynska et al. 2007; Schwarzer and Schulz 2000; Schulz and Schwarzer 2003) were applied. The items were: If you think of the last 3 months, what have persons close to you (partner, children, friends, acquaintances) done for you? Persons close to me... (a) took care of many things for me, (b) took care of things I could not handle on my own. Participants rated the frequency with which they received instrumental support on a four-point scale from (1) '(almost) never' to (4) '(almost) always'. The items correlated to .60.

Functional health as a covariate was assessed at Time 2. Functional health was measured with the German version

Table 1 Means, standard deviations, ranges, and correlations

	<i>M</i>	<i>SD</i>	Range	1	2	3	4	5	6
1. Age	73.27	5.10	65–85						
2. Sex (1 = men, 2 = women)	58% male	42% female		−0.09					
3. T2 EQ5D	78.44	13.87	25.9–97.7	−0.03	−0.20**				
4. T0 perceived self-efficacy	3.01	0.45	1.5–4	<0.01	−0.06	0.15*			
5. T1 instrumental support	2.21	0.92	1–4	0.19**	0.21***	−.18**	<0.01		
6. T1 perceived autonomy	3.43	0.57	1–4	<−0.01	<0.01	.20**	0.20***	−0.24***	
7. T2 perceived autonomy	3.42	0.52	2–4	0.13*	<0.01	0.25***	0.27***	−0.08	0.58***

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

of the EuroQol EQ5D (Schulenburg et al. 1998). The EQ5D has five dimensions (1) mobility, (2) self-care, (3) usual activities, (4) pain/discomfort and (5) anxiety/depression that are rated on a 3-point scale ranging from “no problems” to “extreme problems”. Answers were converted to a *weighted health status index* using European norm weights and the procedure described in the EQ5D manual (Greiner et al. 2003). In our sample, the index ranged from 25.86 to 97.66, with higher scores indicating better quality of life.

Analytic procedure

Descriptive data analysis and Pearson correlations were carried out with SPSS 18.0. Data were further analyzed with structural equation modeling using Mplus 5.21. The moderator effect of self-efficacy was tested by comparing a model with a latent interaction term to one without. The Latent Moderated Structural Equation (LMS) approach by Klein and Moosbrugger (2000) was applied to examine the latent interaction. As commonly used fit indices (e.g., CFI, RMSEA, SRMR) cannot be estimated in the LMS approach and the two models were not nested, the Bayesian Information Criterion (BIC) and the Akaike Information Criterion (AIC) were used to assess improvement in fit with lower BIC and AIC values indicative of better fit (Tabachnick and Fidell 2007). No variable had a skewness or kurtosis larger than a value of 2 (Curran et al. 1996). Missing data (not exceeding 20% on any variable) were treated using full information maximum likelihood in the structural equation model without interaction term and listwise deletion in the LMS model with interaction term.

We tested for measurement invariance of the perceived autonomy scale in order to ensure that it measured the same attributes on the two measurement occasions (Meredith 1993). Chi-square nested model comparisons suggested that strict invariance was not given, as the strict invariance model fitted the data significantly worse than the strong invariance model ($\Delta\chi^2(4) = 12.9, P < 0.05$). However, we could assume weak and strong measurement invariance, as the weak invariance model did not fit the data significantly worse than the baseline model ($\Delta\chi^2(6) = 4.03, n.s.$), and the strong invariance model did not fit the data worse than the weak invariance model ($\Delta\chi^2(4) = 8.56, n.s.$), which allowed assuming that the autonomy factors represent the same construct over time.

Results

Descriptive statistics

Descriptive statistics are reported in Table 1. Women and older participants reported receiving more instrumental

support, but sex and age made no difference for the perception of self-efficacy. Self-efficacy beliefs were positively correlated with autonomy at Time 1 and Time 2 and had no relation to received instrumental support. Received instrumental support at Time 1 was negatively associated with autonomy at Time 1, but showed no significant correlation with autonomy at Time 2.

Structural equation models

After testing for measurement invariance, we specified two structural equation models that both included age, sex and functional health as covariates and received instrumental support as well as self-efficacy beliefs as predictors for perceived autonomy at Time 1 and Time 2. In the second model, we additionally specified an interaction term of self-efficacy and received instrumental support as predictor of autonomy at Time 2. The residuals for each indicator of autonomy were allowed to auto-correlate over time.

The model without interaction had a fair fit, $\chi^2(116) = 270.01$, $RMSEA = 0.07$, $CFI = 0.90$, $SRMR = 0.07$ (Tabachnick and Fidell 2007). The AIC of this model was 12,878.97, the BIC was 13,117.89 (sample size adjusted BIC = 12,914.91). The model explained 46% of the variance in autonomy at Time 2. Figure 1 shows the results for this model. Standardized path coefficients show that receiving instrumental support at Time 1 was negatively associated with perceived autonomy at Time 1 ($\beta = -0.28$, $P < 0.001$). Longitudinally, received instrumental support (Time 1) showed no significant association with perceived autonomy at Time 2 ($\beta = 0.05$, n.s.). This longitudinal path was further examined by specifying a second model that included a latent interaction term for self-efficacy beliefs and received instrumental support.

Fig. 1 Structural equation model without interaction term. *Note:* ** $P < 0.05$; *** $P < 0.01$; **** $P < 0.001$. Reported are standardized coefficients. Covariates were age, sex and functional health. T0 = baseline, T1 = Time 1, T2 = Time 2

The results for the interaction model are shown in Fig. 2. The unstandardized coefficient for the interaction term was significant ($B = -0.30$, $P < 0.05$), indicating that the impact of received instrumental support on perceived autonomy depends on the level of self-efficacy beliefs. The model with interaction term had lower AIC = 8,827.60 and BIC = 9,033.93 values (sample size adjusted BIC = 8,846.91), indicating a better fit compared to the model without interaction.

We used simple slopes analysis (Aiken and West 1991) to determine whether the association of received support with autonomy at Time 2 was compensatory for individuals with lower self-efficacy and interfering for those with higher self-efficacy. Figure 3 depicts the association of the manifest measures of received instrumental support with perceived autonomy at Time 2 at three theoretical levels of self-efficacy (-1 SD, Mean, $+1$ SD).

In accordance with the compensation hypothesis, individuals lower in self-efficacy (-1 SD)—depicted in the solid line in Fig. 3—reported higher levels of autonomy, when they received more instrumental support, whereas individuals higher in self-efficacy ($+1$ SD)—depicted in the dotted line in Figure 3—reported to perceive more autonomy when their levels of instrumental social support were lower, which is in line with the interference hypothesis.

Discussion

In this longitudinal study, we aimed at identifying the relation of received instrumental support to perceived autonomy in a sample of older persons with multiple illnesses. We showed that different levels of self-efficacy

Fig. 2 Structural equation model with interaction term. Note: ** $P < 0.05$; *** $P < 0.01$; **** $P < 0.001$. Reported are unstandardized coefficients. Covariates were age, sex and functional health. T0 = baseline, T1 = Time 1, T2 = Time 2

Fig. 3 Simple slopes analysis depicting the interaction between instrumental support and self-efficacy

beliefs make a difference on whether received instrumental support is detrimental or beneficial for perceived autonomy. Three hypotheses were tested: (a) The *mobilization hypothesis*, assuming that cross-sectionally received social support is negatively related to autonomy, as persons with less perceived autonomy mobilize more support, (b) the *compensation hypothesis*, postulating that longitudinally persons lower in self-efficacy can maintain autonomy by being instrumentally supported, and (b) the *interference hypothesis*, suggesting that persons higher in self-efficacy experience declines in autonomy when they receive instrumental support.

In our study, women and older participants reported higher levels of received instrumental support, which is in line with previous studies (Edelbrock et al. 2001; Longino and Lipman 1981). Despite the high number of chronic conditions in the sample, and considering the sample's age, participants still experienced high levels of autonomy, which were quite stable over the period of investigation (3 months). This may be explained by Ryan and Deci's (2006) conception of autonomy: Autonomy can not only be restored by performing a chosen action on one's own, but also by delegating actions to others, if they are considered to be no more within reach of one's own means (Ryan and Deci 2006). Thus, perceived self-efficacy and received instrumental social support were hypothesized to be focal resources for the maintenance of autonomy in old age. In accordance with this assumption, persons higher in self-efficacy beliefs perceived greater autonomy in this study. The role of received instrumental support, however, can

only be understood by taking additional approaches into consideration: The mobilization, compensation and interference hypotheses.

Our study corroborates previous cross-sectional studies that often found negative relations between received instrumental support and well-being (Barrera 1986; Ringdal et al. 2007; Schwarzer and Leppin 1991; Silverstein et al. 1996). This effect can be explained using the *mobilization* hypothesis, which states that receiving instrumental support is not the cause of adverse outcomes for an individual, but rather an indicator of ill health and low well-being: Being worse off in the first place evokes higher levels of support from the social network (Väänänen et al. 2005). Besides the fact that causality cannot be tested with the design of our study, the disappearance of the negative relation of receiving instrumental support with perceived autonomy in the longitudinal analysis further corroborates the cross-sectional mobilization hypothesis. In our data, the negative association between received instrumental support and autonomy vanished when tested longitudinally; however, it did not turn into a positive effect. To fully understand the time-lagged effect of received instrumental support, one has to consider two further hypotheses—the *compensation* and *interference* hypotheses, which posit that it is necessary to additionally take levels of self-efficacy into consideration.

We specified a latent interaction model with an interaction term of self-efficacy and received instrumental support. The significance of the interaction term and better fit indices of the interaction model as compared to the model without interaction indicated that the longitudinal relation of received instrumental support is moderated by self-efficacy: If individuals have lower self-efficacy, their reports of social support are positively related to their perceptions of autonomy. Hence, they seem to compensate their low levels of self-efficacy with social support. This replicates findings on the *compensation* hypothesis in patients with cancer (Aymanns 1992), rheumatoid arthritis (Reich and Zautra 1995) as well as on patients recovering from heart surgery (Schröder 1997).

In contrast, in individuals with higher levels of self-efficacy who additionally received higher levels of social support, personal and social resources interfered. For those individuals perceptions of autonomy were negatively related to social support. This corroborates the *interference* hypothesis and is in line with previous research showing that receiving support might enhance feelings of dependence, anxiety, guilt, and depression and reduced self-esteem (Bolger et al. 2000; Lu and Argyle 1992; Newsom and Schulz 1998; Warner et al. 2010). Our results suggest that potential negative or non-existent time-lagged effects of receiving instrumental support depend on whether support recipients still feel able to perform and choose actions

on their own. Hence, higher self-efficacy—an important resource on its own—might make it more likely that chronically ill older persons perceive social support as something that is imposed on them, as something creating dependence or threatening their autonomy.

Limitations

The results of our study are limited to older adults with multimorbidity, a group at high risk for further health deteriorations and premature mortality. However, this means that the results cannot necessarily be generalized to other groups with threatened autonomy such as individuals with special needs. This study investigated received *instrumental* support only, as we considered this kind of help to be the most important to restore autonomy in an older functionally limited sample. However, other studies also found negative effects of received *emotional* support (e.g., Warner et al. 2010) and *informational* support from family and friends (e.g., Helgeson and Cohen 1996), which might be explained by an interaction with personal resources as well, and should, therefore, be investigated in future research. Future research might also profit from the increased reliability of a measure of received instrumental support, which contains more than two items.

Furthermore, future longitudinal studies on older adults with multiple chronic conditions should encompass a longer time interval, as the assumed rapid changes in autonomy did not occur during the 3 months period of the present study. Due to the study's design, the causality assumptions of the hypothesis could not be examined sufficiently and should, therefore, be tested in more adequately designed studies (e.g., randomized controlled trials).

Implications for research

Our study suggests taking into consideration personal resources when examining the impact of social resources, as the resources interact in producing individual outcomes. Personal resources can moderate the associations between received social support and perceptions of autonomy in older and chronically ill adults. Therefore, future studies on the effects of receiving help should also take initial levels of self-efficacy into account.

The newly developed Perceived Autonomy in Old Age scale measures autonomy in terms of independence as well as freedom of choice, which covers a wider range of perceptions of autonomy than Ryan and Deci's (2006) definition of autonomy that primarily focuses on freedom of choice. Thus, the Perceived Autonomy in Old Age reflects a broader construct of living autonomously which is in line with the common sense of autonomy among older adults

(Schwarzer 2008). The scale showed good internal consistency and discriminant validity in a pilot study as well as in this study.

Implications for practice

Even well intended help may undermine perceptions of autonomy of older chronically ill persons, if they still feel capable to cope with emerging problems on their own. As an exaggerated consequence, this would mean that individuals with higher self-efficacy beliefs should not be helped at all. However, this will probably not be the best option, as higher levels of self-efficacy and unrealistic optimism might co-occur in some individuals (Schwarzer 1994). As social partners often reward dependent behavior not only in institutionalized but also in community-living older and chronically ill persons (so called *dependency-supportive scripts*; Baltes and Wahl 1992; Baltes et al. 1987), we would suggest two approaches: On the one hand, providers of help should take recipients' perceptions of self-efficacy into account and ask whether they would like to be helped before deciding on whether to provide help at all and which kind of help might be appropriate. On the other hand, family members and professional services who provide help to older chronically ill persons—no matter whether they are higher or lower in self-efficacy—should be trained to support recipients' autonomy and self-responsibility throughout the helping process. This way, caregivers are encouraged to emphasize that the recipients will be supported in whatever action they choose, however, that the choice of action remains within the recipient of help (Baltes et al. 1994; Ryan and Solky 1996; Von Bergen et al. 1999). Over and above an encouragement to maintain autonomy, such an autonomy-supportive approach is more likely to lead to greater program involvement, higher adherence to health behaviors, more independent self-care behavior, and might therefore be the preferred approach for individuals with multimorbidity (Ryan and Solky 1996; Williams 2002; Baltes et al. 1994).

Acknowledgments The German Ageing Survey was funded under Grant 301-1720-2/2 by the German Federal Ministry for Family, Senior Citizens, Women, and Youth. The present study, the first and the third author are funded by the German Federal Ministry of Education and Research (Grant No. 01ET0702); the second author is funded by Grant No. 01ET0801 by the same funding body. The content is the sole responsibility of the authors.

References

- Aiken LS, West SG (1991) Multiple regression: testing and interpreting interactions. Sage, Newbury Park
- Aymanns P (1992) Krebskrankung und familie [cancer and family]. Hans Huber, Bern
- Baltes MM (1995) Dependency in old age: gains and losses. *Curr Dir Psychol Sci* 4:14–19
- Baltes MM, Silverberg S (1994) The dynamics between dependency and autonomy: illustrations across the life span. In: Featherman DL, Lerner RM, Perlmutter M (eds) Life-span development and behavior. Erlbaum, Hillsdale, pp 41–90
- Baltes MM, Wahl H-W (1992) The dependency-support script in institutions: generalization to community settings. *Psychol Aging* 7:409–418
- Baltes MM, Kindermann T, Reizenzein R, Schmid U (1987) Further observational data on the behavioral and social world of institutions for the aged. *Psychol Aging* 2:390–403
- Baltes MM, Neumann E-M, Zank S (1994) Maintenance and rehabilitation of independence in old age: an intervention program for staff. *Psychol Aging* 9:179–188
- Bandura A (1997) Self-efficacy: the exercise of control. Freeman, New York
- Barrera M (1986) Distinctions between social support concepts, measures, and models. *Am J Community Psychol* 14:413–445
- Bengtson VL, Kuypers JA (1985) The family support cycle: psychosocial issues in the aging family. In: Munnichs JMA, Mussen P, Olbrich E (eds) Life span and change in a gerontological perspective. Academic Press, New York, pp 61–77
- Bolger N, Zuckerman A, Kessler RC (2000) Invisible support and adjustment to stress. *J Pers Soc Psychol* 79:953–961
- Bonetti D, Johnston M, Rodriguez-Marin J, Pastor M, Martin-Aragon M, Doherty E, Sheehan K (2001) Dimensions of perceived control: a factor analysis of three measures and an examination of their relation to activity level and mood in a student and cross-cultural patient sample. *Psychol Health* 16:655–674
- Brehm JW, Cole AH (1966) Effect of a favor which reduces freedom. *J Pers Soc Psychol* 3:420–426
- Brown SL, Vinokur AD (2003) The interplay among risk factors for suicidal ideation and suicide: The role of depression, poor health, and loved ones' messages of support and criticism. *Am J Community Psychol* 32:131–141
- Charlson ME, Szatrowski TP, Peterson J, Gold J (1994) Validation of a combined comorbidity index. *J Clin Epidemiol* 47:1245–1251
- Chen G, Gully SM, Whiteman JA, Kilcullen RN (2000) Examination of relationships among trait-like individual differences, state-like individual differences, and learning performance. *J Appl Psychol* 85:835–847
- Cohen JL, Lakey B, Tiell K, Neeley LC (2005) Recipient-provider agreement on enacted support, perceived support, and provider personality. *Psychol Assess* 17:375–378
- Curran PJ, West SG, Finch JF (1996) The robustness of test statistics to nonnormality and specification error in confirmatory factor analysis. *Psychol Meth* 1:16–29
- Edelbrock D, Buys LR, Waite LM, Grayson DA, Broe GA, Creasey H (2001) Characteristics of social support in a community-living sample of older people: the sydney older persons study. *Australas J Ageing* 20:173–178
- Endler NS, Kocovski NL, Macrodimitris SD (2001) Coping, efficacy, and perceived control in acute versus chronic illnesses. *Pers Indiv Differ* 30:617–625
- Fauth EB, Zarit SH, Malmberg B, Johansson B (2007) Physical, cognitive, and psychosocial variables from the disablement process model predict patterns of independence and the transition into disability for the oldest-old. *Gerontologist* 47:613–624
- Fortin M, Lapointe L, Hudon C, Vanasse A, Ntetu AL, Maltais D (2004) Multimorbidity and quality of life in primary care: a systematic review. *Health Qual Life Outcome* 2:51. doi: 10.1186/1477-7525-1182-1151
- Gijzen R, Hoeymans N, Schellevis FG, Ruwaard D, Satariano WA, van den Bos GA (2001) Causes and consequences of comorbidity: a review. *J Clin Epidemiol* 54:661–674

- Greiner W, Weijnen T, Nieuwenhuizen M, Oppe S, Badia X, Busschbach J et al (2003) A single European currency for EQ-5D health states. *Eur J Health Econ* 4:222–231
- Groll DL, To T, Bombardier C, Wright JG (2005) The development of a comorbidity index with physical function as the outcome. *J Clin Epidemiol* 58:595–602
- Haber MG, Cohen JL, Lucas T, Baltes BB (2007) The relationship between self-reported received and perceived social support: a meta-analytic review. *Am J Community Psychol* 39:133–144
- Hays J, Saunders W, Flint E, Kaplan B, Blazer D (1997) Social support and depression as risk factors for loss of physical function in late life. *Aging Ment Health* 1:209–220
- Helgeson VS, Cohen S (1996) Social support and adjustment to cancer: reconciling descriptive, correlational, and intervention research. *Health Psychol* 15:135–148
- Hertz JE, Anschutz CA (2002) Relationships among perceived enactment of autonomy, self-care, and holistic health in community-dwelling older adults. *J Holist Nurs* 20:166–186. doi: [10.1177/08910102020002006](https://doi.org/10.1177/08910102020002006)
- Klein A, Moosbrugger H (2000) Maximum likelihood estimation of latent interaction effects with the LMS method. *Psychometrika* 65:457–474
- Lawton MP, Brody EM (1969) Assessment of older people: self-maintaining and instrumental activities of daily living. *Gerontologist* 9:179–186
- Librero J, Peiró S, Ordiñana R (1999) Chronic comorbidity and outcomes of hospital care: length of stay, mortality, and readmission at 30 and 365 days. *J Clin Epidemiol* 52:171–179
- Longino CF, Lipman A (1981) Married and spouseless men and women in planned retirement communities: Support network differentials. *J Marriage Fam* 43:169–177
- Lu L, Argyle M (1992) Receiving and giving support: effects on relationships and well-being. *Counsell Psychol Q* 5:123
- Luszczynska A, Gibbons FX, Piko B, Teközel M (2004) Self-regulatory cognitions, social comparison, perceived peers' behaviors as predictors of nutrition and physical activity: a comparison among adolescents in hungary, poland, turkey, and USA. *Psychol Health* 19:577–593
- Luszczynska A, Gutiérrez-Doña B, Schwarzer R (2005a) General self-efficacy in various domains of human functioning: evidence from five countries. *Int J Psychol* 40:80–89
- Luszczynska A, Scholz U, Schwarzer R (2005b) The general self-efficacy scale: multicultural validation studies. *J Psychol* 139:439–457
- Luszczynska A, Boehmer S, Knoll N, Schulz U, Schwarzer R (2007) Emotional support for men and women with cancer: do patients receive what their partners provide? *Int J Behav Med* 14:156–163
- Matsui M, Capezuti E (2008) Perceived autonomy and self-care resources among senior center users. *Geriatr Nurs* 29:141–147
- Meredith W (1993) Measurement invariance, factor analysis and factorial invariance. *Psychometrika* 58:525–543
- Newsom JT, Schulz R (1998) Caregiving from the recipient's perspective: Negative reactions to being helped. *Health Psychol* 17:172–181
- Pavot WG, Diener E, Colvin CR, Sandvik E (1991) Further validation of the satisfaction with life scale: evidence for the cross-method convergence of well-being measures. *J Pers Assess* 57:149–161
- Proot IM, Crebolder HFJM, Abu-Saad HH, Macor THGM, Meulen RHJT (2000) Facilitating and constraining factors on autonomy: the views of stroke patients on admission into nursing homes. *Clin Nurs Res* 9:460–478. doi: [10.1177/10547730022158690](https://doi.org/10.1177/10547730022158690)
- Proot IM, ter Meulen RHJ, Abu-Saad HH, Crebolder HFJM (2007) Supporting stroke patients' autonomy during rehabilitation. *Nurs Ethics* 14:229–241. doi: [10.1177/0969733007073705](https://doi.org/10.1177/0969733007073705)
- Reich JW, Zautra AJ (1995) Spouse encouragement of self-reliance and other-reliance in rheumatoid arthritis couples. *J Behav Med* 18:249
- Reis HT, Sheldon KM, Gable SL, Roscoe J, Ryan RM (2000) Daily well-being: the role of autonomy, competence, and relatedness. *Pers Soc Psychol Bull* 26:419–435
- Revenson TA, Wollman CA, Felton BJ (1983) Social supports as stress buffers for adult cancer patients. *Psychosom Med* 45:321–331
- Ringdal GI, Ringdal K, Jordhøy MS, Kaasa S (2007) Does social support from family and friends work as a buffer against reactions to stressful life events such as terminal cancer? *Palliat Supportive Care* 5:61–69
- Ryan RM, Deci EL (2000) Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol* 55:68–78
- Ryan RM, Deci EL (2006) Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *J Pers* 74:1557–1585
- Ryan RM, Solky JA (1996) What is supportive about social support? In: Pierce GR, Sarason BR, Sarason IG (eds) *Handbook of social support and the family*. Plenum Press, New York, US, pp 249–267
- Ryff CD (1995) Psychological well-being in adult life. *Curr Dir Psychol Sci* 4:99–104
- Sarason IG, Levine HM, Basham RB, Sarason BR (1983) Assessing social support: the social support questionnaire. *J Pers Soc Psychol* 44:127–139
- Schröder K (1997) Self-regulation competence in coping with chronic disease. *Internationale Hochschulschriften*, Waxmann, Münster
- Schröder K, Schwarzer R, Konertz W (1998) Coping as a mediator in recovery from cardiac surgery. *Psychol Health* 13:83–97
- Schulenburg JM, Claes C, Greiner W, Uber A (1998) Die deutsche Version des EuroQol-Fragebogens [The German version of the EQ5D]. *Z Gesundh Wiss* 6:3–20
- Schulz U, Schwarzer R (2003) Soziale Unterstützung bei der Krankheitsbewältigung: Die Berliner Social Support Skalen (BSSS). *Diagnostica* 49:73–82
- Schüz B, Wurm S, Warner LM, Ziegelmann JP (in press) Self-efficacy and illness representations in individuals with multimorbidity: a multilevel approach. *Psychol Health*
- Schwarzer R (1994) Optimism, vulnerability, and self-beliefs as health-related cognitions: a systematic overview. *Psychol Health* 9:161–180
- Schwarzer R (2008) Perceived autonomy in old age. <http://user.page.fu-berlin.de/~health/autonomy.htm>. Accessed 19 June 2010
- Schwarzer R, Jerusalem M (1995) Generalized self-efficacy scale. In: Weinman J, Wright S, Johnston M (eds) *Measures in health psychology: a user's portfolio. Causal and control beliefs*. NFER-Nelson, Windsor, pp 35–37
- Schwarzer R, Knoll N (2007) Functional roles of social support within the stress and coping process: a theoretical and empirical overview. *Int J Psychol* 42:243–252
- Schwarzer R, Leppin A (1991) Social support and health: a theoretical and empirical overview. *J Soc Pers Relat* 8:99–127
- Schwarzer R, Schulz U (2000) Berlin social support scales (BSSS). www.coping.de. Accessed 19 June 2010
- Schwarzer R, Boehmer S, Luszczynska A, Mohamed NE, Knoll N (2005) Dispositional self-efficacy as a personal resource factor in coping after surgery. *Pers Individ Differ* 39:807–818
- Seeman TE, Bruce ML, McAvay GJ (1996) Social network characteristics and onset of ADL disability: Macarthur studies of successful aging. *J Gerontol B Psychol Sci Soc Sci* 51:191–200
- Seeman TE, Unger JB, McAvay G, Mendes de Leon CF (1999) Self-efficacy beliefs and perceived declines in functional ability:

- Macarthur studies of successful aging. *J Gerontol B Psychol Sci Soc Sci* 54B:214–222
- Sibley A, Kersten P, Ward CD, White B, Mehta R, George S (2006) Measuring autonomy in disabled people: validation of a new scale in a UK population. *Clin Rehabil* 20:793–803
- Silverstein M, Xuan C, Heller K (1996) Too much of a good thing? Intergenerational social support and the psychological well-being of older parents. *J Marriage Fam* 58:970–982
- Smith J, Goodnow JJ (1999) Unasked-for support and unsolicited advice: age and the quality of social experience. *Psychol Aging* 14:108–121
- Steverink N, Lindenberg S, Slaets JPI (2005) How to understand and improve older people's self-management of wellbeing. *Eur J Ageing* 2:235–244
- Tabachnick BG, Fidell LS (2007) Using multivariate statistics, 5th edn. Allyn & Bacon/Pearson Education, Boston
- Thompson SC, Sobolew-Shubin A (1993) Perceptions of overprotection in ill adults. *J Appl Soc Psychol* 23:85–97
- Väänänen A, Vahtera J, Pentti J, Kivimäki M (2005) Sources of social support as determinants of psychiatric morbidity after severe life events: prospective cohort study of female employees. *J Psychosom Res* 58:459–467
- van den Akker M, Buntinx F, Metsemakers JF, Roos S, Knottnerus JA (1998) Multimorbidity in general practice: prevalence, incidence, and determinants of co-occurring chronic and recurrent diseases. *J Clin Epidemiol* 51:367–375
- Von Bergen CW, Soper B, Rosenthal GT, Cox SJ, Fullerton R (1999) When helping hurts: negative effects of benevolent care. *J Am Psychiatr Nurses Assoc* 5:134–136
- Wahl H-W (1991) Dependence in the elderly from an interactional point of view: verbal and observational data. *Psychol Aging* 6:238–246
- Warner LM, Schüz B, Wurm S, Ziegelmann JP, Tesch-Römer C (2010) Giving and taking—differential effects of providing, receiving and anticipating emotional support on quality of life in adults with multiple illnesses. *J Health Psychol* 15:660–670
- Wethington E, Kessler RC (1986) Perceived support, received support, and adjustment to stressful life events. *J Health Soc Behav* 27:78–89
- Williams GC (2002) Improving patient's health through supporting the autonomy of patients and providers. In: Deci EL, Ryan RM (eds) *Handbook of self-determination research*. University of Rochester Press, Rochester, pp 233–254
- Williams GC, Freedman ZR, Deci EL (1998) Supporting autonomy to motivate patients with diabetes for glucose control. *Diabetes Care* 21:1644–1651
- Wurm S, Tomasik MJ, Tesch-Römer C (2010) On the importance of a positive view on ageing for physical exercise among middle-aged and older adults: cross-sectional and longitudinal findings. *Psychol Health* 25:25–42
- Zautra AJ, Reich JW, Newsom JT (1995) Autonomy and sense of control among older adults: an examination of their effects on mental health. In: Bond L, Cutler S, Grams A (eds) *Promoting successful and productive aging*. Sage, Newbury Park, pp 153–170
- Zissi A, Barry MM, Cochrane R (1998) A mediational model of quality of life for individuals with severe mental health problems. *Psychol Med* 28:1221–1230