Affective and health-related outcome expectancies for physical activity in older adults

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Affective and health-related outcome expectancies for physical activity in older adults

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This study tests the effects of affective and health-related outcome expectancies on physical exercise, assuming stronger direct and indirect (via intention) effects from affective outcome expectancy to physical exercise than from health-related outcome expectancy to exercise. Physical exercise and social cognitive variables were assessed at baseline, and 6- and 12-month follow-up in 335 older adults (60–95 years of age). Applying structural equation modelling, there was a direct effect from affective, but not from health-related outcome expectancy on intentions and behaviour. Also, the indirect effect from self-efficacy on physical exercise via affective outcome expectancy was significant, whereas the mediation via health-related outcome expectancy was not. These findings emphasise the relative importance of affective versus health-related outcome expectancies in predicting intentions and physical exercise in older adults and highlight the importance to separate these facets at a conceptual level to enhance both theory development and health promotion.

Keywords: outcome expectancy; affective; physical activity; physical exercise; intention; self-efficacy

Introduction

In social cognitive theory (SCT), outcome expectancy describes a contingency between a given behaviour of an individual and the consequences following that behaviour (Bandura, 1997). The construct of outcome expectancy is common in physical activity research in older adults (Rotter, 1954; Williams, Anderson, & Winett, 2005). Health behaviour change begins with intention formation, which is facilitated by a favourable balance of positive and negative expectations regarding outcomes of the respective behaviour. While health behaviour change messages typically entail information of more distant health benefits, the more immediate payoffs of engaging in health behaviours, such as affective responses, are typically not part of health behaviour change messages. A growing body of recent studies has highlighted the importance of affective components of outcome expectancy.

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Thus, in this study, we examine the relative effects of affective and health-related outcome expectancies on physical activity in older adults. We hypothesise a stronger direct and indirect effects (via intentions) of the affective outcome expectancy component as opposed to the health-related component.

Despite slightly different labels and conceptualisations of outcome expectancy within different theoretical approaches, such as the transtheoretical model (TTM; Prochaska & DiClemente, 1992), the theory of planned behaviour (TPB; Fishbein & Ajzen, 1975) or the SCT (Bandura, 1997), these conceptualisations have a strong overlap, as they all involve expected outcomes of physical activity. Within the TTM (stages of change), outcome expectancy corresponds to the decisional balance construct, which involves the weighing of perceived pros and cons of a given behaviour. A positive balance is associated with stage progress and a greater likelihood to perform the behaviour (Prochaska & DiClemente, 1992). The TPB conceptualises outcome expectancies as behavioural beliefs underlying the attitude construct, indicating that a behaviour will lead to a given outcome (Ajzen, 1991). In SCT, outcome expectancy describes a contingency between an individual’s behaviour and the consequences following that behaviour (Bandura, 1997).

In sum, outcome expectancy is generally defined as an expectation that a specific outcome will follow a given behaviour (Williams et al., 2005). However, subdividing the conceptualisation in terms of different facets of the expected outcomes may increase the explanatory power of the construct. Affective (e.g. expecting to feel good after exercise) versus health-related (e.g. expecting better health through exercise) outcome expectancy has been shown to be a useful distinction (Lawton, Conner, & Parker, 2007; Trafimow & Sheeran, 1998; van den Berg, Manstead, van der Pligt, & Wigboldus, 2005), especially given the finding that older adults have a preference for emotionally meaningful goals (Carstensen & Mikels, 2005).

**Affective and health-related components**

Anticipated affective responses to physical activity represent an understudied class of outcome expectancies, as research has focused mainly on health benefits of physical activity (Richard, van der Pligt, & de Vries, 1996; Williams et al., 2005). There is a growing body of evidence that shows that affective outcome expectancies and health-related (synonymous to cognitive or instrumental; Lawton, Conner, & McEachan, 2009) outcome expectancies are distinct from each other (Trafimow & Sheeran, 1998; Trafimow et al., 2004). In a large community-based sample, it was found that affective, but not health-related outcome expectancies, predicted physical activity over a 6-month period (Lowe, Eves, & Carroll, 2002). In a similar fashion, affective outcome expectancy (attitudes in TPB) was a more powerful predictor of physical activity ($d = 0.34$) and the intention to be physically active ($d = 0.46$) than health-related outcome expectancy (Lawton et al., 2009). A similar pattern was shown for eight other health behaviours. The findings underscore the importance of affect in the performance of health-enhancing behaviours and suggest that interventions could target the affective consequences of engaging in these behaviours. Conner et al. (2011) investigated the differential impact of affective and health-related outcome expectancies on self-reported exercise in an experimental design. They compared an affective message condition, a health-related message condition and a no-message
control condition. Affective messages consistently produced greater increases in physical exercise than in the other conditions.

There is evidence (Carstensen & Mikels, 2005; Scheibe & Carstensen, 2010) that older persons apparently encode, hold in mind and decode emotionally positive information better in comparison to negative information, which also has implications for expected behavioural consequences. Older adults as opposed to younger ones rated emotionally positive messages as more informative than negative messages, and they remembered a higher proportion of positive to negative messages (Shamaskin, Mikels, & Reed, 2010). However, older adults falsely remembered negative messages as being positive. Hence, valenced health care messages influence motivational processes and behaviour (e.g. Conner et al., 2011), but beyond that the processing of valenced information changes with age (Shamaskin et al., 2010). As shown by Freund, Hennecke, and Riediger (2010), older adults prefer a process focus in terms of direct outcomes (e.g. enjoying exercise), rather than a focus on health-related outcomes (e.g. weight control). Furthermore, only process focus was related to emotional status. This could mean that especially for older adults there is a preference of emotionally gratifying outcomes, and that affective outcome expectancy is a stronger predictor of behaviour.

**Outcome expectancy in SCT**

In SCT (Bandura, 1989, 1997), outcome expectancy is assumed to influence behaviour not only indirectly through behavioural intentions, but also directly, whereas in the TPB (Fishbein & Ajzen, 1975) only an indirect influence is assumed. In SCT, self-efficacy as the perceived capability to perform behaviour is regarded as the most influential predictor of human behaviour. Thereby, self-efficacy influences outcome expectancy (for a debate on the direction of the influence, see Williams, 2010), intention and behaviour. Some studies with older adults have shown that generic outcome expectancy is related to self-efficacy ($r = 0.24–0.70$), and that outcome expectancy accounts for at least some variation in physical activity beyond that accounted for by self-efficacy (for a review, see Williams et al., 2005). According to SCT, affective outcome expectancy should also influence physical activity (van der Pligt & de Vries, 1998), although little research exists to support this (Williams et al., 2005). Studies based on the TPB have consistently shown that generic outcome expectancy (i.e. behavioural beliefs/attitudes) has a small to moderate association with physical activity intention ($r = 0.21–0.50$, see Williams et al., 2005). Lawton et al. (2009) investigated in a TPB study the role of affective outcome expectancies (attitudes in TPB) for a number of health behaviours. They found that, for at least 9 out of 14 health behaviours, except for physical activity, there was an effect (if intention was not included in the model) of affective outcome expectancies on behaviour. Contrary to other health behaviours, the prediction by affective outcome expectancy diminished for physical activity when including intention into the model. This refers to an indirect effect from affective outcome expectancies via intention to physical activity (mediation). As affective outcome expectancies are more potent predictors of both intentions and behaviour than health-related ones, at least for some behaviours (Lawton et al., 2007, 2009), it still remains questionable whether physical exercise can be predicted directly (not mediated via intention) or indirectly when mediated via intentions.
Aims and hypotheses
In this study, we examine the effects of affective and health-related outcome expectancies on physical exercise within the social cognitive model. In addition to all paths outlined by this model (Figure 1), we specify affective and health-related outcome expectancies as two simultaneous mediators and compare their putative mediator roles.

Hypothesis 1: First, we hypothesise a stronger direct effect of affective outcome expectancy in comparison to health-related outcome expectancy on physical exercise.

Hypothesis 2: Moreover, we hypothesise a stronger indirect effect (mediation) from affective outcome expectancy via intention to physical exercise than from health-related outcome expectancy via intention to exercise.

Hypothesis 3: Further, we hypothesise that there is a stronger indirect effect from self-efficacy via affective outcome expectancy to physical exercise than from self-efficacy via health-related outcome expectancy on physical exercise.

Hypothesis 4: Also, the indirect effect from self-efficacy via affective outcome expectancy and via intention to physical exercise (four-variables chain) is expected to be stronger than the indirect effect from self-efficacy via health-related outcome expectancy and via intention to physical exercise.

Finally, we examine whether there is a stronger direct or indirect (via intention) effect from both outcome expectancies to exercise. Thus, the question is whether the two components of outcome expectancies operate directly on exercise or in an indirect manner (mediated via intention on physical exercise).

Design
Participants and procedure
This study focused on the adoption and maintenance of physical exercise in older adults over a time span of 12 months, with three measurement points in time. Ethical

Figure 1. Structural model for predicting physical exercise (N=335).
Notes: Bold arrows indicate significant mediation paths on physical exercise.
*p < 0.05; **p < 0.01; ***p < 0.001.
guidelines were followed, and clearance from the ethics committee was obtained. Inclusion criteria were being older than 60 years and not having a medical contraindication to perform physical exercise. Participants were recruited via newspaper announcements. After sending back the informed consent form, participants received questionnaires to measure social-cognitive variables as well as physical exercise levels via mail at baseline, 6 months later and again 12 months later. Participants who completed all three questionnaires could choose between two books on the topic of physical activity in old age. At baseline (Time 1 [T1]), 418 participants completed the questionnaire. The second questionnaire (Time 2 [T2], 6 months later) was answered by 340 participants, whereas 335 participants completed the third questionnaire (Time 3 [T3], 12 months later). The final longitudinal sample comprised 159 women and 176 men (80% of baseline) with a mean age of 66.7 years, SD = 4.93, ranging from 60 to 95 years.

**Measures**

*Outcome expectancy* was measured with a six-item scale, with a six-point response format, divided into affective and health-related outcome expectancies. *Affective outcome expectancy* consisted of two items asking participants ‘If I would exercise on a regular basis, then I would feel less disheartened and gloomily’, and ‘[…] then I would feel well-balanced in my daily life’. The other four items measured *health-related outcome expectancy*, referring to the short- and long-term benefits of being physically active. An example is ‘If I would exercise on a regular basis, then I would be doing something good for my health in future years’, or ‘[…] then there is also a short-term benefit for my health’. Factor analysis suggested a solution with two factors for the six items, distinguishing between affective (factor loadings between 0.91 and 0.92) and health-related (factor loadings between 0.61 and 0.76) components of outcome expectancy. Item examples are translations from German and are adapted from Schwarzer, Luszczynska, Ziegelmann, Scholz, and Lippke (2008).

*Perceived self-efficacy* was measured with a six-item scale (Scholz, Sniehotta, & Schwarzer, 2005), with a six-point response format. Examples were ‘I am confident that I can adopt a physically active lifestyle’, or ‘I am confident that I can resume a physically active lifestyle, even if I have relapsed several times’. Factor analysis suggested a solution with one factor for all six items (factor loadings between 0.72 and 0.88).

*Intentions* consisted of two single-item indicators (Schwarzer et al., 2008), measured with a six-point response format. An example item is ‘I intend to exercise on a regular basis’.

*Physical exercise* as the *outcome measure* was assessed at baseline (T1) and 12 months later (T3). Based on the PAQ-50+ (adopted from Huy & Schneider, 2008), participants were asked ‘Within the last 7 days, how often did you engage on average in sports/exercise (e.g. swimming, ball games, running, walking, water sports)?’ Then, they were asked to report the frequency (days) and duration of physical exercise/sports (hours and minutes) over the last 7 days. For the analyses, a composite score (frequency × duration) was formed. Physical exercise at T1 averaged 0.53 h a day, SD = 0.57 (at T3: M = 0.58, SD = 0.64) (Table 1).
Assessment of potential covariates

There were no significant effects of gender ($\beta = 0.001$, $p = 0.98$) and age ($\beta = -0.07$, $p = 0.15$) on physical exercise outcome. The $\beta$ values of the hypothesised path model were similar with and without gender and age, whereas the fit indices were less optimal (model with gender, age and SF-12: RMSEA = 0.04 (90%CI = 0.01, 0.05), SRMR = 0.04, CFI = 0.99, TLI = 0.98, $\chi^2(46) = 66.08$, $p = 0.03$). Therefore, gender and age were excluded as covariates in the final model, and only baseline physical exercise served as the covariate. To regress physical exercise on the hypothesised SCT predictor variables, we controlled for baseline exercise levels. It should be noted, however, that by controlling for baseline exercise level in this way it is possible that the effects of social cognitive variables on exercise might be underestimated (Weinstein, 2007).

Analytical procedure

The data analysis specified the SCT within a structural equation modelling framework. In order to test the social cognitive model, direct and indirect paths were estimated (Figure 1). The model was evaluated based on recommended fit indices using Mplus Version 5.21 (L.K. Muthén & B.O. Muthén, 1998–2007). We report fully standardised beta coefficients reflecting the variances of the continuous variables as well as the variances of the background and outcome variables for standardisation.

In order to reduce the number of parameters needed to define a construct, increase the stability of the parameter estimates and improve the normality of the distributions, parcelling was applied. A parcel can be defined as an aggregate-level indicator comprising the average of two or more items (Little, Cunningham, Shahar, & Widaman, 2002). Thereby, we created two manifest indicators per latent construct.
We have spread items with maximal similar item content across parcels to generate two parcels per latent construct that were equivalent in terms of mean, SD and skewness.

Behaviour scores larger than three SDs were truncated. Missing data (<5%) were treated using the full information maximum likelihood (FIML) algorithm (L.K. Muthén & B.O. Muthén, 1998–2007). Under ignorable missing data conditions (missing completely at random and missing at random), FIML estimates are regarded as unbiased and efficient in terms of convergence, parameter estimate bias, parameter estimate efficiency and model goodness of fit (Enders & Bandalos, 2001).

Results

Drop out analyses yielded no baseline differences between participants in the longitudinal sample and those who dropped out in terms of gender, age, marital status, educational level, social-cognitive variables and physical exercise. A selective dropout occurred for self-efficacy only ($t(416) = -0.24, p = 0.02$). The participants who dropped out at T3 had lower baseline values (T1) for self-efficacy ($M = 4.72, SD = 1.22$) than participants who remained in the longitudinal sample ($M = 5.03, SD = 1.02$) with the difference corresponding to a small to medium effect size ($d = 0.27$).

Predicting physical exercise

The hypothesised model fit the data well (RMSEA < 0.001 [90%CI = 0.00, 0.04], SRMR = 0.026, CFI = 1.00, TLI = 1.00, $\chi^2(25) = 23.23$, $p = 0.56$; $\chi^2/df = 0.93$). Figure 1 displays the standardised parameter estimates for the tested model. A baseline model that collapses affective and cognitive outcome expectancies – rather than dividing them into two separate constructs – fits the data equally well (RMSEA < 0.001, [90%CI = 0.00, 0.05], SRMR = 0.022, CFI = 1.00, TLI = 1.00, $\chi^2(14) = 13.46$, $p = 0.49$; $\chi^2/df = 0.96$). As these models are non-nested, a descriptive comparison slightly favours the hypothesised model ($AIC = 7036$, $BIC = 7181$) compared to the baseline model ($AIC = 7166$, $BIC = 7295$) when the number of manifest variables is held constant. Just one general outcome expectancy factor (baseline model) would mask the differential prediction pattern of the two components of outcome expectancy (hypothesised model). Therefore, we further focus on the hypothesised model with two separate outcome expectancy facets. Of the physical exercise variance, 24% was accounted for by the hypothesised model. With an interest in the direct and indirect (via intention) effects of the outcome expectancy facets on exercise behaviour, the total effect can be decomposed into direct and indirect components (Hayes, 2009). The total effect – that is without including intention as a proposed mediator into the model – of affective outcome expectancy on behaviour is $\beta = 0.16$, ([95%CI: 0.03, 0.18], $p = 0.007$), whereas for health-related outcome expectancy it is $\beta = -0.04$, ([95%CI: -0.13, 0.07], $p = 0.55$). For testing the hypotheses, intention is included into the model partitioning the effect of affective and health-related outcome expectancies into the direct and indirect effect components. For Hypothesis 1, there was a significant direct effect on physical exercise by affective outcome expectancy ($\beta = 0.14$, [95%CI: 0.02, 0.26], $p = 0.02$), whereas the direct effect from health-related outcome expectancy ($\beta = -0.06$, [95%CI: -0.17, 0.05], $p = 0.29$; Hypothesis 1) on exercise.
was nonsignificant. For Hypothesis 2, the indirect effect from affective outcome expectancy via intention ($\beta = 0.02$, [95%CI: $-0.004, 0.046$], $p = 0.10$) to physical exercise, but also via health-related outcome expectancy ($\beta = 0.03$, SE = 0.03 [95%CI: $-0.003, 0.058$], $p = 0.08$) was marginally significant. For Hypothesis 3, a significant indirect effect was obtained from self-efficacy via affective outcome expectancy ($\beta = 0.05$, [95%CI: $0.005, 0.097$], $p = 0.03$) to physical exercise. In contrast, the indirect effect from self-efficacy to physical exercise via health-related outcome expectancy ($\beta = -0.02$, [95%CI: $-0.062, 0.019$], $p = 0.30$) was nonsignificant. Also for Hypothesis 4, the indirect effect (four-variables chain) from self-efficacy via affective outcome expectancy and via intention to physical exercise was nonsignificant ($\beta = 0.01$, [95%CI: $-0.002, 0.017$], $p = 0.12$). The same applies to the indirect effect from self-efficacy via health-related outcome expectancy and via intention to physical exercise ($\beta = 0.01$, [95%CI: $-0.002, 0.020$], $p = 0.09$; Hypothesis 4).

**Discussion**

In this study, we examined the effects of affective and health-related outcome expectancies on physical exercise in older adults within the framework of SCT over a 12-month period of time. We specified affective and health-related outcome expectancies as two parallel direct predictors of physical exercise, as well as indirect predictors via intention. Furthermore, we analysed all indirect paths within the social cognitive model from self-efficacy via affective and health-related outcome expectancies on behaviour, and via intention on behaviour. Figure 1 shows all hypothesised paths by the social cognitive model and the parallel outcome expectancies. In our model, the temporal order among the study variables was established in line with the tenets of SCT, while also recognising that no conclusive proof of causal ordering can be derived when using a non-experimental research design. In this study, the temporal ordering was given by operationalising Time 2 outcome expectancies, 6 months after Time 1 and 6 months before the outcome variable physical exercise.

As hypothesised, affective outcome expectancy was a stronger predictor of physical exercise 6 months later, compared to health-related outcome expectancy. In addition, the mediation from self-efficacy on physical exercise via affective outcome expectancy was significant, whereas the mediation via health-related outcome expectancy was not. All paths (four-variables chains) from self-efficacy via one of the types of outcome expectancy and via intention to physical exercise 12 months after self-efficacy measurement took place were nonsignificant. The direct path from self-efficacy to exercise was also nonsignificant, but the mediation from self-efficacy via intention to physical exercise was significant.

These results emphasise the relative importance of affective versus health-related outcome expectancies in predicting intentions and physical exercise in older adults, which is in line with a number of studies (e.g., Conner et al., 2011; Kraft, Rise, Sutton, & Rosamb, 2005; Lawton et al., 2009). Kraft et al. (2005) found in a TPB study for exercise that affective outcome expectancy played a more important role in the intention formation process than did health-related outcome expectancy next to perceived behavioural control. Lawton et al. (2009) found that there was no direct effect of affective outcome expectancy on physical exercise when intention was
included into the model, which was unexpected, as an effect of affective outcome expectancy was hypothesised by the authors and was found for other behaviours in that study. In contrast to Lawton et al. (2009), our results showed a direct effect (not via intention) of affective outcome expectancy as it is also assumed in the social cognitive model. Affective outcome expectancy was the strongest direct predictor of physical exercise, and intention was a significant direct predictor too. As there is no direct path of outcome expectancy assumed in the TPB, the SCT appeared to be more appropriate in explaining exercise behaviour. Conner et al. (2011) showed in an experimental design that affective messages consistently produced greater increases in physical exercise than the health-related and the control conditions, which underscores the fact that exercise is driven by affective expectations or at least by affective cues. A review by Williams et al. (2005) concluded that increases in specific emotional responses to acute exercise (such as revitalisation and positive engagement) could enhance behaviour.

One could argue that health-related outcome expectancies should play a major role in predicting exercise of older adults because of their higher morbidity levels. But we did not find stronger effects of age with affective outcome expectancy than for health-related outcome expectancy. Furthermore, one could argue that especially for older adults there might be a preference for emotionally gratifying stimuli or a neglect of negative information (Shamaskin et al., 2010) and a preference for the process of being active itself (Freund et al., 2010), rather than long-term health benefits that reflects a product.

Limitations and future directions

Some limitations need to be mentioned. Data are based on self-reports. Although self-report measures of physical exercise are common in health behaviour research, adding objective measures would be appropriate (Prince et al., 2008). Weinstein (2007) describes problems that might emerge with ongoing or repeated behaviours that have been and are being performed frequently, such as physical exercise. In such a case, controlling for prior behaviour is likely to underestimate the effects of social cognition on subsequent behaviour. On the other hand, the effect of social cognitions on behaviour can be overestimated because behaviour also causes subsequent social cognitions and vice versa, which leads to an infinite regress (Weinstein, 2007). To better assess such reciprocal relationships in experimental designs, modelling change over time by micro-level analyses is desirable (Williams & Dunsiger, 2007).

Another limitation stems from the fact that we used only two- and four-item measures for outcome expectancy. However, a more elaborated measure would be of advantage (e.g. Physical Activity Enjoyment Scale; Kendzierski & DeCarlo, 1991), to assess also other affective responses, such as dislike of exercise, that have been shown to predict physical exercise (Brownson, Baker, Housemann, Brennan, & Bacak, 2001; Williams et al., 2005). The generalisability of the results might be somewhat restricted due to the recruitment of participants via newspaper announcements and selective dropout. Another shortcoming is related to the operationalisation of the constructs involved. The items used to measure intentions, self-efficacy, and health-related as well as affective outcome expectancies do differ somewhat in their focus, so that affective outcome expectancies refer to exercise on a regular basis,
whereas self-efficacy refers to adopting a physically active lifestyle. In future studies, items should be more consistent in terms of target, action, context and time.

Future research should include a broader conceptualisation of the outcome expectancy construct, distinguishing between affective and cognitive (e.g. health-related) outcomes. Further, there are not only indirect effects from affective outcome expectancy via intention to exercise, but also direct effects of affective outcome expectancy on behaviour, which could be informative for intervention and model development. Future studies should include measures of affective states (e.g. Watson, Clark, & Tellegen, 1988) rather than only affective outcome expectancy. More research is needed to disentangle these effects (Richard et al., 1996), as affective outcome expectancy is conceptualised as cognitive expectations about affective states as a consequence of a specific behaviour and not as the affective states itself.

Future studies should also include moderators such as different outcome values (e.g. Rodgers & Brawley, 1996), subgroups with different affective or cognitive styles (Conner et al., 2011; Trafimow et al., 2004) or different behaviours (Lawton et al., 2009; Trafimow et al., 2004). Although our model fits the data well, alternative models with different causal sequence of the SCT variables (Williams, 2010) and the possibility for reverse causation (Weinstein, 2007) shall not be precluded thereby. This should be tested in future research. Furthermore, researchers should conduct interventions with rigorous experimental designs (Lippke & Ziegelmann, 2008; Weinstein, 2007).

We only looked for positive outcome expectancy, as in previous studies it was found to be more suitable for older adults (for a review, see Williams et al., 2005). But the question about potential effects of negative outcome expectancies especially in combination with expected negative affective outcomes remains. Also, other subdivisions of the outcome expectancy construct may be of interest, for example, the temporal proximity of the behavioural outcomes, particularly distant versus immediate consequences of health behaviour (Orbell & Kyriakaki, 2008; Strathman, Gleicher, Boninger, & Edwards, 1994). As the short-term and long-term health-related outcome expectancy loaded on one factor in our study, we collapsed them into a single construct, but further research and different measures are needed to gain more insight into this issue (Joireman, Balliet, Sprott, Spangenberg, & Schultz, 2008; Strathman et al., 1994).

Conclusions and practical implications
The present results highlight the relative importance of affective as opposed to health-related outcome expectancies in predicting physical exercise in older adults within the social cognitive framework. Further, these results emphasise also direct (not via intentions) effects rather than exclusively mediated effects of affective outcome expectancy on physical exercise. For practical implications, the results suggest that interventions should focus on emotionally positive information, especially in older adults or in those with a more limited future time perspective (Mikels et al., 2010, Ziegelmann, Lippke, & Schwarzer, 2006), rather than only on health-related information. Enjoying the exercise itself (Freund et al., 2010) or highlighting the short-term affective benefits after and during physical exercise should lead to better intervention outcomes (Conner et al., 2011). Another way to increase the affective relevance of exercise for individuals (and therefore increasing
the affective outcome expectancy as well) could be to include emotionally close individuals or the intimate partner in interventions and thus to foster joint exercise. It has been shown that in those participants whose partners took part in a physical activity intervention, physical activity increased substantially over time, as compared to individuals whose partners were not involved in the intervention (Gellert, Ziegelmann, Warner, & Schwarzer, in press). Finally, although there is need for focusing on affective outcome expectancies, it is of note that affective and cognitive behavioural consequences need not always be antagonists or independent facets, but they could also operate in concert.

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