

Avoidance Goal Pursuit Depletes Self-Regulatory Resources

Daniela Oertig,¹ Julia Schüler,² Jessica Schnelle,¹
Veronika Brandstätter,¹ Marieke Roskes,³ and
Andrew J. Elliot⁴

¹University of Zurich

²University of Berne

³Ben Gurion University of the Negev

⁴University of Rochester

Abstract

Objective: Research on the strength model of self-regulation is burgeoning, but little empirical work has focused on the link between distinct types of daily goal pursuit and the depletion of self-regulatory resources. The authors conducted two studies on the link between avoidance goals and resource depletion.

Method: Study 1 (283 [228 female] Caucasians, ages 18–51) investigated the concurrent and longitudinal relations between avoidance goals and resource depletion over a 1-month period. Study 2 (132 [93 female] Caucasians, ages 18–49) investigated the concurrent and longitudinal relations between avoidance goals and resource depletion over a 1-month period and explored resource depletion as a mediator of the avoidance goal to subjective well-being relation.

Results: Studies 1 and 2 documented both a concurrent and a longitudinal negative relationship between avoidance goals and self-regulatory resources, and Study 2 additionally showed that self-regulatory resources mediate the negative link between avoidance goals and subjective well-being. Ancillary analyses demonstrated that the results observed in the two studies were independent of neuroticism.

Conclusions: These findings advance knowledge in both the resource depletion and avoidance goal literatures, and bolster the view that avoidance goal pursuit over time represents a self-regulatory vulnerability.

Keywords: self-regulation, resource depletion, avoidance goal, subjective well-being

In everyday life, people adopt and pursue a variety of different goals, and this self-regulation via intentional goal pursuit requires and expends the self's resources (Baumeister & Vohs, 2007; Muraven & Baumeister, 2000). Goals can focus on trying to acquire or maintain a positive outcome or psychological situation (i.e., approach goals) or they can focus on trying to avoid or stay away from a negative outcome or psychological situation (i.e., avoidance goals; Elliot, 1999). This approach-avoidance distinction is fundamental to the goal literature, as pursuit of these qualitatively distinct types of goals has been linked to a differential set of psychological processes and subsequent outcomes (for reviews see Elliot, 2005; Gable & Berkman, 2008). In the present research, we investigate the link between avoidance goal pursuit and self-regulatory resources. On the basis of both theory and prior empirical work on goals and psychological processes, we hypothesize that the pursuit of avoidance goals has a particularly depleting effect on self-regulatory resources. In addition, we hypothesize that this depletion effect is responsible, in part, for the inimical influence of avoidance goals on subjective well-being (SWB).

In the present research we conducted two studies designed to test this set of hypotheses.

Self-Regulation and Resource Depletion

Self-regulation involves acting to change one's affect, cognition, or behavior to bring it in line with a standard such as a goal. This process of change often entails overriding natural, habitual, or learned responses in order to guide psychological functioning in a different direction (Baumeister & Vohs, 2007). Self-regulation is a core subcomponent of the executive function of the self (Baumeister, 1998) and is commonly characterized in terms of three broad processes: establishing

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Correspondence concerning this article should be addressed to Julia Schüler, Institute of Sport Science, University of Berne, Brengartenstrasse 145, CH-3012 Berne, Switzerland. E-mail: julia.schueler@ispw.unibe.ch.

standards or goals, engaging in goal-directed behavior, and monitoring goal progress (Carver & Scheier, 1981; Gollwitzer, 1990; Kuhl, 2000).

A prominent idea in contemporary research on the self is that self-regulation draws on a limited, common pool of resources (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Muraven, Tice, & Baumeister, 1998; Vohs & Heatherton, 2000). Regulating the self is difficult and requires strength or energy, and engaging in an act of self-regulation temporarily diminishes the amount of strength or energy available for subsequent acts of self-regulation. Thus, self-regulatory processes produce what is termed a state of “ego depletion” (Baumeister et al., 1998).

An expanding body of research has emerged in support of this strength model of self-regulation (for reviews, see Baumeister & Vohs, 2003, 2007; Hagger, Wood, Stiff, & Chatzisarantis, 2010). Much of the prior research on this model makes use of a two-task paradigm in which participants engage in one act of self-regulation (e.g., controlling thoughts, managing emotions, directing attention), prior to assessing participants’ quality of functioning on a second volitional task (e.g., resisting temptation, solving analytical problems, persisting on a hand-grip task). Results indicate that functioning on the second task is impaired, supporting the idea that both tasks draw from a common resource pool that is depleted by the initial regulatory act (Baumeister et al., 1998; Fischer, Greitemeyer, & Frey, 2008; Inzlicht & Gutsell, 2007; Muraven et al., 1998; Schmeichel, Vohs, & Baumeister, 2003; Vohs et al., 2008). More generally, high self-regulatory capacity has been linked to higher academic performance, more effective relational and interpersonal functioning, greater well-being, and more adaptive eating, drinking, and sexual behavior (Bertrams & Dickhäuser, 2009; Côté, Gyurak, & Levenson, 2010; Peluso, Ricciardelli, & Williams, 1999; Tangney, Baumeister, & Boone, 2004).

Engaging in goal-directed behavior and monitoring goal progress expends resources because it requires volitional and mental control to stay focused on the aim at hand; to shield perception and attention from competing demands and interests; to contrast one’s present state with the focal aim; and to organize, integrate, and adjust the various strategies and tactics supporting goal pursuit. All intentional goal pursuit undoubtedly expends resources to some degree, but we posit that the pursuit of some types of goals is more depleting than others. In the present research we focus on avoidance goals and suggest that the pursuit of this type of goal is particularly likely to deplete self-regulatory resources.

Avoidance Goals and the Use of Self-Regulatory Resources

As noted earlier, avoidance goals focus on trying to avoid or stay away from a negative outcome or psychological situation. Examples of avoidance goals are “Try to avoid doing poorly

compared to others in school,” “Try not to upset my girlfriend,” and “Try to avoid getting sick.”

Whereas approach goals use positive, desired possibilities as the hub or center-point of self-regulation which typically leads to favorable psychological processes and outcomes, such as perceptions of personal progress or competence in goal pursuit (Elliot & Sheldon, 1997; Elliot, Sheldon, & Church, 1997), the pursuit of avoidance goals involves using negative, undesired possibilities as the hub or center-point of self-regulation (Elliot et al., 1997). This focus on negative possibilities has a number of important implications for self-regulation.

First, avoidance goals provide the individual with something to move or keep away from, but not something to move toward that can guide the person in a concrete direction and provide a clear sense of goal progress (Carver & Scheier, 1998; Elliot & Church, 2002). Second, with avoidance goals, progress simply represents the absence of a negative state that merely helps one survive, as opposed to the presence of a positive state that helps one acquire the psychological nutrients necessary to thrive (Elliot & Sheldon, 1997; McFarland & Miller, 1994). Third, the inherent focus on negative possibilities in avoidance goal regulation leads to a host of aversive psychological processes, including perceptual, attentional, mental control, emotional or behavioral processes (e.g., distracting thoughts, experiencing anticipatory anxiety, feeling compelled to escape from the goal-relevant situation; Derryberry & Reed, 2002; Elliot & McGregor, 1999; Heimpel, Elliot, & Wood, 2006; Hembree, 1988; McFarland & Miller, 1994; Öhman, Flykt, & Esteves, 2001; Wegner, 1994). These avoidance-based processes are typically experienced as urgent and immediate, because the consequences of failure at avoidance regulation are often of considerable consequence (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; David, Green, Martin, & Suls, 1997). Furthermore, we assume that experiencing most of these avoidance-based processes demands and consumes self-regulatory resources. For instance, self-regulatory resources are required in order to stop distracting thoughts, alter emotional responses, or suppress the impulse to escape from the goal-relevant situation, leaving fewer resources thereafter. The perception of poor progress and ineffective goal pursuit evoked by avoidance goal pursuit may also drain resources and leave the individual feeling exhausted. Accordingly, we posit that avoidance goal pursuit represents a self-regulatory vulnerability in that it is particularly taxing of resources and, therefore, particularly likely to lead to resource depletion.

Research has yet to directly examine the link between avoidance goal pursuit and the depletion of self-regulatory resources. However, research has been conducted on the effectiveness and phenomenological consequences of avoidance goal regulation and this provides indirect support for the hypothesized relation. Prospective and longitudinal work on personal goals, for example, has shown that avoidance goals are negative predictors of health behavior and subjective well-

being, and positive predictors of physical symptomatology (Elliot & Sheldon, 1998; Elliot et al., 1997; Sullivan & Rothman, 2008). Research on achievement goals has shown that striving to avoid incompetence, especially normative incompetence, leads to ineffective study strategies, poor performance, and reduced intrinsic motivation (Elliot & Harackiewicz, 1996; McGregor & Elliot, 2002; Sideridis, 2005; Van Yperen, 2006). Empirical work on social goals has demonstrated that trying to avoid negative relational outcomes has deleterious consequences for relational well-being and subjective well-being more generally (Elliot, Gable, & Mapes, 2006; Gable, 2006; Impett et al., 2010). Taken together, the inherent structure of avoidance goals (i.e., their grounding in negative possibilities) naturally leads to aversive psychological processes that often have negative consequences, and we think that these processes also exact a toll on individuals in the form of resource depletion.

Self-Regulatory Resources as a Mediation Variable

As noted above, a central finding in the literature on avoidance goal regulation is that the pursuit of such goals has inimical consequences for subjective well-being. Although this finding has been documented a number of times, there has been minimal research on the mediational processes that account for this relation. A few studies have identified perceived goal progress (or related constructs) as a mediator variable (Elliot & Church, 2002; Elliot & Sheldon, 1997, 1998), and a recent article documented that avoidance goal pursuit leads to an increase in stressful life events that, in turn, undermine well-being (Elliot, Thrash, & Murayama, 2011). Herein we seek to extend this work by examining whether self-regulatory resources mediate the relation between avoidance goals and SWB. Avoidance goal regulation is posited to deplete self-regulatory resources, and prior research has shown that resource depletion is negatively associated with well-being (Ciarocco, Sommer, & Baumeister, 2001; Forstmeier, Drobetz, & Maercker, 2011; Kehr, 2004; Tangney et al., 2004). Integrating the prior research with the predictions of the present research leads to the following mediational model: Avoidance goal pursuit leads to a decrease in self-regulatory resources which, in turn, undermine SWB. This mediational model is put to empirical test in the present work. Supporting findings would establish an important downstream consequence of the avoidance goal–resource depletion relation.

Overview of the Present Research

The depletion of self-regulatory resources is usually documented in experimental work indirectly, by showing impaired quality of functioning on the second task in the aforementioned two-task paradigm. Although some researchers have

assessed resource depletion more directly by measuring blood glucose levels (Gailliot & Baumeister, 2007; Gailliot et al., 2007), the vast majority of empirical work has used the indirect approach to measurement. In the present research, we examine resource depletion using direct, explicit self-report measures (see also Bertrams, Unger, & Dickhäuser, 2011; Kehr, 2004) to investigate resource depletion in the context of everyday goal striving.

Specifically, we conducted two studies designed to investigate the link between avoidance goal pursuit and participant reports of self-regulatory resources. Study 1 examined the concurrent and longitudinal relation between avoidance goals and self-regulatory resources. In Study 2, we additionally tested the mediational model whereby self-regulatory resources mediate the negative influence of avoidance goals on SWB.

In conducting our studies, we attended to neuroticism as a possible confounding variable. Neuroticism represents a general tendency towards emotional instability and over-reactivity (Costa & McCrae, 1989; Eysenck & Eysenck, 1968), and is associated with chronic negative affect, poor control of impulses, ineffective coping with stress, and weak dispositional self-control (McCrae & Costa, 1986; McCrae & John, 1992; Parkes, 1986; Tangney et al., 2004). Individuals high in neuroticism are more likely to adopt avoidance goals (Elliot et al., 1997), and may also report having less self-regulatory resources and lower SWB (Costa & McCrae, 1987; Watson & Pennebaker, 1989). As such, it is possible that relations consistent with our predictions could simply be a function of underlying shared relations with neuroticism. We assessed and controlled for neuroticism in both studies of the present research in order to empirically address this possibility.

STUDY 1

Method

Participants and Procedure. Two hundred and eighty-three (228 female and 55 male) university undergraduates in Switzerland participated in the study in return for extra course credit. The mean age of participants was 23.47 ($SD = 6.58$) with a range of 18 to 51. All participants were Caucasian. The data were collected as part of a broader research project on motivational processes from which parts are already published (Schnelle, Brandstätter, & Knöpfel, 2010).

Participants' avoidance goals and self-regulatory resources were assessed in the middle of the semester at Time 1 (T1). Participants' self-regulatory resources were assessed again one month later at Time 2 (T2). Neuroticism was also measured at T2. All data were collected using web-based questionnaires.

Measures

Avoidance goals. Avoidance (relative to approach) goals were assessed with 22 items focused on a broad range of daily goal statements, including academic-based goals (see Schnelle

et al., 2010), affiliation-based goals, or leisure-based goals. The goal statements were presented with avoidance and approach phrasing juxtaposed; this allows goal content to be kept constant across the avoidance and approach phrasing (e.g., “I really do not want to neglect my hobby activities [sports, music, theatre]” versus “I really would like to have regular time for my hobby activities [sports, music, theatre]”). Participants were instructed to indicate which of the two goals best represents their current goal pursuit; if neither option seemed a good match, they were instructed to refrain from choosing either option. Participants selected a mean of 16.36 ($SD = 3.03$) total goals; of these, a mean of 3.95 ($SD = 2.55$) were avoidance goals and a mean of 12.41 ($SD = 3.44$) were approach goals. An index of the proportion of avoidance goals was computed by dividing the number of avoidance goals by the total number of goals selected. The possible range for this index was between 0 and 1, with an observed mean of .24 ($SD = .15$), indicating that 24% of the goals selected by participants were avoidance goals.

Self-regulatory resources. Participants’ self-regulatory resources were assessed with a brief, face-valid 4-item measure. Each item focused on a different type of resource—self-discipline, concentration, stress-resistance, and physical energy—and participants were asked to indicate how much of these resources they currently have compared to the average student on a 1 (*much below average*) to 7 (*much above average*) scale. Participants’ scores were averaged at each assessment to create the self-regulatory resources indices: At T1, $M = 3.89$ ($SD = .88$) and $\alpha = .62$; at T2, $M = 3.93$ ($SD = .93$) and $\alpha = .71$.

Neuroticism. Neuroticism was assessed with the German version of the 16-Personality-Adjective checklist (16 PA; H. Brandstätter, 1988, 2009), which assesses Cattell’s (1957) global personality factors. The 16 PA consists of 32 bipolar adjectives corresponding to Cattell’s 16 personality factors, each represented by two adjective pairs. Participants had to indicate on a continuum from 1 to 9, with one adjective on one end (e.g., *easily upset*) and the other adjective on the other end (e.g., *emotionally stable*), which of the adjectives described them best. As recommended by the creator of the measure, neuroticism was reliably estimated by a regression analytic procedure taking into account an individual’s responses on all 32 items of the 16 PA (for methodological details, see Brandstätter, 2009; Brandstätter & Königstein, 2001), $M = 6.27$ ($SD = 2.45$).

Results and Discussion

In line with our hypothesis, bivariate correlations revealed that avoidance goals were negatively related to T1 self-regulatory resources, $r = -.21$, $p < .001$, and T2 self-regulatory resources, $r = -.24$, $p < .001$. Furthermore, T1 and T2 resources were significantly correlated, $r = .65$, $p < .001$. Also, neuroticism

was significantly related to avoidance goals, $r = .13$, $p < .05$, T1 self-regulatory resources, $r = -.37$, $p < .001$, and T2 self-regulatory resources, $r = -.45$, $p < .001$. There were no associations between the total number of goals and the study variables.

In this and the following study, separate multiple regression analyses were conducted to investigate the concurrent and longitudinal links between avoidance goals and self-regulatory resources, as well as their robustness across neuroticism. Unless otherwise stated, neither participants’ gender nor their age nor the total number of goals had a significant impact on the results reported.

The bivariate analysis described above revealed a negative correlation between avoidance goals and T1 self-regulatory resources. Regressing T1 resources on avoidance goals with neuroticism also in the equation revealed that avoidance goals remained a significant negative predictor, $F(1, 280) = 8.61$, $p < .01$ ($\beta = -.16$). Neuroticism was also a significant negative predictor of T1 resources, $F(1, 280) = 38.53$, $p < .001$ ($\beta = -.34$). Regressing T2 self-regulatory resources on avoidance goals with T1 self-regulatory resources controlled revealed that avoidance goals were a significant negative predictor, $F(1, 280) = 5.87$, $p < .05$ ($\beta = -.11$), indicating that participants pursuing a greater proportion of avoidance goals exhibited a decline in resources over the course of the month. Repeating this analysis with neuroticism also in the equation, avoidance goals remained a significant negative predictor ($\beta = -.10$, $p < .05$), and neuroticism was also a significant negative predictor ($\beta = -.25$, $p < .001$).

In sum, this study documented both a concurrent and a longitudinal link between avoidance goals and self-regulatory resources. These relations were shown to be quite robust, as they held when controlling for a powerful nuisance variable, neuroticism. As such, avoidance goals per se, not just a general avoidance-based orientation (Elliot & Thrash, 2002), appears to be deleterious for self-regulatory resources. In Study 2 we moved beyond the avoidance goal–resources link to investigate the mediational role of self-regulatory resources in the avoidance goal–SWB relation.

STUDY 2

Method

Participants and Procedure. One hundred and thirty-two (93 female and 39 male) university undergraduates in Switzerland participated in the study in return for modest monetary compensation. The mean age of participants was 22.26 ($SD = 4.28$) with a range of 18 to 49. All participants were Caucasian. The data were collected as part of a broader research project on motivational processes.

Participants’ avoidance goals, self-regulatory resources, subjective well-being and neuroticism were assessed at T1, one month before the end of the fall semester (and the beginning of the Christmas holiday). Participants’ self-regulatory resources

and subjective well-being were measured again one month later at T2, at the end of the semester. All data were collected using web-based questionnaires.

Measures

Avoidance goals. Avoidance (relative to approach) goals were assessed with 31 items focused on a broad range of goal statements relevant to the end of the semester and the pre-Christmas period. Some of the goal statements were those from Study 1, revised to focus specifically on the end of the semester and the pre-Christmas period. The other items were new items focusing on additional goals that students' pursue exclusively during this end of semester/pre-Christmas period (e.g., taking final exams, doing Christmas shopping, attending to family responsibilities). In this measure, we followed Schnelle et al. (2010) in presenting the goal statements with avoidance and approach phrasing juxtaposed in order to allow goal content to be kept constant across the avoidance and approach phrasing (e.g., "I do not want to be unprepared for my lectures [courses, seminars, etc.] at the end of the semester" versus "I want to be prepared for my lectures [courses, seminars, etc.] at the end of the semester"). However, for this assessment, participants were instructed to indicate, on a 1 (approach) to 8 (avoidance) continuum, which of these goal phrasings best described their current goal pursuit; if neither goal statement seemed a good match, they were instructed not to provide a response for that item. Participants selected a mean of 30.08 ($SD = 1.89$) total goals. The sum score for the selected goals was $M = 105.61$ ($SD = 29.16$). An index of the proportion of avoidance goals was computed by dividing the sum score for the selected goals by the total number of goals selected. The possible range for this index was between 1 and 8, whereby a higher score represents greater avoidance (relative to approach) goal pursuit. The observed mean was 3.51 ($SD = .92$).

Self-regulatory resources. Self-regulatory resources were assessed the same way that they were assessed in Study 1. At T1, $M = 4.20$ ($SD = 1.01$) and Cronbach's $\alpha = .67$; at T2, $M = 4.15$ ($SD = 1.14$) and Cronbach's $\alpha = .86$.¹

Subjective well-being (SWB). We assessed the three primary components of subjective well-being (Diener, 1994) with the 10-item questionnaire from Brunstein (1993): life-satisfaction (2 items; e.g., recoded: "In the near future a lot of things will have to change before I feel satisfied with my life"), positive affect (4 items; e.g., "happy", "pleased"), and negative affect (4 items; e.g., "depressed", "sad"). Participants completed the items with regard to how they felt "during the past few days." All items were rated on a 1 (*not at all/completely disagree*) to 7 (*very frequently/completely agree*) scale. An aggregate SWB variable was created by standardizing the positive affect, negative affect, and life-satisfaction scores, then subtracting the negative affect score from the sum of positive affect and life-satisfaction scores (see Elliot et al., 1997; Sheldon & Elliot, 1999); T1, $M = .00$ ($SD = 2.65$) and Cronbach's $\alpha = .92$, and T2, $M = .00$ ($SD = 2.64$) and Cronbach's $\alpha = .92$.

Neuroticism. Neuroticism was assessed with the German version of the neuroticism measure of the NEO Five Factor Inventory (NEO-FFI; Costa & McCrae, 1989; Borkenau & Ostendorf, 1993). The measure consists of 12 items (e.g., "When I'm under a great deal of stress, sometimes I feel like I'm going to pieces"). Participants indicated their responses on a 0 (*strongly disagree*) to 4 (*strongly agree*) scale, and participants' scores were averaged to create the neuroticism index, $M = 1.76$ ($SD = .64$) and Cronbach's $\alpha = .82$.

Results and Discussion

The intercorrelations among the variables are presented in Table 1. In the following, we first report the relation between avoidance goals and self-regulatory resources, then we extend the focus to the mediation model.

Relation Between Avoidance Goals and Self-Regulatory Resources. The bivariate analysis revealed a negative correlation between avoidance goals and T1 self-regulatory

Table 1 Intercorrelations Among Variables (Study 2)

	1.	2.	3.	4.	5.	6.	7.	8.
1. Avoidance goals	—							
2. T1 self-regulatory resources	-.40***	—						
3. T2 self-regulatory resources	-.48***	.56***	—					
4. T1 SWB	-.33***	.57***	.37***	—				
5. T2 SWB	-.43***	.47***	.55***	.68***	—			
6. Neuroticism	.33***	-.48***	-.39***	-.63***	-.58***	—		
7. Total number of goals	.09	.04	-.09	.07	-.01	.03	—	
8. Sex	.01	.14	.03	.06	-.05	-.11	.08	—
9. Age	-.10	-.08	-.07	.03	-.06	.02	.05	.24**

Note. $N = 132$. T1 = Time 1; T2 = Time 2; SWB = Subjective well-being. Coding for sex: 0 = female, 1 = male. Coefficients are Pearson Product Moment Correlation for continuous variables and Spearman's Rho Correlation for categorical variables.

** $p < .01$. *** $p < .001$.

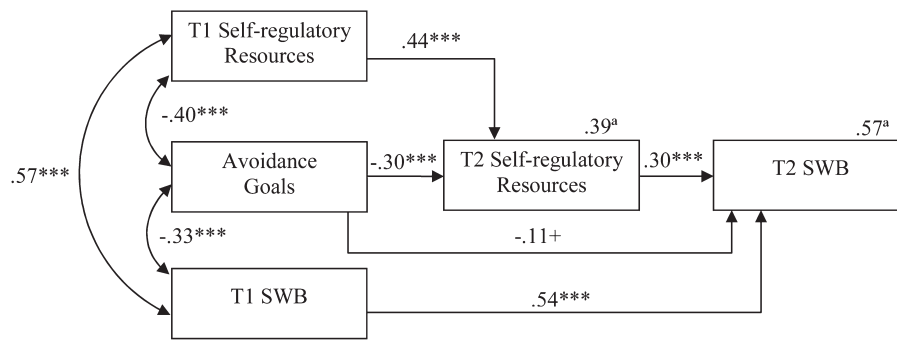


Figure 1. Standardized parameters for the hypothesized mediational model in Study 2 with avoidance goals as the predictor, self-regulatory resources as the mediator and subjective well-being (SWB) as the dependent variable.

Note. $N = 132$. ^aExplained variance for the endogenous variables.

+ $p < .10$. ** $p < .01$. *** $p < .001$.

resources, $r = -.40$, $p < .001$.² Regressing T1 resources on avoidance goals with neuroticism also in the equation revealed that avoidance goals remained a significant negative predictor, $F(1, 129) = 12.04$, $p < .01$ ($\beta = -.27$). Neuroticism was also a significant negative predictor of T1 resources, $F(1, 129) = 24.64$, $p < .001$ ($\beta = -.39$). Regressing T2 self-regulatory resources on avoidance goals with T1 self-regulatory resources controlled revealed that avoidance goals were a significant negative predictor, $F(1, 129) = 15.75$, $p < .001$ ($\beta = -.30$), indicating that participants pursuing a greater proportion of avoidance goals exhibited a decline in resources over the course of the month. Repeating this analysis with neuroticism also in the equation, avoidance goals remained a significant negative predictor ($\beta = -.28$, $p < .001$); neuroticism was unrelated to T2 resources ($\beta = -.10$, $p = .20$).³

Extension to Subjective Well-Being and Mediation.

Before testing the mediation model we examined the longitudinal relation between avoidance goals and SWB. Regressing T2 SWB on avoidance goals with T1 SWB controlled revealed that avoidance goals were a significant negative predictor, $F(1, 129) = 12.43$, $p < .01$ ($\beta = -.23$), indicating that participants pursuing a greater proportion of avoidance goals exhibited a decline in well-being over the course of the month. Moreover, avoidance goals remained a significant negative predictor ($\beta = -.20$, $p < .01$), when repeating this analysis with neuroticism also in the equation.

We next tested whether avoidance goal pursuit depletes self-regulatory resources, which in turn impairs SWB. We used manifest variable models within AMOS 18 (Arbuckle, 2009), with maximum-likelihood estimation and a bootstrap procedure (2,000 samples). In the hypothesized model, avoidance goals were specified as the independent variable, T2 self-regulatory resources as the mediator (controlling for T1 self-regulatory resources) and T2 SWB as the dependent variable (controlling for T1 SWB). Figure 1 presents the model with the parameter estimates (standardized solution) and the explained variance for the endogenous variables. The model had an

acceptable fit to the data: $\chi^2 (df = 2; N = 132) = 1.20$, $p = .55$, AGFI = .97, CFI = 1.00, RMSEA = .00.⁴ An additional link from T1 self-regulatory resources to T2 SWB, or from T1 SWB to T2 self-regulatory resources, was not indicated by the data. The model accounted for 57% of the variance in T2 SWB. The indirect (mediated) effect of avoidance goals on T2 SWB was significant ($\beta = -.09$, $SE = .03$, 95% CI = between $-.17$ and $-.04$, $p < .001$). Moreover, the effect of avoidance goals on T2 SWB (controlling for T1 SWB) dropped from $\beta = -.23$ ($p < .01$) to $\beta = -.11$ ($p = .09$) after the mediator, T2 self-regulatory resources (controlling for T1 self-regulatory resources), was included in the model, a decrease of 52.2%. These results supported the hypothesis that avoidance goals have an indirect influence on SWB by decreasing self-regulatory resources.⁵

In sum, the results of this study fully replicated those of Study 1 and extended them to the domain of SWB. Avoidance goals were both concurrently and longitudinally linked to self-regulatory resources, and self-regulatory resources were documented as a mediator of the negative longitudinal relation between avoidance goals and SWB.

GENERAL DISCUSSION

The present research provides clear and consistent support for the hypothesized relation between avoidance goal regulation and self-regulatory resources. In two studies we documented a concurrent negative relation between avoidance goals and self-regulatory resources. In these same two studies we also documented a longitudinal relation between the focal variables, as avoidance goal pursuit predicted a decrease in self-regulatory resources over a one month time period. All of these relations held when controlling for neuroticism, thereby eliminating the possibility that our findings simply reflected the underlying influence of a general avoidance-based disposition. In Study 2, we additionally demonstrated that the negative relation between avoidance goals and self-regulatory resources has negative implications for SWB over time.

The magnitude of the longitudinal relation between avoidance goals and self-regulatory resources was much greater in Study 2 than in Study 1. This may be due, at least in part, to the fact that in Study 2 we focused the goal statements on more specific goals relevant to the upcoming month-long period. Specific goals or goals referring to a specific time period may be more closely related to every-day actions, and thus may produce stronger effects within the period of investigation. In addition, we conducted the study during the last month of a semester and immediately prior to the busy Christmas season, thereby affording an examination of the avoidance goal–resources relation during a particularly resource-demanding time in participants' lives.

Research on the strength model of self-regulation is burgeoning, and the emerging data are supportive of the central tenets of this framework (see Hagger et al., 2010, for a meta-analytic review). Many different variants of independent variable, dependent variable, and procedure have been utilized in this research, but it is noteworthy that nearly all of the work that has been conducted, especially on resource depletion per se, has been experimental in nature. The present research contributes to the strength model by yielding additional supportive data on resource depletion using concurrent and longitudinal correlational designs (see also Kehr, 2004). These designs enabled us to assess self-regulatory resources more explicitly than is commonly the case in the experimental research, and to examine resource depletion beyond the lab in the realm of everyday, real-world goal pursuit.

Furthermore, our research not only demonstrated that avoidance goal pursuit influences real world self-regulatory resources, but it also showed that this detrimental effect has problematic downstream implications for real world feelings of well-being. Thus, our research may be seen as contributing to the avoidance goal literature more broadly, and may even point to an overarching reason why avoidance goal pursuit typically has deleterious consequences, not only for well-being outcomes, but also for other important outcomes such as performance, intrinsic motivation, and health behavior. Although mediational work on avoidance goals remains relatively sparse (see Elliot et al., 2011), several psychological processes have been shown to account for avoidance goal effects, such as worry, task distraction, stress generation, and poor goal progress (for a review, see Elliot & Friedman, 2007). We posit that each of these process variables has inimical implications because, in part, they deplete self-regulatory resources. For example, we believe that poor goal progress accounts for the detrimental effect of avoidance goals on subjective well-being (Elliot & Church, 2002; Elliot et al., 1997), because ineffective goal pursuit exhausts self-regulatory resources and leaves the individual feeling spent and unfulfilled. In essence, we view self-regulatory resource depletion as a proximal mediator of diverse avoidance goal effects, a common pathway through which the mediators examined to date exert their influence on various outcome variables. We encourage subsequent research on this intriguing possibility.

Self-regulation often entails exercising self-control and much of the research on the strength model has focused on the resource depleting implications of self-control. In the strength model, self-control is usually conceptualized in terms of overriding a natural, prepotent response. Muraven (2008) described self-control as “an avoidance-oriented situation” (p. 769), and Schmeichel, Harmon-Jones, and Harmon-Jones (2010) posited that self-control entails both behavioral inhibition and behavioral activation system functioning, but there has been no overt consideration of approach and avoidance goals per se in this literature. We think it is possible to construe engaging in self-control as a particular variant of avoidance goal regulation. Structurally, avoidance goals are comprised of two component parts—a negatively valenced stimulus and a volitional commitment to move or stay away from that negatively valenced stimulus (Elliot & Fryer, 2008). In the prototypic avoidance goal, an inherently negative stimulus is appraised as undesirable and the volitional commitment represents a natural tendency to evade the negative stimulus. We think self-control entails an additional volitional step, which is to reappraise an inherently positive, desired stimulus as a negative, undesirable stimulus, and then to make a volitional commitment to move or stay away from it. As such, we view the self-control process as a particularly demanding variant of avoidance goal regulation, and suspect that it is more resource depleting than other forms of avoidance goal pursuit. Subsequent research would do well to test this possibility by assessing self-control goals and more prototypic avoidance goals independently and examining whether they have a differential effect on the depletion of self-regulatory resources. In addition, it would be interesting to examine whether different types of “prototypic” avoidance goals (e.g., those focused on *moving away* from a *present negative* stimulus versus those focused on *staying away* from an *absent negative* stimulus) have a different influence on resource depletion.

The present research advances knowledge in both the resource depletion and avoidance goal literatures. Hagger et al. (2010) identified the longevity of the resource depletion effect as an important question in need of attention. Conceptually, the primary focus of the strength model has been on the short-term influence of self-regulation on resources, and empirically, the vast majority of research has tested the influence of brief regulatory efforts (typically less than ten minutes) on resource depletion. Our two longitudinal studies demonstrated that ongoing, protracted forms of avoidance-based regulation (i.e., daily avoidance goal pursuit) drain resources as well, suggesting that depletion effects can cumulate over time. We envision reciprocal, cyclical processes at play here, in which initial avoidance goal pursuit leads to resource depletion, resource depletion leads to a self-protective posture that elicits further avoidance goal pursuit (Hobfoll, 1989; Schnelle et al., 2010), and further avoidance goal pursuit continues to deplete resources. In the average individual, this cyclical process likely leads to an underlying sense of fatigue and reduced well-being; at the extreme, it can eventuate in various clinically-relevant

failures in self-regulation (e.g., obesity, alcohol abuse, chronic anxiety; see Cox, Klinger, & Blount, 1991; Dickson, 2006; Dickson & MacLeod, 2004; Sullivan & Rothman, 2008).

To enhance the generalizability of our findings, future research would do well to systematically focus on more distinct state- and trait measures, as well as different time frames. Previous research has discussed state and trait levels of self-regulation and avoidance goals (see Fryer & Elliot, 2007; Hagger et al., 2010). The strength model of self-regulation (e.g., Baumeister et al., 1998; Muraven & Baumeister, 2000), focuses on state depletion of self-regulatory resources. On the other hand, there are also a number of capacity-based approaches that focus on self-regulation as a dispositional, trait-like construct (e.g., Tangney et al., 2004). Previous theorizing has suggested that state ego depleted individuals behave in a similar way to individuals low in dispositional self-regulation (see Schmeichel et al., 2010). In the present research, individuals' dispositional level of self-regulation may have influenced their responses; this is a possibility we cannot definitively rule out. However, this is unlikely to have had a strong influence on our findings, as we assessed self-regulatory resources twice and controlled for baseline levels at T1 when investigating the longitudinal relationship between avoidance goals and T2 self-regulatory resources.

Furthermore, in the present research we used a representative goal list to assess individuals' avoidance goals. Previous research has indicated that such bipolar approach-avoidance goal lists are sensitive to change during the course of semester (Schnelle et al., 2010). In future studies avoidance goals may also be assessed with idiographic procedures by free listing one's personal goals for a specified period of time. Using such procedures may more clearly separate personal goals from general personality tendencies and response biases. However, it should be noted that the examination of self-generated goals leaves open the question of whether specific goal content is an important factor in influencing outcomes. Using a bipolar approach-avoidance goal measure, as we have done herein, has the advantage that goal content and the approach-avoidance dimension are completely independent.

An intriguing question for future research is whether the pursuit of time-limited, clearly-defined avoidance goals for a specific task (e.g., "I don't want to overlook any typographical errors in this proof reading task") also depletes an individual's self-regulatory resources in the short term. It seems reasonable to posit that such goals would likewise have inimical implications for resources because their pursuit is fraught with state anxiety, worry, distraction from the task, and other disruptions (Elliot & Harackiewicz, 1996; Elliot & McGregor, 1999) which in turn would likely impair successful self-regulation. However, it is also possible that some individuals may less suffer or even benefit from such goals in the short term. Taking into account results from regulatory fit theory (e.g., Higgins, 2000), one may argue that a fit between an individual's chronic avoidance orientation (e.g., chronic prevention focus) and an assigned avoidance goal results in increased motivation to

attain the goal which in turn may temporarily counteract the effect of resource depletion (see Hong & Lee, 2008; Muraven & Slessareva, 2003; Tamir, 2005). Research is needed to examine these intriguing possibilities.

Two limitations of our research may be noted. First, given that we used concurrent and longitudinal designs in our studies, our data are correlational in nature. As already noted, in the context of the existing literature on resource depletion, these designs are optimal in that they help establish a multi-method evidence base for the strength model of self-regulation. In addition, it is rare to replicate longitudinal findings in a single empirical report, as we do herein. Nevertheless, it is important to acknowledge that the correlational nature of our data preclude any causal statements about the observed relations. Second, the samples in both studies were comprised entirely of Caucasians in Western Europe, thereby leaving open questions about the generalizability of our findings to other ethnicities and cultures. It would be especially interesting to conduct follow-up work with participants in East Asia, where avoidance goal regulation is particularly prevalent and seems a close match to the cultural emphasis (see Elliot, Chirkov, Sheldon, & Kim, 2001).

In closing, the study of self-regulatory resources is of central importance to an understanding of volition in general and goal pursuit in particular. At present, we know a great deal about resource depletion as a function of self-control, whereas the literature on resource depletion as a function of qualitatively distinct types of goal pursuit is relatively underdeveloped. The findings from the two studies herein demonstrate that the pursuit of avoidance goals warrants careful and sustained consideration in this regard. Avoidance goal regulation appears to represent a self-regulatory vulnerability in that it is, simply put, exhausting.

Notes

1. We also used a second measure of self-regulatory resources to confirm the robustness of our findings. For this purpose we used the 10-item German State Self-Control Capacity Scale (SSCCS-K-D; Bertrams et al., 2011) comprised of ten statements (e.g., recoded: "I feel like my willpower is gone"). Participants responded according to how they felt "during the past few days" on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*); T1, $M = 4.68$ ($SD = 1.10$) and Cronbach's $\alpha = .89$, and T2, $M = 4.53$ ($SD = 1.22$) and Cronbach's $\alpha = .91$.

2. Regressing T1 self-regulatory resources on sex, avoidance goals, and the interaction of these variables revealed a significant effect for sex, $F(1, 128) = 4.22$, $p < .05$ ($\beta = .16$), indicating that male participants reported having more resources than female participants; no significant interactive effects involving sex emerged.

3. This pattern of results was replicated with the second measure of self-regulatory resources, the SSCCS-K-D (Bertrams et al., 2011). Details on these analyses are available from the corresponding author upon request.

4. We additionally tested a model in which avoidance goals were specified as the predictor, T2 SWB as the mediator (controlling for T1 SWB) and T2 self-regulatory resources as the dependent variable (controlling for T1 self-regulatory resources). This model was not a good fit to the data: χ^2 ($df = 2$; $N = 132$) = 5.09, $p = .08$, AGFI = .88, CFI = .99, RMSEA = .11.
5. Again, this pattern of results was replicated with the second measure of self-regulatory resources. Details on these analyses are available from the corresponding author upon request.

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