The Influence of Avoidance Temperament and Avoidance-Based Achievement Goals on Flow

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Abstract

In the present research, we conducted two studies designed to examine the joint influence of avoidance temperament and avoidance-based achievement goals on the experience of flow on a creativity task. In both a laboratory study ($N = 101$; $M_{age} = 22.61$, $SD_{age} = 4.03$; 74.3% female) and a naturalistic study ($N = 102$; $M_{age} = 16.23$, $SD_{age} = 1.13$; 48% female), participants high in avoidance temperament were shown to experience greater flow when performance-avoidance goals were induced; no differences were found in any of the other three achievement goal conditions from the 2×2 achievement goal framework. These findings reveal a short-term benefit for a disposition-goal match grounded in avoidance motivation, and point to the need for more research on both avoidance-based matches and the short-term versus long-term implications of such matches.

Existing research on achievement goals has documented a number of negative effects of pursuing avoidance-based goals on cognitive, affective, and self-regulatory processes and outcomes (for reviews, see Elliot, 2005; Huang, 2012; Hulleman, Schrager, Bodmann, & Harackiewicz, 2010; Richardson, Abraham, & Bond, 2012). In this literature, the influence of avoidance-based goals has primarily been examined independently of the broader intrapersonal or environmental context. This is shortsighted, as goal regulation *always* takes place in such contexts, and such contexts may interact with goals in influencing psychological functioning. In the present research, we focused on one such intrapersonal context—that of individual differences in avoidance temperament (Elliot & Thrash, 2002). Specifically, we examined the joint influence of avoidance temperament and avoidance-based achievement goals on an activity-related motivational variable that is highly important in achievement settings: the experience of flow during task engagement (Csikszentmihalyi, 1975, 1990).

Achievement Goals and Avoidance Temperaments

Achievement goals represent the competence-relevant aims that individuals adopt and pursue in achievement situations (e.g., school, sports, work). Achievement goals may be conceptualized using a 2×2 framework that takes into account distinctions between mastery and performance goals, and between approach and avoidance goals (Elliot, 1999; Pintrich,

2000). The four goals of the 2×2 achievement goal framework are as follows: mastery-approach goals (focused on approaching intrapersonal or task-based competence), mastery-avoidance goals (focused on avoiding intrapersonal or task-based incompetence), performance-approach goals (focused on approaching normative competence), and performance-avoidance goals (focused on avoiding normative incompetence). It is the two avoidance-based goals—mastery-avoidance and performance-avoidance—that are of primary interest herein.

According to the hierarchical model of approach-avoidance motivation, goals are not sufficient to account for motivated behavior (Elliot, 2006); it is also important to consider the sources of motivation underlying the goals. An important source of motivation underlying avoidance-based goals is an individual's dispositional avoidance temperament, characterized as a general neurobiological sensitivity to negative stimuli (Elliot & Thrash, 2002). Avoidance temperament is responsible for an individual's affective (e.g., more negative emotion), cognitive (e.g., heightened vigilance), and behavioral (e.g., a predisposition to avoid) responses to negative and punishment-related stimuli. In the present research, we focus

on behavioral inhibition system (BIS) sensitivity and neuroticism as indicators of an individual's avoidance temperament (Elliot & Thrash, 2002; Heimpel, Elliot, & Wood, 2006) and as the motivational foundation underlying goal pursuit. BIS sensitivity is conceptualized as a motivational system that is sensitive to cues of threat, punishment, non-reward, and novelty (Gray, 1982); it reflects a proneness to nervousness/anxiety in potentially anxiety-provoking situations (Carver & White, 1994). Neuroticism represents individual differences in "the tendency to experience distress, and in the cognitive and behavioral styles that follow from this tendency" (McCrae & John, 1992, p. 195). Both BIS sensitivity and neuroticism have been shown to prompt the adoption of avoidance-based goals (Bipp, Steinmayr, & Spinath, 2008; Elliot & Thrash, 2002; Heimpel et al., 2006; Payne, Youncourt, & Beaubien, 2007; Zweig & Webster, 2004).

Temperaments and goals are posited to have different functions in the self-regulation process. Temperament is seen as a basic energizer of valenced propensities, whereas goals are assumed to serve as channels for these general propensities, providing specific direction and focus (Elliot, 2006; Elliot & Thrash, 2002). Temperaments and goals operate in tandem in the regulation of achievement behavior, but researchers have rarely considered the joint, interactive influence of temperaments and goals in predicting achievement-relevant processes.

The Joint Influence of Avoidance Temperament and Avoidance-Based Achievement Goals

Although research on the joint influence of different levels of motivational constructs is rare in the achievement domain, it has received considerable attention, especially recently, in the psychological literature more generally. Most theorists posit that a content or valence match between different levels of analysis facilitates optimal self-regulation and leads to positive processes and outcomes. For example, with regard to goal content, researchers have proposed that striving for goals that fit persons' dispositional motives leads to emotional well-being and life satisfaction (e.g., Brunstein, Schultheiss, & Grässmann, 1998; Hofer & Chasiotis, 2003). With regard to goal valence, Higgins (2000) posits that people experience "regulatory fit" when they pursue a goal in a way that is congruent with and sustains their more general motivational orientation. This type of fit is thought to "feel right" (Higgins, 2000), leading to a number of benefits, such as stronger engagement, increased value of goal attainment, more enjoyment, and greater degree of self-regulation during goal pursuit (Cesario, Grant, & Higgins, 2004; Freitas & Higgins, 2002; Higgins, 2005; Hong & Lee, 2008; Shah, Higgins, & Friedman, 1998; Spiegel, Grant-Pillow, & Higgins, 2004). More broadly, it is thought that "motivation and performance are greater when chronic dispositions, task incentives, and means of goal attainment all share the same focus then when

they do not (Shah et al., 1998, p. 291). Greater processing fluency is assumed as one mechanism that may contribute to this perception of "feeling right" when the strategy of goal pursuit matches an individual's goal (Lee & Aaker, 2004). Likewise, Tamir (2005) argues that when trait and state levels of motivation are congruent, such as when individuals high in neuroticism experience negative affect, they may become more engaged and successful in their goal pursuits (for related views, see Caplan, 1987; Fuhrman & Kuhl, 1998; Kristof, 1996; Murray, 1938).

Others, however, have raised the possibility that the benefits of such matches are specific to approach-based constructs. For example, Elliot and colleagues (Elliot, Chirkov, Kim, & Sheldon, 2001; Elliot et al., 2012) have shown that avoidance personal goals are not beneficial and can even be inimical when pursued within cultures that emphasize the avoidance of negative outcomes. In similar fashion, Righetti, Finkenauer, and Rusbult (2011) have found that avoidance-oriented individuals do not benefit from interacting with other avoidance-oriented individuals, whereas an interpersonal match between approach-oriented persons does yield positive relational outcomes.

Theorizing within the achievement domain has followed the more general literature in emphasizing the likely benefits of a match between different levels of motivational constructs. For example, theorists have proposed that achievement goals have their most positive effects on processes and outcomes when they match the focus of one's achievement-relevant dispositions (Durik & Harackiewicz, 2003; Elliot & Harackiewicz, 1994), one's upper-level goals (Harackiewicz & Elliot, 1998; Harackiewicz & Sansone, 1991), or the achievement environment (Barron & Harackiewicz, 2001; Kristof-Brown & Stevens, 2001; Linnenbrink & Pintrich, 2001). Also in accord with the general literature, a few theorists in the achievement goal literature have raised the possibility, yet to be rigorously tested, that the benefits of a match do not extend to avoidance-based constructs (Lau & Nie, 2008; Murayama & Elliot, 2009).

Flow and Overview of the Present Research

The present research tested an avoidance-based match by examining the interactive influence of BIS sensitivity and neuroticism, two avoidance-based dispositional tendencies (Carver & White, 1994; Cattell, 1965; Gray, 1982), and avoidance-based achievement goals (mastery-avoidance and performance-avoidance) on flow experience. Flow is a psychological state in which people become completely absorbed in a task to the extent that they forget time, fatigue, themselves—everything except the activity itself (Csikszentmihalyi & LeFevre, 1989). Flow is mainly characterized by a deep, intense involvement in a moment-to-moment activity and experienced as a merging of action and awareness (Csikszentmihalyi, 1990; Csikszentmihalyi, Abuhamdeh, & Nakamura, 2005). The most important antecedent for experi-

encing flow is a perceived balance between one's skills and the demands of the task (perceived challenge-skills balance; Csikszentmihalyi et al., 2005). A challenge-skills balance also means that both success and failure are equally probable. Consequently, success and failure might both be salient during active goal striving. When in a flow state, individuals function at their highest capacity, attention is completely focused on the task at hand, and they experience a state of high activation. The experience of flow is thought to be a powerful motivating force (Csikszentmihalyi et al., 2005), "a form of energy that spurs people to action" (Csikszentmihalyi & Rathunde, 1993, p. 91).

On one hand, it seems sensible to hypothesize that the valence match represented by avoidance temperament and avoidance-based achievement goals facilitates flow during task engagement. BIS sensitivity and neuroticism orient the individual to avoid negative possibilities, and avoidance-based achievement goals, with their similar focus on negative outcomes, seem ideally suited to help guide and serve this general motivational orientation in an efficient and effective way. The result of this valence match may be a sense of compatibility and fluency of regulatory functioning that facilitates immersion in the task. On the other hand, the coupling of an avoidance-based achievement goal with an avoidance-based disposition may simply accentuate or exacerbate the individual's anxiety, worry, and self-worth concerns, thereby interfering with concentration and full engagement in the task. Given that both of these possibilities seem reasonable and draw on theorizing in the achievement motivation literature (and beyond), we did not generate an a priori prediction for this research.

The present research comprised two studies, the first of which was a laboratory study focused on BIS sensitivity as the intrapersonal context for avoidance-based achievement goal pursuit, and the second of which was a field study with neuroticism as the key dispositional variable. Both studies examined the influence of the focal match on flow experience in the context of a creativity task. A creativity task should allow flow to more easily emerge than an intelligence task, in which task involvement is easily disrupted by self concerns and other evaluation-based processes (Csikszentmihalyi, 1997).

STUDY 1

In Study 1, participants were randomly assigned to one of four goal conditions from the 2×2 achievement goal framework and then given a verbal creativity task during which flow was assessed. BIS sensitivity was also assessed, and the interactive influence of BIS sensitivity and avoidance goal pursuit on flow was of primary interest.

Method

Participants and Procedure. One hundred and one university students from Switzerland ($M_{age} = 22.61$, $SD_{age} = 4.03$; 74.3% female) participated in the study in return for extra course credit or monetary compensation. Data were collected at two assessment periods. At the first assessment period (Assessment 1), demographic data, BIS sensitivity, and baseline data for flow while working on a creative generation task were assessed individually at home using Web-based questionnaires. Participants were told that creativity is a characteristic that is important for professional success. Then they were instructed to generate and write down as many creative uses of a brick as they could imagine (the task and instructions were taken from Schoppe, 1975; see also Friedman & Förster, 2001). In order to assess baseline flow, after 2 minutes, the task was interrupted by the Web survey and participants were asked to rate their experience of flow while working on the task. Subsequently, a second everyday object, a pair of scissors, was displayed and participants were again instructed to generate as many creative uses as they could imagine during 2 minutes. Finally, students filled out a questionnaire assessing BIS sensitivity and demographics.

Participants came to the laboratory individually for the second assessment period (Assessment 2). First, participants were assigned to one of the four goal conditions from the 2×2 achievement goal framework. Then the procedure from the first assessment period was repeated. Specifically, participants were asked to generate creative uses of an empty can and were interrupted after 2 minutes so that flow could be measured. Finally, participants were asked to generate creative uses of a simple string. They were then debriefed and thanked for their participation.

Materials and Measures
Achievement Goal Manipulations. The achievement goal manipulations were as follows (in German): mastery-approach goal (MAP)—"In the following creativity test we would like you to do better and therefore be more creative than in the creativity test that you completed at home. The creativity test will be scored immediately after completion. The experimenter will inform you at the end of the study if your creativity has improved"; performance-approach goal (PAP)—"In the following creativity test we would like you to do better and therefore be more creative than the average student who has already completed the test. The creativity test will be scored immediately after completion. The experimenter will inform you at the end of the study if you were more creative than your co-students"; mastery-avoidance goal (MAV)—"In the following creativity test we would like you not to do worse and therefore be less creative than in the creativity test that you completed at home. The creativity test will be scored immediately after completion. The experimenter will inform you at the end of the study if your creativity has worsened"; performance-avoidance goal (PAV)—"In the following creativity test we would like you not to do worse and therefore be less creative than the average student who has already completed the test. The creativity test will be scored immediately after completion. The experimenter will inform you at the end of the study if you were less creative than your co-students."[1]

Table 1 Studies 1–2: The Influence of Avoidance Temperament and Achievement Goal Condition on Post-Manipulation Flow (Controlling Baseline Flow)

Level	Effect	Study 1		Study 2	
		β	t	β	t
1	Baseline Flow	.34	3.59**	.30	3.11**
2	Approach vs. Avoidance (AA)	−.02	−.17	−.00	−.02
	Mastery vs. Performance (MP)	−.04	−.38	−.11	−1.17
	Avoidance Temperament	.06	.64	.02	.21
3	AA × MP	.03	.34	−.07	−.71
	Avoidance Temperament × AA	−.17	−1.67+	−.25	−2.56*
	Avoidance Temperament × MP	−.06	−.59	−.03	−.31
4	Avoidance Temperament × AA × MP (three-way interaction)	.12	1.12	.04	.39

Note. The indicators of avoidance temperament were BIS sensitivity in Study 1 and neuroticism in Study 2.
$+p < .10.$ $*p < .05.$ $**p < .01.$

Flow. To assess participants' experience of flow, we used the German version of the 10-item Flow-Short-Scale (FKS; Rheinberg, Vollmeyer, & Engeser, 2003). Participants indicated their agreement with each statement (e.g., "I am totally absorbed in what I am doing") on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Their responses were averaged to form the flow index at Assessment 1 ($\alpha = .78$; $M = 4.34$, $SD = .81$) and Assessment 2 ($\alpha = .84$; $M = 4.72$, $SD = .85$).

BIS Sensitivity. The German version of Carver and White's (1994) seven-item BIS sensitivity scale was used to assess participants' BIS sensitivity (Strobel, Beauducel, Debener, & Brocke, 2001). Participants indicated their agreement with each statement (e.g., "I feel worried when I think I have done poorly at something") on a scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Their responses were averaged to form the BIS sensitivity index ($\alpha = .73$; $M = 2.75$, $SD = .46$). We did not assess behavioral activation system (BAS) sensitivity.

Results and Discussion

Preliminary Analysis and Correlations. No significant differences between experimental conditions were revealed with respect to gender, age, BIS sensitivity, baseline flow, or post-manipulation flow. There were no significant correlations between BIS sensitivity and baseline flow ($r = −.14$, $p = .16$) or post-manipulation flow ($r = .01$, $p = .94$). Baseline and post-manipulation flow were correlated ($r = .34$, $p = .001$). To control for individual differences in flow experience while generating creative ideas, we controlled for baseline flow in the following analyses.[2]

Testing the Influence of BIS Sensitivity and Achievement Goal Condition on Flow. To examine the interactive influence of BIS sensitivity and achievement goal condition on post-manipulation flow, we tested a hierarchical regression model with post-manipulation flow entered as the dependent measure; baseline flow entered on Step 1 as a covariate;
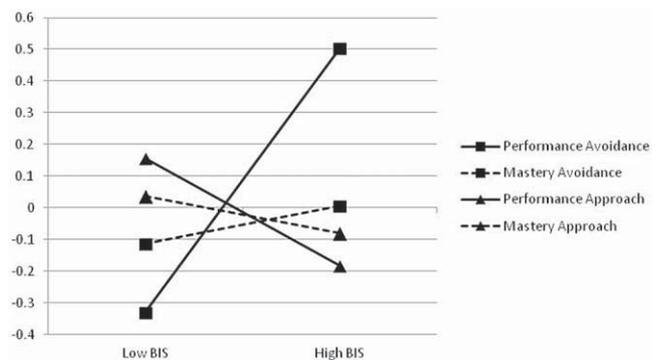
Figure 1 The influence of behavioral inhibition system (BIS) sensitivity and achievement goal condition on flow (controlling baseline flow). The data points represent predicted values within each condition at one standard deviation above and below the BIS sensitivity mean.

approach versus avoidance goal condition, mastery versus performance goal condition, and BIS sensitivity entered on Step 2; all two-way interactions entered on Step 3; and the three-way interaction entered on Step 4. The results (see Table 1) revealed a marginally significant BIS Sensitivity × Approach Versus Avoidance Goal interaction (see Figure 1).

To determine the nature of this interaction, simple slope follow-up tests were conducted within the approach and avoidance goal conditions, the mastery and performance goal conditions, and each of the four goal conditions individually. The results within the approach and avoidance goal conditions indicated no influence of BIS sensitivity in the approach goal condition ($\beta = −.09$, $t = −.97$, $p = .34$), and a marginally significant relation between BIS sensitivity and flow in the avoidance goal condition ($\beta = .18$, $t = 1.90$, $p = .06$); those higher in BIS sensitivity experienced greater flow in the avoidance goal condition. The results within the mastery and performance goal conditions indicated no influence of BIS sensitivity on flow in either the mastery goal condition ($\beta = −.05$, $t = −.52$, $p = .60$) or the performance goal condition ($\beta = .13$, $t = 1.32$, $p = .19$).

Simple slope tests within each of the four goal conditions revealed a significant influence of BIS sensitivity on flow in

the performance-avoidance goal condition ($\beta = .21$, $t = 2.23$, $p = .03$), but not in any of the other goal conditions (MAP: $\beta = -.06$, $t = -.63$, $p = .53$; PAP: $\beta = -.08$, $t = -.81$, $p = .42$; MAV: $\beta = .00$, $t = .03$, $p = .98$). In the performance-avoidance goal condition, those with stronger BIS sensitivity reported experiencing greater flow.

To summarize, the effect of an assigned avoidance-based achievement goal varied as a function of individuals' avoidance temperament. When assigned an avoidance goal, a performance-avoidance goal in particular, individuals with a strong BIS sensitivity reported a greater degree of flow. Null results were observed for all other goal conditions.[3]

STUDY 2

In Study 2, we tested whether the findings observed in Study 1 would be replicated in a more naturalistic setting, specifically, among high school students during one of their regularly scheduled lessons. A different creativity task was used in this study, and avoidance temperament was operationalized in terms of individual differences in neuroticism, rather than BIS sensitivity.

Method

Participants and Procedure. One hundred and two high school students from Switzerland ($M_{age} = 16.23$, $SD_{age} = 1.13$; 48.0% female) voluntarily participated in the study as part of a broader project on creative writing. Data were collected at three assessment periods. At the first assessment period (Assessment 1), baseline data for flow experienced while writing a creative story were assessed in a take-home booklet. Participants were instructed to take 15 minutes to write a creative short story based on a preset prompt. They were further instructed to set a phone (or other) alarm to interrupt them at 10 minutes so they could report on their thoughts and experiences during the writing task. Finally, they were instructed to complete another questionnaire (for a separate study) after they finished the writing task. The second assessment period (Assessment 2) took place 2 weeks later in a classroom session. First, participants were assigned to one of the four goal conditions from the 2×2 achievement goal framework. Then the procedure from the first assessment period was repeated. Specifically, participants wrote a 15-minute creative story that was interrupted after 10 minutes so that flow could be measured. The third assessment period took place 3–4 days later, again during a classroom session. Participants completed a final questionnaire that included a measure of neuroticism. They were then debriefed and thanked for their participation.

Materials and Measures

Achievement Goal Manipulations. The achievement goal manipulations were as follows (in German): mastery-approach goal—"In the following we would like you to write a short story that is more imaginative, inventive, and creative than the story you wrote at home. As soon as we have read the stories, we will let you know if your creativity has improved"; performance-approach goal—"In the following we would like you to write a short story that is more imaginative, inventive, and creative than the stories your classmates are writing. As soon as we have read the stories, we will let you know if you are more creative than your classmates"; mastery-avoidance goal—"In the following we would like you to write a short story that is not less imaginative, inventive, and creative than the story you wrote at home. As soon as we have read the stories, we will let you know if your creativity has worsened"; performance-avoidance goal—"In the following we would like you to write a short story that is not less imaginative, inventive and creative than the stories your classmates are writing. As soon as we have read the stories, we will let you know if you are more creative than your classmates."

Flow. Participants' experience of flow was assessed using the same questionnaire as in Study 1. Participants' responses were averaged to form the flow index at Assessment 1 ($\alpha = .84$; $M = 5.00$, $SD = .91$) and Assessment 2 ($\alpha = .82$; $M = 4.76$, $SD = .91$).

Neuroticism. The German version of the Neuroticism scale from the NEO Five-Factor Inventory (NEO-FFI; Borkenau & Ostendorf, 1993; Costa & McCrae, 1989) was used to measure neuroticism. The scale consists of 12 items (e.g., "When I'm under a great deal of stress, sometimes I feel like I'm going to pieces") rated on a 0 (*strongly disagree*) to 4 (*strongly agree*) scale. Participants' responses were averaged to form the neuroticism index ($\alpha = .79$; $M = 1.56$, $SD = .57$). We did not assess extraversion.

Results and Discussion

Preliminary Analysis and Correlations. No significant differences between experimental conditions were revealed with respect to gender, age, neuroticism, baseline flow, or post-manipulation flow. There was a marginally significant correlation between neuroticism and baseline flow ($r = -.17$, $p = .09$) and no correlation between neuroticism and post-manipulation flow ($r = -.03$, $p = .78$). Baseline and post-manipulation flow were correlated ($r = .30$, $p = .002$). Again, we controlled for baseline flow in the following analyses.[2]

Testing the Influence of Neuroticism and Achievement Goal Condition on Flow. To examine the interactive influence of neuroticism and achievement goal condition on post-manipulation flow, we tested a hierarchical regression model with post-manipulation flow entered as the dependent measure; baseline flow entered on Step 1 as a covariate; approach versus avoidance goal condition, mastery versus performance goal condition, and neuroticism entered on Step 2;
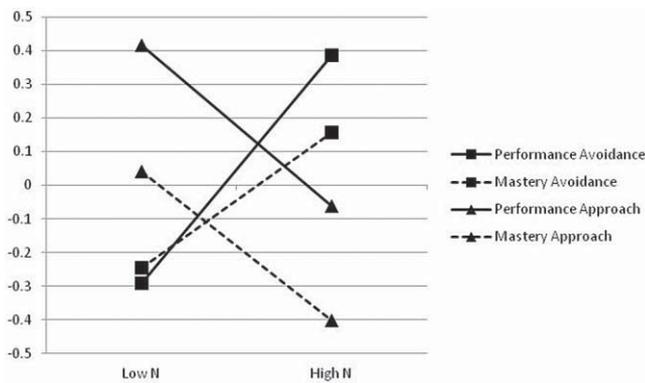
Figure 2 The influence of neuroticism (N) and achievement goal condition on flow (controlling baseline flow). The data points represent predicted values within each condition at one standard deviation above and below the neuroticism mean.

all two-way interactions entered on Step 3; and the three-way interaction entered on Step 4. The results (see Table 1) revealed a significant Neuroticism × Approach Versus Avoidance Goal interaction (see Figure 2).

As in Study 1, we then conducted simple slope follow-up tests within the approach and avoidance goal conditions, the mastery and performance goal conditions, and each of the four goal conditions individually. The results within the approach and avoidance goal conditions indicated no influence of neuroticism in the approach goal condition ($\beta = -.13$, $t = -1.38$, $p = .17$) and a significant relation between neuroticism and flow in the avoidance goal condition ($\beta = .21$, $t = 2.20$, $p = .03$); those higher in neuroticism experienced greater flow in the avoidance goal condition. The results within the mastery and performance goal conditions indicated no influence of neuroticism on flow in either the mastery ($\beta = -.01$, $t = -.15$, $p = .88$) or performance goal condition ($\beta = .04$, $t = .44$, $p = .66$).

Simple slope tests within each of the four goal conditions revealed a significant influence of neuroticism on flow in the performance-avoidance goal condition ($\beta = .19$, $t = 2.02$, $p < .05$), but not in any of the other goal conditions (MAP: $\beta = -.09$, $t = -.92$, $p = .36$; PAP: $\beta = -.10$, $t = -1.03$, $p = .31$; MAV: $\beta = .09$, $t = .98$, $p = .33$). In the performance-avoidance goal condition, those higher in neuroticism reported experiencing greater flow.

In sum, the results of this experiment replicated those from Study 1 and extended them to a naturalistic classroom setting, a different creativity test, and a different indicator of avoidance temperament.

GENERAL DISCUSSION

Both studies of the present research yielded data indicating that a match between avoidance-based achievement goals and avoidance temperament facilitates the experience of flow during a creativity task. It was the match involving performance-avoidance goals, in particular, that facilitated flow experience. This pattern was found for two different subject populations (university students and high school students), two different creativity tasks (the often used "uses of an object" task and a creative writing task), and two different indicators of avoidance temperament (BIS sensitivity and neuroticism).

A considerable amount of research has shown that avoidance-based dispositions and goals (especially performance-avoidance goals) lead to worry, distraction, and resource depletion in achievement settings (for reviews, see Elliot, 2005; Eysenck, Derakshan, Santos, & Calvo, 2007; Roskes, Elliot, Nijstad, & De Dreu, 2013). As such, it is quite striking that the combination of avoidance temperament and performance-avoidance goals would facilitate a regulatory process like flow that is commonly considered a positive, even optimal experience (Csikszentmihalyi, 1990). Our data suggest that the negative effects of either form of avoidance-based motivation may be overcome or compensated for by the two operating in tandem. For individuals high in avoidance temperament, a concrete goal that matches the valence of their broader concerns may provide a much needed channeling and focusing of attention in a way that "feels right" and that helps them directly address their salient worries and fears (Higgins, 2000; Tamir, 2005). Furthermore, for those high in avoidance temperament, the adoption of a (performance-) avoidance goal may bolster their commitment to avoiding a negative outcome and prompt a full allocation of resources designed to do anything and everything possible to ensure that a negative outcome does not occur (Eysenck et al., 2007; Norem & Cantor, 1986). Consequently, (performance-) avoidance goals may serve as effective regulatory tools that help those with a strong avoidance temperament cope with and negotiate stressful achievement situations.

The effects were obtained for the performance-avoidance but not the mastery-avoidance goal instruction. Previous research has indicated that mastery-avoidance goal regulation is prevalent in the undergraduate classroom setting, but to a somewhat lesser extent than other forms of goal regulation (e.g., performance-avoidance goals; Elliot & McGregor, 2001). Being less common or familiar to students with a strong avoidance temperament, the mastery-avoidance goal instruction may not have produced the effect. Moreover, mastery-avoidance goals, even though they have an avoidance component, are not as good of a disposition-goal match for individuals high in BIS sensitivity or neuroticism (compared to performance-avoidance goals). The performance-avoidance goal instruction additionally creates an evaluative social situation along with the desire to avoid unfavorable judgments from others—a desire that fits particularly well to individuals with a strong dispositional avoidance temperament (Zweig & Webster, 2004).

In the present research, we did not observe main effects on flow. A critical assumption in motivation psychology is that motivation results from the interplay between the person and the environment/situation (originally Motive × Incentive; i.e.,

Lewin, 1936; McClelland, 1985). Thus, main effects are not necessarily to be expected, either for the person variable or for the task context (i.e., goal type).

This is the first research in the achievement motivation literature to show a positive influence of performance-avoidance goals on an appetitive phenomenological variable, either alone or in conjunction with another variable. As such, we hasten to add that additional data are needed before definitive statements regarding the benefits of matches involving performance-avoidance goals may be offered. Research on the extent to which and precisely how such matches exert their influence would be welcomed.

On a related note, several features of the present research should be highlighted in the interest of interpretational clarity. First, although flow is commonly conceptualized as a positive, appetitive construct, it is typically assessed in a valence-neutral way in terms of full concentration and absorption in an activity, without reference to the appetitive or aversive feelings that accompany task immersion. Our research was no exception, and it is possible, even likely, that our data show the benefits of an avoidance-based match for concentration per se, not concentration accompanied by positive emotion. This phenomenological experience can still be considered flow, albeit perhaps not a prototypical exemplar of the construct (see Csikszentmihalyi & Rathunde, 1993, for other non-prototypic examples of flow, such as intense concentration accompanied by destructive, antisocial urges in extreme fighting). Second, the present research focused on a creativity task, which is a relatively benign context in which to examine achievement-relevant processes. Had we used a task that assessed a core, self-defining attribute for most participants, such as intelligence, it is possible that we would have found that the helpful aspects of performance-avoidance goals are insufficient to fully address the anxiety, worry, and self-preoccupation encountered by those high in avoidance temperament in such situations (Eysenck, 1992). It would be interesting, therefore, to investigate whether the effects observed herein would be observed in a more stressful evaluative context or with a task more sensitive to anxiety than that used in the present research.

Perhaps most importantly, it must be emphasized that our findings document a benefit of an avoidance-based match in the short run, that is, for a brief flow experience during a single achievement event. The question of whether the activity-related experience of flow derived from an avoidance temperament–goal match leads to positive outcomes in the long run is one that remains unanswered. Prior research speaks against rather than in favor of this possibility. For example, other research has shown that avoidance goal pursuit is particularly depleting of regulatory resources (Oertig et al., 2012; Roskes, De Dreu, & Nijstad, 2012) and that any beneficial effects of avoidance striving are typically accompanied by negative long(er)-term implications for enjoyment, effort expenditure, continuing investment, and general well-being (Roskes et al., 2013; Ståhl, Van Laar, & Ellemers, 2012). Thus, although an avoidance-based match can facilitate flow on an achievement task, it is possible that the benefits from this form of regulation are both ephemeral and isolated.

It is likely that the short-term benefits of pursuing avoidance goals for those high in avoidance temperament are what lead these individuals to continue utilizing avoidance goals despite their long(er)-term costs. Persons with a strong avoidance temperament tend to experience worry, anxiety, and other distressing emotions in evaluative or competitive situations (e.g., Eysenck, 1992; Eysenck et al., 2007; Gray, 1982), and research on anxiety and phobia indicates that the modal avoidance-oriented individual tends to prefer the fastest and easiest way to eliminate distressing emotions in such situations regardless of possible future costs (cf. Bögels & Mansell, 2004; Grosse Holtforth, Grawe, Egger, & Berking, 2005). As such, avoidance goal pursuit can be self-reinforcing and can persist in spite of residual problems encountered downstream. A different option for those high in avoidance temperament is the utilization of approach-based goals, particularly performance-approach goals, to help negotiate the stresses of achievement settings. Research indicates that those with avoidance-based dispositions sometimes adopt approach-based goals, particularly performance-approach goals, in the service of these dispositions (Bjornebekk & Diseth, 2010; Elliot, Murayama, & Pekrun, 2011; Tanaka & Yamauchi, 2001), resulting in a "goal complex" entailing "approaching success in order to avoid failure" (Elliot & Thrash, 2001, p. 148). This form of regulation may reap the benefits of approach goal pursuit, perhaps without having to endure negative downstream costs. Research is needed on the long-term implications of this hybrid approach-to-avoid form of regulation, and whether those high in avoidance temperament can be successfully encouraged to not only adopt approach goals, but also to maintain their pursuit, especially in the face of challenges and obstacles.

In addition to contributing to the achievement motivation literature, the present research contributes to the literature on flow by expanding the range of factors that promote the flow experience. Much research has been conducted on the antecedents of flow, with the primary focus being on a match between people's skills and the demands of the situation (for a review, see Csikszentmihalyi et al., 2005). Less research has examined matches involving personality dispositions, and only a few studies have examined such matches within the achievement motivation domain (Oertig, Schüler, & Buchli, in press; Schüler & Brandstätter, 2013; Schüler, Brandstätter, & Sheldon, 2012). Our research is entirely unique in focusing on and documenting the joint influence of a basic temperament and a situationally induced goal in an achievement setting. As noted above, the fact that this match involves avoidance motivation makes it all the more unique and noteworthy.

Flow represents an optimal psychological state that people desire to experience again (Csikszentmihalyi & Rathunde, 1993). Our results suggest that it is not only inherent, truly intrinsically motivated situations/conditions that foster getting into this state. This fits with previous findings indicating that

an approval-seeking goal, also an extrinsically motivated goal orientation, was (marginally) positively related to flow (Rheinberg & Vollmeyer, 2003). The authors speculated that qualitative differences in initial motivation may lose their influence once participants come into the state of flow under optimal conditions. It also fits with the finding that freely chosen extrinsically motivated activities produce the highest degree of intrinsically rewarding flow during daily life (Mannell, Zusanek, & Larson, 1988). However, in our studies, we did not assess the degree to which our participants accepted our goal instructions as "self-determined." Asking for the reason for goal striving on a continuum from extrinsic to intrinsic (through introjected, identified) in future studies might help to clarify the influence of self-determination in the assumed relationships. Furthermore, future research would do well to explore the conditions and mechanisms under which extrinsically motivated situations/activities also promote (rather than hinder) flow (e.g., high personal skills, easy task, commitment to the task, match to other personal or situational characteristics).

The avoidance temperament–goal match predicted flow, but not performance (or, to be precise, creativity).[3] We assume that this is due to different time lags from goal setting. Flow is a variable that represents the process of goal striving. As a proximal consequence of goal setting, it is probably influenced more directly by the temperament–goal interaction. In contrast, creativity is an outcome of the goal-striving process. As a more distal consequence, it is likely that other variables also exert their influence on the creativity outcome. Future studies should consider the influence of further creativity predictors, such as trait curiosity, openness to new experiences, and dispositional self-regulation (see Biebrich & Kuhl, 2002; McCrae, 1987), on creativity and the temperament/goal–outcome link. One might further argue that performance is influenced by the temperament–goal interaction through the experience of flow. However, this relationship should occur on a fairly long-term time course. Repeated flow experiences reward the activity, which is performed again. The repeated activity, in turn, enhances skills and therewith performance. Thus, longitudinal studies are needed to test a temperament/goal → flow → performance relationship.

In closing, approach motivation facilitates thriving, whereas avoidance motivation facilitates surviving (physically and psychologically). Both approach motivation and avoidance motivation are adaptive under certain circumstances and in certain situations, but avoidance motivation is often overused in daily regulation, leading to unnecessary costs (often in the short run, but even more so in the long run). These negative implications of avoidance motivation have led researchers to focus primarily on their costs and to ignore instances in which avoidance motivation may be beneficial; this is especially the case in the achievement motivation domain. The present research documents an instance in which avoidance goal pursuit can have positive implications for an important process—flow—within a particular intrapersonal context (i.e.,

for individuals high in avoidance temperament). This highlights the need for additional research on the potential benefits of avoidance goal pursuit in achievement settings, although such research would also do well to fully consider the long-term, as well as short-term, implications of avoidance-based regulation.

Notes

1. At the end of the experiment, students were asked which goal they were given at the beginning of the creativity task (as a manipulation check). Participants indicated their response by checking one of the four goals according to the 2×2 goal framework (for a similar procedure, see Elliot & Harackiewicz, 1996). All but four participants checked the correct answer (two in the mastery-avoidance goal condition and two in the performance-approach goal condition), indicating that our achievement goal manipulations were effective.

2. Without controlling for flow at Assessment 1, the interaction effect disappeared. This does not come as a surprise because previous research has indicated that people differ in trait levels of flow (e.g., flow proneness) as well as in experiencing flow in specific settings (e.g., during creative task engagement; Cermakova, Moneta, & Spada, 2010; Csikszentmihalyi, 1990; Jackson & Marsh, 1996; Ullén et al., 2012). In order to capture individual differences in flow experience, we took an experience sample of flow before the experimental manipulation, which we controlled in our analyses.

3. Ancillary analyses took the performance data from the creativity test into consideration. Creativity was measured as the number of creative uses generated for the two presented everyday objects (see Schoppe, 1975). Correlation analyses indicated a marginally significant correlation between baseline flow and baseline creativity ($r = .17, p = .09$) and a nonsignificant but positive correlation between post-manipulation flow and post-manipulation creativity ($r = .16, p = .11$). There were no significant correlations between BIS sensitivity and baseline creativity ($r = .03, p = .76$) or post-manipulation creativity ($r = -.00, p = .97$). Baseline and post-manipulation creativity, however, were correlated ($r = .45, p < .001$). Moreover, with a series of regression analyses, we investigated the interactive influence of BIS sensitivity and achievement goal condition on creativity. No significant main or interactive effects emerged. It may be speculated that individuals with a strong avoidance temperament would have done worse when assigned to a (performance-) avoidance goal if they had not been higher in flow. The experience of flow may counteract the negative effects (e.g., of anxiety), and a person in flow—even one with a strong avoidance temperament who pursues a (performance-) avoidance goal—may feel focused during the task.

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