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Passionate Thinkers Feel Better:

Self-Control Capacity as Mediator of the Relationship Between Need for Cognition and

Affective Adjustment

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### Abstract

The present study tested a possible explanation for the positive relationship between the motivation to engage in cognitive endeavors (need for cognition, NFC) and indicators of affective adjustment (e.g., higher self-esteem, lower depression) that has been demonstrated in previous studies. We suggest that dispositional self-control capacity mediates this relationship since NFC has been found to be related to self-control capacity, and self-control capacity is crucial for adjustment. NFC, dispositional self-control capacity, self-esteem, habitual depressive mood, and tendency to respond socially desirably were measured among 150 university students via self-report. Regression analyses and Sobel tests revealed that self-control capacity was a potential mediator of the positive relationship between NFC and affective adjustment. The findings were robust in terms of social desirability.

*Keywords:* need for cognition, self-control, self-regulation, self-esteem, depression

### Passionate Thinkers Feel Better:

#### Self-Control Capacity as Mediator of the Relationship Between Need for Cognition and Affective Adjustment

People differ in how much they are motivated to think effortfully. While some individuals have fun during cognitive effort, others do not enjoy it and try to avoid the effort. In the present article, we investigate the relationship between the motivation to engage in cognitive effort and affective adjustment (higher self-esteem and lower habitual depressive mood). We aim to show that people who more strongly engage in effortful information processing are higher in affective adjustment, and we assume that this relationship is mediated by dispositional self-control capacity.

#### *Need for Cognition*

The tendency to engage in and enjoy effortful cognitive endeavors is named *need for cognition* (NFC; Cacioppo & Petty, 1982). NFC marks a relatively stable trait that influences the depth of information processing. NFC is conceptualized as a one-dimensional bipolar continuum (Cacioppo, Petty, Feinstein, & Jarvis, 1996); that is, high NFC means a high tendency to engage in and enjoy cognitive effort whereas low NFC means a relative absence of this tendency. Empirical evidence accounts for the notion that NFC is positively related to enjoyment of effortful information processing (see Cacioppo et al., 1996, for a review). It has also been demonstrated that depending on NFC, people differ in their actual engagement in effortful information processing (see Cacioppo et al., 1996, for a review): For instance, compared to people lower in NFC, people higher in NFC tend to recall more complex information to which they were exposed. The plausible explanation of this is that people higher in NFC invest more effort into elaboration and understanding of complex contents.

Given these differences in information processing, it is not surprising that NFC is related to better performance in a variety of cognitive tasks. People higher in NFC are better

in course performance, particularly when mastery of the course material requires effortful thought (Leone & Dalton, 1988). NFC was also positively related to better grades (Bertrams & Dickhäuser, 2009a; Cacioppo et al., 1996; Epstein, Pacini, Denes-Raj, & Heier, 1996), and negatively related to underachievement (Preckel, Holling, & Vock, 2006) as well as grade retention (Bertrams & Dickhäuser, 2009a). At this point, it may be noteworthy that NFC seems to be independent from cognitive ability since it was unrelated to abstract reasoning ability (see Cacioppo et al., 1996) and cognitive processing speed (Bertrams & Dickhäuser, 2008b).

Interestingly, studies have not only found NFC to be related to cognitive variables but also to variables that refer to affect. In a meta-analytic review, Cacioppo et al. (1996) determined an average positive correlation of  $r = .38$  between NFC and self-esteem across six different samples. Additionally, previous studies revealed negative relations between NFC and depression as well as NFC and anxiety (Epstein et al., 1996; Olson, Camp, & Fuller, 1984; Reeves, Watson, Ramsey, & Morris, 1995). These findings suggest that individuals who like to think effortfully generally feel better and are affectively better adjusted, respectively. Up to now it is not clear yet what accounts for this relationship. In the present article, we test a possible explanation for the relationship between NFC and affective adjustment. We assume that this relationship is mediated by dispositional self-control capacity. This assumption is in line with Epstein et al.'s (1996) suggestion that high NFC refers to the rational system that may be characterized as an executive process, and therefore is related to the mechanisms that govern self-regulation and coping, and hence psychological adjustment.

### *Self-Control Capacity*

Self-control (also: self-regulation) is defined as the process of actively overriding or altering one's own responses. This includes restraining impulses, altering emotional

reactions, controlling stream of thought, and regulating performance related behavior (Baumeister, Heatherton, & Tice, 1994; Tangney, Baumeister, & Boone, 2004). People higher in dispositional self-control capacity are more successful in this regard (for a review, see Tangney et al., 2004). This means that individuals higher in self-control capacity are supposed to be better at behaviors like resisting fattening snacks, hiding anger, shielding one's attention from distraction, and beginning and sticking to unpleasant but important tasks.

Self-control was argued to be a key to success in life (Baumeister, Leith, Muraven, & Bratslavsky, 1998) because it often underlies adaptive behavior. For instance, to abstain from short term temptations and pleasures for achieving more important long term goals requires self-control. Consequently, self-control capacity predicts important outcomes such as academic performance, even though self-control capacity is unrelated to cognitive ability (Duckworth & Seligman, 2005). Self-control is also required for interpersonal functioning (Finkel & Campbell, 2001; Vohs, Baumeister, & Ciarocco, 2005; Vohs & Ciarocco, 2004); accordingly, people higher in dispositional self-control capacity have better interpersonal relationships (see Tangney et al., 2004, for a review). Furthermore, in line with the assumption that difficulties with self-regulation can set the stage for psychological problems, self-control capacity is negatively related to a broad range of personality and psychopathology symptom measures (Tangney et al., 2004). Finally, coping with negative feelings requires self-control, and people higher in self-control capacity seem to be more successful therein (Gailliot, Schmeichel, & Baumeister, 2006). Given the role self-control plays in things such as reaching important goals, social functioning, psychological health, and affect regulation, it may not be surprising that dispositional self-control capacity is positively related to affective adjustment: For instance, self-control capacity has been found to be positively related to self-esteem and negatively related to depression and anxiety (Finkenauer, Engels, & Baumeister, 2005; Tangney et al., 2004).

### *Connecting NFC and Self-Control Capacity*

A variety of studies suggest that self-control relies on the availability of a limited resource akin to energy or strength (for reviews, see Baumeister, 2002; Schmeichel & Baumeister, 2004). This means that exertion of self-control temporarily depletes this resource and, therefore, subsequent self-control performance temporarily declines. It has been demonstrated that different kinds of self-control (e.g., control of emotional expression, overcoming inertia) depend upon the same common energy resource. Thus, exertion of one kind of self-control can impair subsequent self-control of a different kind. Recently, Gailliot et al. (2007) discovered the physiological nature of the energy resource: Across nine studies they showed that self-control depends on the availability of glucose, which is required by the brain for effortful executive processes.

The limited energy model of self-control was extended by Schmeichel, Vohs, and Baumeister (2003), who showed that effortful cognitive processing (e.g., logical reasoning, text comprehension) depends on the same limited resource as self-control. For instance, in one experiment an initial emotion regulation task impaired subsequent reasoning performance, probably because the initial self-control reduced the available energy for effortful information processing. Several further studies support the idea that self-control and effortful information processing share a common resource. One of them (Masicampo & Baumeister, 2008) also proved a relation between effortful information processing and the availability of glucose. So, one theoretical approach to explain why self-control and effortful information processing depend on the same resource is that both relate to effortful executive brain processes which require the same energy source, i.e., glucose.

Furthermore, there is cumulating evidence that regular exertion of self-control boosts the executive energy resource, analogous to working out a muscle through repeated exercise (see Baumeister, Gailliot, DeWall, & Oaten, 2006). In accordance with the notion that

different kinds of self-control all rely on the same resource, studies demonstrated that regular exertions of one form of self-control involve an improvement of self-control in other forms. Galliot (2008) suggests that such improvement is attributable to increased brain glycogen stores that provide the brain with more energy. Presumably, comparable to athletic training effects, the organism adapts to its regular executive demands. If this is true, each regular engagement in executive effort—self-control as well as effortful information processing—is supposed to boost the executive resource and therefore improve self-control capacity.

Based on the assumption that regular cognitive effort increases self-control capacity, we suggested that NFC is positively related to self-control capacity (Bertrams & Dickhäuser, 2009a). As people high in NFC are more motivated to engage in effortful information processing and actually do so more frequently compared to people low in NFC (see Cacioppo et al., 1996), it may be assumed that they boost their executive resource thereby. The strengthened resource should make them generally more successful in exerting self-control. In line with this reasoning, we recently found that NFC is positively related to dispositional self-control capacity (Bertrams & Dickhäuser, 2009a). We also found that people higher in NFC apparently are less prone to self-control depletion (Bertrams & Dickhäuser, 2008a).

### *Hypothesis*

As NFC was positively related to self-control capacity in two studies (Bertrams & Dickhäuser, 2008a, 2009a) and self-control seems to be a key requirement for reaching affective adjustment, we suggest that people higher in NFC are better adjusted affectively due to their higher self-control capacity. This means that we assume self-control capacity to be a potential mediator for the relationship between NFC and habitual affective adjustment. We examined this hypothesis using self-esteem and habitual depressive mood as indicators of affective adjustment.

### Method

### *Participants and Procedure*

One hundred and fifty undergraduates (84% female, mean age = 21.2) training to be future teachers voluntarily participated in this study. One participant was detected as an outlier and was therefore excluded from the regression analyses. The participants filled out scales about their NFC and dispositional self-control capacity in a first session. Seven weeks later, they answered scales about their self-esteem, habitual depressive mood, and socially desirable responding. Due to the time lag, it is unlikely that responding to the predictor measures influenced responses to the criteria measures in an artificial way. The questionnaires were administered during regular lectures.

### *Measures*

All scales used in the present study have been proved in previous studies to be reliable and valid measures for German-speaking samples.

*Need for cognition.* To measure NFC, we used the German adaptation of the NFC Scale (Bless, Wänke, Bohner, Fellhauer, & Schwarz, 1994). The scale consists of 33 items such as “I tend to set goals that can be accomplished only by expending considerable mental effort” or “The notion of thinking abstractly is not appealing to me” (reverse scored). In the present study, Cronbach’s alpha was .90. Items were answered on a 7-point scale ranging from 1 (*completely disagree*) to 7 (*completely agree*).

*Self-control capacity.* To assess dispositional self-control capacity, participants answered the German adaptation of the Brief Self-Control Scale (Bertrams & Dickhäuser, 2009b). The scale consists of 13 items such as “I am good at resisting temptation” or “I have a hard time breaking bad habits” (reverse scored). Items were answered on a 5-point scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). Additionally, we applied the German Self-Regulation Scale (Luszczynska, Diehl, Gutiérrez-Doña, Kuusinen, & Schwarzer, 2004), which consists of seven items such as “If an activity arouses my feelings

too much, I can calm myself down so that I can continue with the activity quickly” or “I can control my thoughts from distracting me from the task at hand”. Items were answered on a 4-point scale ranging from 1 (*completely disagree*) to 4 (*completely agree*). Together, the items of both scales had a Cronbach’s alpha of .84. We averaged the standardized scores of both scales in order to create a highly reliable composite measure of self-control capacity.<sup>1</sup>

*Self-esteem.* Self-esteem was assessed by the ten items of the German adaptation of the Rosenberg Self-Esteem Scale (Collani & Herzberg, 2003). Typical items are “I certainly feel useless at times” (reverse scored) or “I feel that I have a number of good qualities”. In the present study, Cronbach’s alpha was .89. Items were answered on a 4-point scale ranging from 1 (*completely disagree*) to 4 (*completely agree*).

*Depressive mood.* We used the ten item trait subscale of the German State-Trait Depression Scales (Spaderna, Schmukle, & Krohne, 2002) to measure habitual depressive mood. The participants were asked to indicate particular feelings (e.g., sad, hopeful [reverse scored]) according to how they feel in general. In the present study, Cronbach’s alpha was .87. Items were answered on a 4-point frequency scale from 1 (*hardly ever*) to 4 (*nearly always*).

*Social Desirability.* To control for the tendency to respond in a socially desirable way, we used Stöber’s (1999) Social Desirability Scale-17. The scale consists of 17 items such as “I never hesitate to help someone in an emergency” or “I always stay friendly and courteous with other people, even when I am stressed out”. In the present study, Cronbach’s alpha was .57. Items were answered in a dichotomous response format (*agree* vs. *disagree*).

## Results

### *Data Preparation*

Prior to the analyses, we applied log-transformations in order to normalize the distribution of the self-esteem and depression scores (see Tabachnick & Fidell, 2007).<sup>2</sup>

### *Correlations*

Table 1 displays descriptive statistics and the correlations between the measured variables with and without controlling for social desirability. As can be seen, NFC and self-control capacity were significantly correlated. Also, NFC was correlated with self-esteem and depressive mood. Furthermore, self-control capacity was correlated with self-esteem as well as depressive mood. These correlations were as expected from previous research and remained significant even when we controlled for social desirability.

### *Mediation Analyses*

In order to show that self-control capacity is a potential mediator of the relationship between NFC and affective adjustment, we conducted two Sobel tests (Preacher & Hayes, 2004), one for self-esteem as criterion and one for depressive mood as criterion. Table 2 displays the results from the regression analyses that provide the information required for the Sobel tests. In all regression analyses, we controlled for social desirability. All regression models were statistically significant,  $ps < .001$ . Adjusted  $R^2$ s were .27 (prediction of self-control capacity), .14 (prediction of self-esteem), and .15 (prediction of depressive mood). As expected, the Sobel tests revealed that self-control capacity was a potential mediator of the relation between NFC and self-esteem,  $z = 3.07$ ,  $p < .01$ , and of the relation between NFC and habitual depressive mood,  $z = -2.64$ ,  $p < .01$ . As can be seen in Table 2, NFC was no longer related to self-esteem and depressive mood, respectively, when NFC and self-control capacity were simultaneously entered into the regression model. According to Baron and Kenny (1986), this suggests that the relationships between NFC and the two affective adjustment measures were completely mediated by self-control capacity.<sup>3</sup>

### Discussion

In line with the assumption that regular engagement in effortful information processing boosts the executive resource that is also underlying self-control, previous

research has shown that NFC is positively associated with self-control capacity (Bertrams & Dickhäuser, 2008a, 2009a). Self-control enables people to adjust themselves and regulate their affects. Therefore, we predicted self-control capacity to be a potential mediator of the relationship between NFC and variables indicating affective adjustment. The data of the present study supported this assumption.

Suggestions have been made in the literature to explain why NFC, a variable that primarily refers to the cognitive behavior of people, has been found to be positively associated with indicators of affective adjustment. Osberg (1987) assumes that people higher in NFC more carefully analyze their world and feel more mastery over it and, therefore, evidence higher self-esteem. According to Reeves et al. (1995), NFC is related to depression since NFC is relevant for healthy insight. In line with our view, Epstein et al. (1996) explain their findings on the relationship between NFC and affective adjustment such that high NFC refers to the executive mechanisms that govern self-regulation and coping. However, so far nobody has empirically investigated whether such explanations can actually account for the relationship between NFC and affective adjustment. The present study goes beyond assumptions and brings first theory based evidence for one possible explanation of this relationship.

The central implication of the present findings is that, in contrast to Osberg's (1987) and Reeves et al.'s (1995) assumptions, more careful processing of specific information—a central feature of the NFC construct—probably does not directly explain the higher affective adjustment in people higher in NFC. Instead, self-control capacity, as a variable related to both NFC and affective adjustment, appears to be responsible for this relation. It is quite reasonable to assume that the higher capacity to control undesirable and harmful impulses, affects, cognitions, and behaviors (i.e., self-control) enables people higher in NFC to reach higher affective adjustment and subjective well-being. However, Osberg's (1987) and Reeves

et al.'s (1995) assumptions are less plausible: A sound analysis of one's world is not supposed to be necessarily associated with feelings of more mastery over it, nor must it provide healthy insights; likewise, such an analysis could generate the idea that the world is a dangerous and uncontrollable place or that life is senseless in principle. Thus, further research on NFC and adjustment should primarily focus on self-control capacity as mediating variable rather than on direct effects of NFC and information processing.

The present findings suggest that NFC may be a variable relevant in positive psychology and in research on psychological health. According to our rationale given in the introduction, NFC-related regular effortful thinking is a determinant of higher self-control capacity, which in turn determines adjustment and health. Although the causal relationships between these variables have still to be proven, the present data indicate that an increase in NFC is associated with an increase in self-control capacity and affective adjustment. Thus, finding ways to increase people's NFC might not only be useful for enhancing their engagement in sound thinking but also for increasing their volitional strength, which is one important factor in reaching psychological health and subjective well-being.

A couple of limitations of the present study have to be mentioned. First, the design of the study is correlational, and hence the data does not clearly show any causality. However, it has to be pointed out that the findings are in line with a theory-driven causal model. Second, due to the correlational design, self-control capacity was not unambiguously established as a mediator by means of our analyses, but rather established as one potential mediator of the relationship between NFC and affective adjustment. So, our study can be seen as a first exploration into why NFC and affective adjustment are related and should be followed by further research that supports the interpretation of the present findings. Finally, we applied self-report measures that can be biased due to the tendency to respond in a social desirable manner, for instance. However, in all analyses we controlled for social desirability and found

that all relations remained statistically significant and fell only slightly, if at all. Therefore, we are confident that the results are not just an artifact attributable to social desirable responding. Nevertheless, it would be desirable to complement the present findings with measures beyond self-reports.

Future research should try to demonstrate causal relationships between frequent cognitive effort, self-control capacity, and affective adjustment in order to examine the theoretical assumptions underlying this study and to test self-control capacity unambiguously as mediator variable. Of primary interest may be whether regular cognitive effort actually increases self-control capacity since this still constitutes a gap in the research literature. Furthermore, it would be interesting to see if and how NFC can be increased by an intervention program, and whether an increase of NFC would actually be followed by the expected increase in self-control capacity and affective adjustment.

## References

- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.
- Baumeister, R. F. (2002). Ego depletion and self-control failure: An energy model of the self's executive function. *Self and Identity, 1*, 129-136.
- Baumeister, R. F., Gailliot, M., DeWall, C. N., & Oaten, M. (2006). Self-regulation and personality: How interventions increase regulatory success, and how depletion moderates the effects of traits on behavior. *Journal of Personality, 74*, 1773-1801.
- Baumeister, R. F., Heatherton, T. F., & Tice, D. M. (1994). *Losing control: How and why people fail at self-regulation*. San Diego, CA: Academic Press.
- Baumeister, R. F., Leith, K. P., Muraven, M., & Bratslavsky, E. (1998). Self-regulation as a key to success in life. In D. Pushkar, W. M. Bukowski, A. E. Schwartzman, D. M. Stack, & D. R. White (Eds.), *Improving competence across the lifespan: Building interventions based on theory and research* (pp. 27-36). New York, NY: Plenum Press.
- Bertrams, A., & Dickhäuser, O. (2008a). *The relation of need for cognition to self-control performance after self-regulatory effort*. Manuscript submitted for publication.
- Bertrams, A., & Dickhäuser, O. (2008b). *University and school students' motivation for effortful thinking: Factor structure, reliability, and validity of the German Need for Cognition Scale*. Manuscript submitted for publication.
- Bertrams, A., & Dickhäuser, O. (2009a). High-school students' need for cognition, self-control capacity, and school achievement: Testing a mediation hypothesis. *Learning and Individual Differences, 19*, 135-138.

- Bertrams, A., & Dickhäuser, O. (2009b). Messung dispositioneller Selbstkontroll-Kapazität: Eine deutsche Adaptation der Kurzform der Self-Control Scale (SCS-K-D) [Measuring dispositional self-control capacity: A German adaptation of the Brief Self-Control Scale (SCS-K-D)]. *Diagnostica*, *55*, 2-10.
- Bless, H., Wänke, M., Bohner, G., Fellhauer, R. F., & Schwarz, N. (1994). Need for Cognition: Eine Skala zur Erfassung von Engagement und Freude bei Denkaufgaben [Need for cognition: A scale measuring engagement and happiness in cognitive tasks]. *Zeitschrift für Sozialpsychologie*, *25*, 147-154.
- Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology*, *42*, 116-131.
- Cacioppo, J. T., Petty, R. E., Feinstein, J. A., & Jarvis, W. B. G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin*, *119*, 197-253.
- Collani, G. von, & Herzberg, P. Y. (2003). Eine revidierte Fassung der deutschsprachigen Skala zum Selbstwertgefühl von Rosenberg [A revised version of the German adaptation of Rosenberg's Self-Esteem Scale]. *Zeitschrift für Differentielle und Diagnostische Psychologie*, *24*, 3-7.
- Duckworth, A. L., & Seligman, M. E. P. (2005). Self-discipline outdoes IQ in predicting academic performance of adolescents. *Psychological Science*, *16*, 939-944.
- Epstein, S., Pacini, R., Denes-Raj, V., & Heier, H. (1996). Individual differences in intuitive-experiential and analytical-rational thinking styles. *Journal of Personality and Social Psychology*, *71*, 390-405.

- Finkel, E. J. & Campbell, W. K. (2001). Self-control and accommodation in close relationships: An interdependence analysis. *Journal of Personality and Social Psychology, 81*, 263-277.
- Finkenauer, C., Engels, R. C. M. E., & Baumeister, R. F. (2005). Parenting and adolescent externalizing and internalizing problems: The role of self-control. *International Journal of Behavioral Development, 29*, 58-69.
- Gailliot, M. T. (2008). Unlocking the energy dynamics of executive functioning: Linking executive functioning to brain glycogen. *Perspectives on Psychological Science, 3*, 245-263.
- Gailliot, M. T., Baumeister, R. F., DeWall, C. N., Maner, J. K., Plant, E. A., Tice, D. M., Brewer, L. E., & Schmeichel, B. J. (2007). Self-control relies on glucose as a limited energy source: Willpower is more than a metaphor. *Journal of Personality and Social Psychology, 92*, 325-336.
- Gailliot, M. T., Schmeichel, B. J., & Baumeister, R. F. (2006). Self-regulatory processes defend against the threat of death: Effects of self-control depletion and trait self-control on thoughts and fears of dying. *Journal of Personality and Social Psychology, 91*, 49-62.
- Leone, C., & Dalton, C. H. (1988). Some effects of the need for cognition on course grades. *Perceptual and Motor Skills, 67*, 175-178.
- Luszczynska, A., Diehl, M., Gutiérrez-Doña, B., Kuusinen, P., & Schwarzer, R. (2004). Measuring one component of dispositional self-regulation: Attention control in goal pursuit. *Personality and Individual Differences, 37*, 555-566.

- Masicampo, E. J., & Baumeister, R. F. (2008). Toward a Physiology of Dual-Process Reasoning and Judgment: Lemonade, Willpower, and Expensive Rule-Based Analysis. *Psychological Science, 19*, 255-260.
- Olson, K., Camp, C., & Fuller, D. (1984). Curiosity and need for cognition. *Psychological Reports, 54*, 71-74.
- Osberg, T. M. (1987). The convergent and discriminant validity of the need for cognition scale. *Journal of Personality Assessment, 51*, 441-450.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers, 36*, 717-731.
- Preckel, F., Holling, H., & Vock, M. (2006). Academic underachievement: Relationship with cognitive motivation, achievement motivation, and conscientiousness. *Psychology in the Schools, 43*, 401-411.
- Reeves, A. L., Watson, P. J., Ramsey, A., Morris, R. J. (1995). Private self-consciousness factors, need for cognition, and depression. *Journal of Social Behavior and Personality, 10*, 431-443.
- Schmeichel, B. J., & Baumeister, R. F. (2004). Self-regulatory strength. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 84-98). New York, NY: Guilford Press.
- Schmeichel, B. J., Vohs, K. D., & Baumeister, R. F. (2003). Intellectual performance and ego depletion: Role of the self in logical reasoning and other information processing. *Journal of Personality and Social Psychology, 85*, 33-46.

- Spaderna, H., Schmukle, S. C., & Krohne, H. W. (2002). Bericht über die deutsche Adaptation der State-Trait Depression Scales (STDS) [Report about the German adaptation of the State-Trait Depression Scales (STDS)]. *Diagnostica, 48*, 80-89.
- Stöber, J. (1999). Die Soziale-Erwünschtheits-Skala-17 (SES-17): Entwicklung und erste Befunde zu Reliabilität und Validität [The Social Desirability Scale-17 (SDS-17): Development and first results on reliability and validity]. *Diagnostica, 45*, 173-177.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson.
- Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality, 72*, 271-324.
- Vohs, K. D., Baumeister, R. F., & Ciarocco, N. J. (2005). Self-regulation and self-presentation: Regulatory resource depletion impairs impression management and effortful self-presentation depletes regulatory resources. *Journal of Personality and Social Psychology, 88*, 632-657.
- Vohs, K. D., & Ciarocco, N. J. (2004). Interpersonal functioning requires self-regulation. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 392-407). New York: Guilford Press.

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## Footnotes

<sup>1</sup>We applied two conceptually related scales in order to increase the reliability of the mediator measure in terms of internal consistency.

<sup>2</sup>Repeating the correlation analyses, regression analyses, and Sobel tests with untransformed scores yielded equivalent results.

<sup>3</sup>Besides our main analyses, we found that self-control capacity was a potential mediator of the relationship between NFC and social desirability as well: NFC no longer predicted social desirability after including self-control capacity in the regression model,  $B = 0.10$ ,  $SE = 0.27$ ,  $\beta = .03$ , *ns*, whereas self-control capacity was still a significant predictor of social desirability,  $B = 1.41$ ,  $SE = 0.25$ ,  $\beta = .45$ ,  $p < .001$ . Additionally, a Sobel test indicated the mediating role of self-control capacity,  $z = 3.46$ ,  $p < .001$ . Thus, self-control capacity offers an explanation for the relationship between NFC and social desirability. One possible explanation for the relationship between self-control capacity and social desirability might be that people high in self-control capacity are actually more able to behave in a socially desirable manner.

Table 1

*Means, Standard Deviations, and Intercorrelations Among Variables (N = 149)*

Variable	<i>M (SD)</i>	1	2	3	4	5
1. Need for cognition	4.44 (0.80)	-	.35***	.23**	-.24**	.18*
2. Self-control capacity	-0.01 (0.86)	.30***	-	.37***	-.39***	.46***
3. Self-esteem	3.27 (0.52)	.22**	.37***	-	-.70***	.10
4. Depressive mood	1.83 (0.41)	-.22**	-.36***	-.70***	-	-.17*
5. Social desirability	10.47 (2.71)	-	-	-	-	-

*Note.* Correlations are displayed without (above diagonal) and with (below diagonal)

controlling for social desirability. Except for social desirability, the item responses of each scale were averaged. For social desirability, the item responses were summed up (i.e., a person's score represents how many of 17 items the person answered socially desirably).

Self-control capacity values are based on standardized scores.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table 2

*Regression Analyses for Sobel Tests (N = 149)*

1. Regressing self-control capacity	<i>B</i>	<i>SE B</i>	$\beta$
Social desirability	0.13	0.02	.41***
Need for cognition	<b>0.29</b>	<b>0.08</b>	.27***
2. Regressing self-esteem	<i>B</i>	<i>SE B</i>	$\beta$
Social desirability	-0.01	0.00	-.10
Need for cognition	0.02	0.01	.12
Self-control capacity	<b>0.06</b>	<b>0.01</b>	.37***
3. Regressing depressive mood	<i>B</i>	<i>SE B</i>	$\beta$
Social desirability	0.00	0.00	.01
Need for cognition	-0.02	0.01	-.12
Self-control capacity	<b>-0.04</b>	<b>0.01</b>	-.35***

*Note.* Numbers in bold were input for the Sobel tests.

\*\*\* $p < .001$ .