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# True self-alienation positively predicts reports of mindwandering



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## ABSTRACT

Two studies assessed the relationship between feelings of uncertainty about who one truly is (i.e., true self-alienation) and self-reported task-unrelated thoughts (i.e., mindwandering) during performance tasks. Because true self-alienation is conceptualized as the subjective disconnect between conscious awareness and actual experience, we hypothesized that greater feelings of true self-alienation would positively relate to subjective reports of mindwandering. Two convergent studies supported this hypothesis. Moreover, this relationship could not consistently be accounted for by the independent influence of other aspects of authenticity, negative mood, mindfulness, or broad personality dimensions. These findings suggest that individual differences in true self-alienation are reliably associated with subjective reports of mindwandering. The implications of these findings for the true self-alienation construct, the ways that personality relates to mindwandering, and future research directions focused on curtailing mindwandering and improving performance and achievement are discussed.

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## 1. Introduction

As important as it may seem to be aware of and attuned to present experience, it is a simple truth that people's minds frequently wander to things unrelated to the task at hand. Research suggests that, on average, people's attention is focused on something other than the present environment nearly 50% of the time (Killingsworth & Gilbert, 2010). And, while mentally focusing on things detached from present experience can be harmless or even beneficial in certain contexts (Baird et al., 2012; Smallwood & Andrews-Hanna, 2013), mindwandering can significantly impair performance in domains that place demands on attention. For example, mindwandering while driving can increase the likelihood of crashes (Yanko & Spalek, 2013), mindwandering in educational contexts can impair learning (Smallwood, Fishman, & Schooler, 2007), and mindwandering in health care settings may contribute to significant medical errors (Smallwood, Mrazek, & Schooler, 2011). Such consequences underscore the importance of identifying psychological factors that can account for variability in people's tendency to subjectively feel disconnected from focal tasks. The present research addressed this issue by integrating research on mindwandering with emerging work on individual differences in true self-alienation. True self-alienation (Wood, Alex, Maltby, Baliouis, & Joseph, 2008), or perceived true self-knowledge (Schlegel & Hicks, 2011; Schlegel, Hicks, King, & Arndt, 2011), reflects the degree to which people subjectively feel like they know who they really are, deep down. In the current research, we hypothesized that people who feel greater uncertainty about who they truly are may be more likely to report mindwandering during performance tasks.

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The true self-alienation construct is a subcomponent of the more general personality dimension of authenticity (Kernis & Goldman, 2006; Wood et al., 2008). Conceptually, individual differences in authenticity reflect differences in the degree to which people are aware of and freely express the characteristics and beliefs that reflect who they think they truly are at the “core” (i.e., their true self-concept). Wood et al. (2008) argue that authenticity is comprised of three interrelated components: true self-alienation, authentic living, and the acceptance of external influence. True self-alienation is defined as the *subjective feeling* of not knowing or being detached from who one believes she/he truly is. It is akin to the sentiments frequently portrayed by protagonists in literature and film who experience uncertainty or difficulty answering the question “Who am I, really?” Authentic living, on the other hand, reflects the degree to which one behaves in ways that are consistent with her/his core beliefs and values. It is likened to the common expression of behaving in ways that are “true to one’s self.” Finally, acceptance of external influence is defined as the degree to which one’s behavior is influenced by other people’s expectations. It is exemplified by common notions of succumbing to “peer pressure” and changing one’s behavior to meet the standards of other people. Wood et al. (2008) argue that these three facets undergird individual differences in authenticity and fundamentally contribute to psychological well-being. Considerable research supports this view.

Indeed, all three facets of authenticity are associated with self-esteem, positive affect, life satisfaction, and personal growth in ways consistent with the idea that authenticity underlies positive psychological functioning (e.g., true self-alienation is negatively associated with self-esteem; Wood et al., 2008). Likewise, authenticity is also linked to greater feelings of self-actualization, lower levels of stress, and more adaptive responses to psychological threats (for a review, see Kernis & Goldman, 2006). Moreover, the importance of authenticity for positive psychological functioning has been evidenced by recent experimental studies that induce people to feel inauthentic or to feel as if they don’t know who they truly are. For example, experimentally inducing people to feel like they don’t (vs. do) know who they truly are decreases the perception that life is meaningful (Schlegel et al., 2011) and general satisfaction with important life decisions (Schlegel, Hicks, Davis, Hirsch, & Smith, 2013). Inducing people to feel inauthentic (vs. authentic) also leads people to perceive themselves as less moral and pure (Gino, Kouchaki, & Galinsky, 2015), suggesting that feelings of authenticity are critically linked to perceptions of moral virtue (Newman, Bloom, & Knobe, 2013). Taken together, these and other findings (Kernis & Goldman, 2006; Schlegel & Hicks, 2011) demonstrate that authenticity contributes to positive psychological functioning and well-being.

Yet, while the links between authenticity and psychological well-being have been firmly established, no research (to our knowledge) has examined how aspects of authenticity relate to people’s propensity to report mindwandering. Do individual differences in aspects of authenticity predict tendencies to report mental disengagement from focal tasks? Answers to this question would seem to be important given the substantial impacts that mindwandering can have on educational outcomes and the fact that disturbances in authenticity and questions about who one really is likely become more salient during the high school and college years. We hypothesize that one facet of authenticity, feelings of uncertainty about who one really is (i.e., true self-alienation), should positively relate to mindwandering reports. Conceptually, true self-alienation is subjectively felt as a disconnection between “conscious awareness and actual experience” (Wood et al., 2008, p. 386), a feeling very consistent with mindwandering in that mindwandering occurs precisely when one’s conscious attention is directed toward something disconnected from the here and now. On an empirical level, several studies have also documented associations between true self-alienation and trait mindfulness (Allan, Bott, & Suh, 2014; Lakey, Kernis, Heppner, & Lance, 2008). An important aspect of mindfulness, “being attentive to and aware of what is taking place in the present” (Brown & Ryan, 2003, p. 822), is the conceptual inverse of mindwandering and research has not surprisingly documented inverse connections between mindfulness and reports of mindwandering (Mrazek, Franklin, Phillips, Baird, & Schooler, 2013; Mrazek, Smallwood, & Schooler, 2012). Thus, on the basis of these empirical and conceptual links, we hypothesized that differences in the feeling of being disconnected from and uncertain about who one really is (i.e., true self-alienation) would positively predict reports of mindwandering.

## 2. The present research

Two studies were conducted to assess the relationship between true self-alienation and tendencies to report being mentally disengaged from focal tasks. In both studies, participants completed a battery of personality measures, a measure of true self-alienation, and vigilance tasks used in previous research to elicit mindwandering. Mindwandering was assessed via thought probes during the vigilance tasks in both studies, but Study 2 also included a retrospective report measure of off-task thoughts to provide additional validity. We hypothesized that true self-alienation would positively predict mindwandering reports in both studies. Because Studies 1 and 2 utilized nearly identical methodologies, we describe the methods for each study first, followed by a cumulative presentation of the results.

### 2.1. Study 1 Methods

#### 2.1.1. Participants

Introductory psychology students ( $N = 93$ ; 51 females, 39 males, 3 unreported) completed the study for course credit. Participants ranged in age from 18 to 38 years old ( $M = 20.23$ ,  $SD = 4.18$ ) and were predominately Caucasian (84.4%; Indian, 4.4%; all other races <3.0%).

### 2.1.2. Procedure

The study was described as an investigation of the relationship between personality, emotions, and attention. Participants arrived to the lab in groups of 1–3 per session, were given a brief introduction to the study, and were ushered into a separate testing room where they completed the study in private computer cubicles. The study consisted of a battery of standard personality and mood measures, as well as the critical measure of mindwandering. The mindwandering task was presented in the middle of the battery for all participants, but the remaining measures were presented in two randomly assigned orders. Order of presentation did not significantly alter any of the results.<sup>1</sup> There was no specific reason for presenting the mindwandering task in the middle of the battery other than our intuition that it might help bolster the cover story that the study emphasized personality, emotions, and attention. In the personality battery, we included measures of constructs known to be associated with mindwandering (e.g., trait mindfulness, mood) to assess whether these constructs could account for any relationship between true self-alienation and mindwandering. We also measured aspects of well-being that are related to, yet distinct from, authenticity (e.g., meaning in life). These measures were included to more broadly assess relationships between reports of mindwandering and well-being, and to examine the independent effect of self-alienation above and beyond the independent influence of these other variables. Finally, the battery also featured other secondary measures that were included for exploratory purposes irrelevant to our focal aims. These secondary measures also helped us fill the hour lab session so that participants could earn a full participation credit. Information about the secondary measures can be found in [Supplementary Materials](#). The primary measures described below were selected *a priori* to be included in the critical analyses.

### 2.1.3. Primary measures

Descriptive statistics for the primary measures are presented in [Table 1](#).

**2.1.3.1. Authenticity.** We utilized the Authentic Personality Scale ([Wood et al., 2008](#)) to measure the three distinct aspects of authenticity highlighted in the Introduction: true self-alienation, authentic living, and acceptance of external influence. Example items from each subscale include: “I feel out of touch with the real me” (true self-alienation), “I am true to myself in most situations” (authentic living), and “I am strongly influenced by the opinions of others” (acceptance of external influence). Responses to each item were made on 1 (*not at all true of me*) to 6 (*very true of me*) scales and were averaged into separate true self-alienation, authentic living, and acceptance of external influence composites.

**2.1.3.2. Trait mindfulness.** We utilized the Cognitive and Affective Mindfulness Scale – Revised (CAMS-R; [Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007](#)) to assess individual differences in trait mindfulness. Mindfulness is positively associated with aspects of authenticity ([Lakey et al., 2008](#)) and inversely associated with mindwandering tendencies ([Mrazek et al., 2012](#)). We thus included the CAMS-R to assess the association between true self-alienation and mindwandering above and beyond trait mindfulness. The CAMS-R features 12-items (e.g., “I am able to focus on the present moment,” “I am preoccupied by the future”) that participants responded to on 1 (*rarely/not at all*) to 4 (*almost always*) scales. Responses were averaged into a single mindfulness composite.

**2.1.3.3. Self-concept clarity.** Self-concept clarity is conceptualized as “the extent to which the contents of an individual’s self-concept (e.g., perceived personal attributes) are clearly and confidently defined, internally consistent, and temporally stable” ([Campbell et al., 1996, p. 141](#)). The first part of this conceptualization is similar to the conceptualization of the true self-alienation construct in that it focuses on the clarity of one’s perceived self-knowledge. However, the self-concept clarity construct also captures elements of stability and consistency that are not captured by the true self-alienation construct. We thus included the Self-Concept Clarity Scale (SCCS; [Campbell et al., 1996](#)) to assess the association between self-alienation and mindwandering independent of differences in self-concept clarity. The SCCS features 12-items (e.g., “My beliefs about myself often conflict with one another”) that participants responded to on 1 (*strongly disagree*) to 6 (*strongly agree*) scales. Responses were averaged into a self-concept clarity composite.

**2.1.3.4. Affect.** Negative mood states positively predict mindwandering ([Smallwood, Fitzgerald, Miles, & Phillips, 2009](#)). We therefore included the Positive and Negative Affect Schedule (PANAS; [Watson, Clark, & Tellegen, 1988](#)) to account for the effects of affect. Participants indicated how much they generally feel a series of positive (e.g., proud) and negative (e.g., nervous) emotions on 1 (*very slightly or not at all*) to 5 (*extremely*) scales. Separate positive and negative affect composites were computed.

**2.1.3.5. Big five personality dimensions.** Although aspects of authenticity are distinct from traits featured in the “Big 5” model of personality, we included the Ten Item Personality Inventory (TIPI; [Gosling, Rentfrow, & Swann, 2003](#)) to assess the role of general personality dimensions. The TIPI includes brief (2-item) assessments of neuroticism (emotional stability), extroversion, agreeableness, openness to experience, and conscientiousness. Responses were made on 1 (*disagree totally*) to 5 (*agree totally*) scales and separate mean composites for each “Big 5” dimension were computed.

<sup>1</sup> The ordering of all measures is provided in [Supplementary Materials](#).

**Table 1**  
Bivariate correlations and descriptive statistics for primary measures in Study 1.

Measure	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) True self-alienation	-	-0.20 <sup>†</sup>	0.38**	0.29**	-0.18 <sup>†</sup>	-0.47**	-0.68**	-0.23*	0.46*	-0.20*	-0.14	-0.28**	0.42**	-0.33**	-0.12	0.30**	-0.52**
(2) Authentic living		-	-0.22*	0.03	0.07	0.29**	0.22*	0.30**	-0.10	0.08	0.04	0.14	-0.29**	0.23*	0.06	-0.03	0.27**
(3) Acceptance of external influence			-	0.27*	-0.07	-0.33**	-0.30**	-0.04	0.46**	-0.07	0.16	-0.27**	0.29**	-0.19 <sup>†</sup>	-0.09	0.25*	-0.10
(4) Mindwandering (thought probe)				-	-0.31**	-0.20 <sup>†</sup>	-0.17	-0.07	0.21*	0.00	-0.03	-0.05	0.22*	-0.03	-0.20 <sup>†</sup>	0.08	-0.09
(5) SART skill index					-	0.04	0.02	0.11	0.04	-0.10	0.25*	0.06	-0.09	0.07	0.04	0.11	0.13
(6) Trait mindfulness (CAMS-R)						-	0.56**	0.53**	-0.31**	0.32*	0.06	0.25*	-0.52**	0.30**	0.15	-0.16	0.40**
(7) Self-concept clarity (SCCS)							-	0.22*	-0.44**	0.21*	-0.02	0.14	-0.42**	0.19 <sup>†</sup>	0.12	-0.49**	0.42**
(8) Positive affect (PANAS)								-	0.05	0.40**	0.16	0.38**	-0.25*	0.12	0.09	-0.02	0.45**
(9) Negative affect (PANAS)									-	-0.15	0.01	-0.23 <sup>†</sup>	0.44**	-0.40	-0.15	0.32**	-0.09
(10) Extroversion (TIPI)										-	0.23*	0.27**	-0.29**	-0.05	0.01	-0.14	0.21 <sup>†</sup>
(11) Agreeableness (TIPI)											-	0.29**	0.01	0.04	-0.03	0.07	0.24**
(12) Openness to experience (TIPI)												-	-0.24*	0.05	0.10	0.27**	
(13) Neuroticism (TIPI)													-	-0.16	-0.20 <sup>†</sup>	0.18 <sup>†</sup>	-0.26*
(14) Conscientiousness (TIPI)														-	0.13	-0.11	0.22*
(15) Self-esteem (SISE)															-	0.01	0.16
(16) Search for meaning in life																-	-0.07
(17) Presence of meaning in life																	-
Mean	2.74	4.96	3.28	0.49	1.62	2.72	3.91	3.40	1.80	3.30	3.74	3.90	2.46	4.01	4.97	4.84	4.65
SD	1.22	0.69	1.23	0.33	0.48	0.44	0.99	0.96	0.68	1.09	0.72	0.74	0.99	0.81	1.73	1.46	1.46
$\alpha$	0.84	0.67	0.86	n/a	n/a	0.77	0.89	0.92	0.85	n/a	n/a	n/a	n/a	n/a	n/a	0.90	0.89

Note. The Authentic Personality Scale and the SCCS were measured on a 6-point likert scale. The SISE and meaning in life scales were measured on a 7-point likert scale. The CAMS-R was measured on a 4-point likert scale. The PANAS and the TIPI were measured on a 5-point likert scale.

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

†  $p < 0.10$ .

**2.1.3.6. Self-esteem.** To rule out the possibility that any effects involving self-alienation could be explained by the positivity of people's self-views, we included the Single Item Self-Esteem Scale (Robins, Hendin, & Trzesniewski, 2001). Participants indicated their agreement with the statement "I have high self-esteem" on a 1 (*not at all*) to 7 (*totally*) scale. This instrument is a reliable and valid measure of trait self-esteem (Robins et al., 2001).

**2.1.3.7. Meaning in life.** Like aspects of authenticity, the presence of and search for meaning in life are central components of eudaimonic well-being (Steger, Frazier, Oishi, & Kaler, 2006). Research also indicates that the true self-concept and meaning in life are reliably linked (Schlegel, Hicks, Arndt, & King, 2009). We therefore included Steger et al.'s (2006) meaning in life questionnaire to assess the independent association between self-alienation and mindwandering reports above and beyond meaning in life. The meaning in life questionnaire assesses differences in the presence of meaning in life and the search for meaning in life. Example items include "I understand my life's meaning" (presence) and "I am searching for meaning in my life" (search). Responses were made on 1 (*absolutely untrue*) to 7 (*absolutely true*) scales and were averaged into separate presence of and search for meaning in life composites.

**2.1.3.8. Task to elicit mindwandering.** To capture mindwandering in Study 1, we had participants complete a version of the sustained attention to response task (SART; Robertson, Manly, Andrade, Baddeley, & Yiend, 1997), which is used frequently to induce mindwandering episodes (e.g., Smallwood, Beach, Schooler, & Handy, 2007). The task presented digits (1–9) on the screen one at a time. Participants were required to press the space bar when the number was any digit other than a 3. When the digit was a three, they were required to do nothing and simply let the trial pass. Each stimulus (i.e., the digit) was presented for 1250 ms with a 1250 ms intertrial interval. Participants completed 7 practice trials with feedback in order to acquaint themselves to the task. After the practice trials, participants were informed that the actual task would not present feedback, but that it would contain questions about their "current thoughts." The instructions read:

During the actual trials, you may find that you begin thinking about things completely unrelated to the task at hand. This is not uncommon. We refer to this as "mind wandering." You will be asked at various points during the trials to indicate whether your attention was firmly directed toward the task or whether you were thinking about something unrelated to the task. When you see these questions about your "current thoughts," we simply want you to respond as truthfully as possible.

The SART consisted of 245 trials, with 17 (7%) target stimulus trials requiring a "non-response." The target stimulus ("3") was presented on trials 11, 25, 37, 48, 58, 78, 99, 107, 117, 123, 143, 162, 178, 193, 208, 225, and 240. We computed a SART "skill index" that accounts for speed-accuracy trade-offs in performance (Jonker, Seli, Cheyne, & Smilek, 2013). Average accuracy on "non-response" trials was divided by average reaction time for "response" trials and this proportion was multiplied by 1000 to reduce decimal places. Higher scores reflect greater performance (i.e., greater accuracy and greater speed) on the SART.

**2.1.3.9. Thought probe measure of mindwandering.** During the SART, 7 thought probes were presented to participants. The probes were presented following trials 31, 67, 115, 152, 188, 205, and 236. The probes read: "What were you just thinking about? Just prior to being asked, was your attention directed to the task at hand (here and now), a personal event from your past, or an upcoming personal event?" Participants were instructed to press the "T" key if their thoughts were focused on the task, the "P" key if their thoughts were focused on the past, and the "F" key if their thoughts were focused on the future. This probe was modeled after previous research (Smallwood, Schooler et al., 2011) and allowed us to assess the frequency of on-task thoughts and explore any potential differences in the temporal focus of off-task thoughts that might emerge.<sup>2</sup> We subtracted the number of reported "on-task" thoughts from 7 and then divided that number by 7 in order to create a mindwandering index (i.e. the percentage of thoughts that were off-task). Higher scores indicate greater reports of mindwandering.

## 2.2. Study 2 Methods

### 2.2.1. Participants

Introductory psychology students ( $N = 106$ ; 80 females and 24 males) completed the study for course credit. Participants ranged in age from 18 to 37 years old ( $M = 19.78$ ,  $SD = 3.47$ ) and were predominately Caucasian (82%; Asian, 7.5%; Black/African, 3.8%; Multiple Races, 3.8%; all other races <3.0%).

### 2.2.2. Procedure

The procedure was nearly identical to that of Study 1. Participants completed a battery of standard questionnaires and the critical mindwandering measure. All of the primary measures described in Study 1 were included in Study 2. The mindwandering task was again presented in the middle of a battery of personality and mood measures, which were presented in two

<sup>2</sup> Although greater true self-alienation predicted greater retrospective bias in Study 1 ( $r = -0.21$ ,  $p = 0.049$ ), no relationship emerged in Study 2 ( $r = 0.04$ ,  $p = 0.66$ ). We thus do not discuss the temporal bias measure further. However, consistent with previous research (e.g., Baird, Smallwood, & Schooler, 2011), we did find that future oriented thoughts were more prevalent than past oriented thoughts in Study 1 [ $M_{\text{future}} = 0.29$ ,  $SD_{\text{future}} = 0.26$  vs.  $M_{\text{past}} = 0.20$ ,  $SD_{\text{past}} = 0.24$ ,  $F(1, 92) = 6.31$ ,  $p = 0.014$ ] and Study 2 [ $M_{\text{future}} = 0.25$ ,  $SD_{\text{future}} = 0.22$  vs.  $M_{\text{past}} = 0.15$ ,  $SD_{\text{past}} = 0.18$ ,  $F(1, 105) = 12.19$ ,  $p = 0.001$ ].

randomly determined orders. Order of presentation did not affect the results. As in Study 1, we included measures directly relevant to our focal aims (e.g., authenticity, trait mindfulness) and secondary measures that were utilized for unrelated exploratory purposes. Information about the secondary measures can be found in [Supplementary Materials](#).

### 2.2.3. Primary measures unique to Study 2

Descriptive statistics for all measures are presented in [Table 2](#).

**2.2.3.1. Task to elicit mindwandering.** In this study, we utilized a different vigilance task to elicit mindwandering and included two separate measures of mindwandering frequency to provide convergent validity for our findings. We used a different task to elicit mindwandering in Study 2 to ensure that the association between mindwandering and true self-alienation was not specific to one type of task (i.e., the SART). Participants in Study 2 completed a Choice Reaction Time Task (CRT) modeled after tasks utilized in previous studies on mindwandering ([Smallwood, Schooler et al., 2011](#)). The task presented digits (1–8) in the center of the computer screen one at a time in either black or green font (on a gray background). Participants were required to do nothing if the digit was presented in black font. If the digit was in green font, participants were instructed to “left-click” the mouse when the stimulus was an even number and to “right-click” the mouse when the stimulus was an odd number. Each trial began with a fixation “x” presented in the center of the screen for 1000 ms, followed by the stimulus digit for 2000 ms. The intertrial interval was also 2000 ms. Participants completed four practice trials with feedback prior to beginning the actual task. No feedback was provided during the actual task and we did not warn participants that questions about their current thoughts would be presented sporadically throughout the task. The CRT consisted of 168 trials, with 22 (13%) target stimulus trials that required participants to indicate whether the stimulus was an odd or even number. Responses were required on trials 1, 8, 16, 22, 31, 35, 47, 52, 64, 73, 84, 86, 92, 98, 105, 115, 119, 121, 131, 143, 151, and 155. Task performance was indexed as the median response time (in milliseconds) to target trials ([Smallwood & O’Connor, 2011](#)) and the proportion of accurate target stimulus classifications. Shorter response times and higher accuracy scores reflect greater performance.

**2.2.3.2. Thought probe measure of mindwandering.** The thought probes utilized in Study 1 were presented to participants in Study 2 on 5 different occasions during the CRT. The probes were presented immediately after trials 29, 44, 82, 113, and 165. As in Study 1, we subtracted the number of reported “on-task” thoughts from 5 and then divided that number by 5 to create a mindwandering index (i.e. the percentage of thoughts that were off-task). Higher scores reflect greater reported mindwandering.

**2.2.3.3. Retrospective self-report measure of mindwandering.** In addition to the thought probe measure, we also had participants complete the Dundee State Stress Questionnaire (DSSQ; [Matthews, Joyner, Gilliland, Campbell, Falconer, & Huggins, 1999](#)) immediately after the CRT. The DSSQ is a retrospective self-report measure that assesses the frequency of both task-unrelated thoughts (mindwandering) and task-interfering thoughts during a previous task (in this case, the CRT). Example items include “While performing the task, I thought about something that might happen in the future” (task-unrelated thought) and “While performing the task, I thought about how I should work more carefully” (task-interfering thought). Responses were made on 1 (*never*) to 5 (*very often*) scales and were averaged into separate task-unrelated thoughts and task-interfering thoughts composites. Our primary focus was on the task-unrelated thoughts composite, as this measure reflects mindwandering and has been used to operationalize mindwandering reports in previous studies (e.g., [Baird et al., 2012](#); [Barron, Riby, Greer, & Smallwood, 2011](#); [Smallwood, O’Connor, & Heim, 2004](#)).

## 3. Results

### 3.1. Authenticity and mindwandering

[Tables 1 and 2](#) present the bivariate correlations and descriptive statistics for all primary measures in Studies 1 and 2. As predicted, true self-alienation was positively correlated with reports of mindwandering. This association emerged on the thought probe reports of mindwandering in both studies and the retrospective report measure of mindwandering (the DSSQ) included in Study 2. There was thus convergent support for the idea that true self-alienation is positively correlated with reports of mindwandering.

However, because acceptance of external influence (both studies) and authentic living (marginally in Study 2) were also associated with reports of mindwandering, we conducted regression analyses to test whether the relationship between true self-alienation and mindwandering occurs above and beyond the effects of other aspects of authenticity. These analyses directly tested our hypothesis that true self-alienation would be the central aspect of authenticity linked to mindwandering reports. When all three aspects of authenticity were entered as simultaneous predictors of mindwandering reports in Study 1, the effect of true self-alienation remained significant [ $\beta = 0.23$ ,  $t(89) = 2.15$ ,  $p = 0.034$ ]. In contrast, the effect of authentic living ( $\beta = 0.12$ ,  $p = 0.233$ ) was not significant and the effect of acceptance of external influence ( $\beta = 0.21$ ,  $p = 0.058$ ) became marginally significant. Identical analyses conducted on the Study 2 data returned similar, albeit less robust results. True self-alienation was a marginally significant positive predictor of the mindwandering thought probe measure [ $\beta = 0.20$ ,  $t(102)$

**Table 2**  
Bivariate correlations and descriptive statistics for primary measures in Study 2.

Measure	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) True self-alienation	–	–0.40**	0.40**	0.27**	0.28**	0.06	–0.04	–0.50**	–0.71**	–0.38**	0.42**	–0.22*	–0.08	–0.03	0.39**	–0.36**	–0.03	0.21*	–0.49**
(2) Authentic living		–	–0.36**	–0.17†	–0.19†	0.15	–0.05	0.35**	0.46**	0.24*	–0.27**	0.08	0.22*	0.14	–0.29**	0.11	–0.04	–0.15	0.31**
(3) Acceptance of external influence			–	0.21*	0.27**	0.03	0.09	–0.47**	–0.35**	–0.11	0.28**	–0.18†	0.13	–0.25**	0.20*	–0.06	–0.07	0.17†	–0.30**
(4) Mindwandering (thought probe)				–	0.60**	–0.02	0.02	–0.37**	–0.22*	0.05	0.20*	0.01	0.08	0.07	0.16†	–0.01	–0.02	0.28**	–0.21*
(5) Mindwandering (DSSQ)					–	–0.06	0.17†	–0.41**	–0.36**	–0.09	0.39**	–0.05	–0.03	–0.01	0.24*	–0.03	–0.03	0.20*	–0.26**
(6) CRT Proportion target correct						–	–0.50**	–0.14	–0.04	–0.18†	–0.12	–0.09	–0.01	0.03	0.21*	0.06	0.04	–0.13	–0.10
(7) CRT Target reaction time							–	–0.01	–0.03	0.02	0.18†	–0.02	0.04	–0.05	0.00	0.09	–0.03	0.08	0.10
(8) Trait mindfulness (CAMS-R)								–	0.56**	0.36**	–0.46**	0.28*	0.05	0.11	–0.58**	0.24*	0.00	–0.15	0.45**
(9) Self-concept clarity (SCCS)									–	0.56**	–0.42**	23*	0.14	–0.04	–0.50**	0.30**	0.02	–0.21*	0.46**
(10) Positive affect (PANAS)										–	–0.11	0.35**	0.13	–0.03	–0.40**	0.36**	0.00	–0.06	0.37**
(11) Negative affect (PANAS)											–	–0.17†	–0.16†	–0.11	0.49**	–0.10	–0.19†	–0.06	–0.12
(12) Extroversion (TIPI)												–	–0.05	0.17†	–0.26**	0.09	–0.06	–0.02	0.13
(13) Agreeableness (TIPI)													–	–0.06	–0.18†	–0.05	0.09	–0.01	0.26**
(14) Openness to experience (TIPI)														–	0.02	–0.16	–0.11	–0.04	–0.04
(15) Neuroticism (TIPI)															–	–0.33**	–0.02	–0.08	–0.17†
(16) Conscientiousness (TIPI)																–	0.05	0.03	0.22*
(17) Self-Esteem (SISE)																	–	0.10	–0.05
(18) Search for meaning in life																		–	–0.34**
(19) Presence of meaning in life																			–
Mean	2.73	4.92	3.33	0.41	2.13	0.82	894.05	2.66	3.71	3.28	1.79	3.18	3.62	3.99	2.68	4.05	4.66	4.64	4.84
SD	1.30	0.76	1.22	0.27	0.82	0.28	247.12	0.44	1.10	0.85	0.71	1.16	0.94	0.73	1.03	0.83	1.68	1.53	1.50
α	0.86	0.70	0.85	n/a	0.84	n/a	n/a	0.73	0.89	0.89	0.89	n/a	n/a	n/a	n/a	n/a	n/a	0.89	0.90

Note. The Authentic Personality Scale and the SCCS were measured on a 6-point likert scale. The SISE and meaning in life scales were measured on a 7-point likert scale. The CAMS-R was measured on a 4-point likert scale. The PANAS, the TIPI, and the DSSQ were measured on a 5-point likert scale.

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

†  $p < 0.10$ .

= 1.86,  $p = 0.066$ ] and the retrospective DSSQ measure [ $\beta = 0.19$ ,  $t(102) = 1.77$ ,  $p = 0.080$ ]. Authentic living was unrelated to the thought probe measure [ $\beta = -0.05$ ,  $t(102) = 0.44$ ,  $p = 0.661$ ] and the DSSQ measure [ $\beta = -0.05$ ,  $t(102) = 0.48$ ,  $p = 0.636$ ]. Acceptance of external influence in Study 2 was unrelated to the thought probe measure of mindwandering [ $\beta = 0.11$ ,  $t(102) = 1.07$ ,  $p = 0.288$ ], but was a marginally significant predictor of the retrospective DSSQ measure [ $\beta = 0.18$ ,  $t(102) = 1.72$ ,  $p = 0.089$ ].

Because Studies 1 and 2 included an identical thought probe measure of mindwandering and featured nearly identical methodologies, we combined the data from both studies to conduct a more powerful regression analysis. This analysis focused specifically on the thought probe measure of mindwandering reports. When the data were pooled across Studies 1 and 2, authentic living was unrelated to thought probe reports of mindwandering [ $\beta = 0.05$ ,  $t(195) = 0.73$ ,  $p = 0.468$ ]. In contrast, both true self-alienation [ $\beta = 0.22$ ,  $t(195) = 2.96$ ,  $p = 0.003$ ] and acceptance of external influence [ $\beta = 0.16$ ,  $t(195) = 2.16$ ,  $p = 0.032$ ] were significant positive predictors of thought probe reports of mindwandering.

Taken together, these findings support the hypothesis that true self-alienation accounts for a significant portion of the variance in subjective reports of mindwandering, above and beyond other aspects of authenticity. They also suggest, unexpectedly, that acceptance of external influence is positively associated with mindwandering reports, albeit somewhat less consistently than true self-alienation.

### 3.2. True self-alienation, mindwandering, and the influence of other key variables

Beyond associations with aspects of authenticity, [Tables 1 and 2](#) also reveal a number of other variables that are linked to subjective reports of mindwandering. The most consistent of these associations (i.e., those that emerge across studies) are noteworthy because they replicate previous work. Specifically, we broadly replicated previous research ([Smallwood et al., 2009](#)) by showing that negative mood was positively associated with all of the measures of mindwandering reports. Individual differences in tendencies toward negative affect (i.e., neuroticism) were also positively associated with reports of mindwandering, though this association was only marginally significant for the thought probe mindwandering measure utilized in Study 2. Also consistent with previous research ([Mrazek et al., 2012](#)), trait mindfulness and reports of mindwandering were inversely correlated in both studies (with a marginal effect in Study 1). This generally supports the view ([Mrazek et al., 2012](#)) that mindwandering and mindfulness are opposing constructs.

Given that true self-alienation, negative affect, neuroticism, and trait mindfulness consistently predicted mindwandering reports in both studies, and given evidence of other less consistent associations between mindwandering and other personality traits (e.g., self-concept clarity), we tested whether the predicted association between mindwandering and true self-alienation remained significant when the independent influence of each of these other variables was statistically controlled. This series of partial correlations allowed us to systematically assess the effects of true self-alienation above and beyond the independent influence of each of these other variables. [Table 3](#) presents the results of these analyses.

In Study 1, the relationship between true self-alienation and mindwandering remained significantly different than zero (at  $p < 0.05$ ) when the independent influence of each of the other primary variables was statistically controlled. In Study 2, controlling for self-concept clarity and trait mindfulness both independently eliminated the significant association between self-alienation and measures of mindwandering reports. In addition, the self-alienation and mindwandering association on both mindwandering measures in Study 2 was marginally significant when the presence of meaning in life was statistically controlled. Controlling for negative affect only eliminated the relationship between self-alienation and the retrospective report measure of mindwandering (DSSQ). Taken together, the results of these partial correlation analyses across both studies indicate that no single construct consistently eliminated (across both studies) the association between true self-alienation and mindwandering when its influence was statistically controlled.

However, as we did with the regression analyses focused on aspects of authenticity, we also conducted a series of identical partial correlation analyses with the data of both Studies 1 and 2 pooled together. These analyses provide a more cumulative view of the data and benefit from the enhanced statistical power that a larger sample size provides. As seen in the right most column of [Table 3](#), the positive relationship between self-alienation and thought probe reports of mindwandering remained significant when each of the other primary variables was independently controlled. This suggests that true self-alienation may be a particularly robust positive predictor of subjective reports of mindwandering.<sup>3</sup>

## 4. General discussion

The results of these studies provide (to our knowledge) the first evidence that individual differences in true self-alienation positively predict tendencies to become mentally disengaged from focal experiences. This association was consistent across two studies and two distinct types of tasks used to elicit mindwandering. The association also emerged on two distinct types

<sup>3</sup> Instead of this series of partial correlation analyses, another statistical approach could be to simply enter all of the variables as simultaneous predictors of mindwandering in a single regression analysis. We were concerned that this approach might suffer from multicollinearity problems and that the estimates of individual effects would be negatively affected by the inclusion of variables that are irrelevant for mindwandering. The partial correlation analyses were thus selected because they could more precisely reveal the effect of true self-alienation above and beyond the independent influence of each additional variable. Nevertheless, the results of a simultaneous regression analysis mirrored the results of the partial correlation analyses. For instance, when data were pooled across Study 1 and 2, true self-alienation was a significant positive predictor of mindwandering above and beyond the simultaneous influence of all other relevant variables.

**Table 3**

Partial correlations between true self-alienation and mindwandering controlling for other variables.

Measure	Correlation between true self-alienation and mindwandering controlling for measure			
	Study 1 – Probe	Study 2 – Probe	Study 2 – DSSQ	Pooled – Probe
Authentic living	0.30**	0.22*	0.23*	0.26**
Accepting external influence	0.21*	0.20*	0.19*	0.20**
Self-concept clarity	0.24*	0.16	0.04	0.21**
Self-esteem	0.27*	0.26**	0.28**	0.26**
Trait mindfulness	0.22*	0.10	0.10	0.17*
Negative affect	0.25*	0.21*	0.14	0.22**
Positive affect	0.28**	0.31**	0.27**	0.28**
Neuroticism (emotional instability)	0.22*	0.22*	0.21*	0.22**
Extraversion	0.29**	0.27**	0.28**	0.28**
Conscientiousness	0.29**	0.28**	0.29**	0.28**
Openness	0.28**	0.27**	0.28**	0.27**
Search for meaning in life	0.27**	0.22*	0.25	0.24**
Presence of meaning in life	0.28**	0.19†	0.18†	0.23**

Notes. The “pooled” columns represent the results when the data from Studies 1 and 2 are pooled together. The pooled analyses focus only on the thought probe measure of mindwandering because that measure was identical across studies.

\*  $p < 0.05$ .\*\*  $p < 0.01$ .†  $p < 0.06$ .

of mindwandering measures (thought probes and retrospective report), was independent from other aspects of authenticity, and could not consistently be accounted for by the independent influence of negative mood, trait mindfulness, or other self-relevant variables (e.g., self-esteem, self-concept clarity). Thus, the current results provide clear support for our hypothesis that subjectively feeling uncertain and disconnected from who one thinks he/she truly is reliably predicts reports of mindwandering.

These findings have several implications. Conceptually, the findings speak to the relationship between true self-alienation and general patterns of mental activity. This is notable given that previous research on the true self has primarily focused on the role that authenticity in general, and true self-alienation specifically, play in psychological well-being. For example, compared to people high in true self-alienation, people who feel like they have a good sense of who they truly are experience greater meaning in life, greater self-esteem, and lower levels of stress, anxiety, and depression (Kernis & Goldman, 2006; Schlegel et al., 2011; Wood et al., 2008). The current findings extend our understanding of the true self-alienation construct to an entirely new domain by revealing that the perceived knowledge of who one really is also predicts the degree to which people report being mentally connected to present experience. In this way, our work is the first to explicitly test and support an important component of Wood et al.’s (2008) conceptualization of true self-alienation. Wood et al. (2008) argue that true self-alienation reflects a subjectively felt disconnect between “conscious awareness and actual experience” (Wood et al., 2008, p. 386). Because mindwandering states are empirically indicative of a general “decoupling” of conscious attention from perceptual stimuli in one’s present environment (Barron et al., 2011), the finding that true self-alienation and reports of mindwandering are reliably related lends unique empirical support to a prominent theoretical model of the authenticity construct.

These findings also reveal the utility of examining individual differences when seeking to account for variability in reports of mindwandering frequency. Indeed, while studies have focused on individual differences in cognitive factors closely linked to mental processes underlying mindwandering (e.g., working memory capacity; Kane et al., 2007), relatively fewer have emphasized the role that personality dimensions might play. In one exception, Diaz et al. (2014) found reliable associations between the subjective feeling of having little control over one’s thoughts (i.e., discontinuity of mind) and the broad personality dimensions emphasized in Cloninger’s psychobiological model of temperament and character (Cloninger, Svrakic, & Przybeck, 1993). However, just as our findings indicated that the effects of true self-alienation on mindwandering were independent from other broad personality dimensions (e.g., neuroticism), previous research has indicated that Wood et al.’s (2008) model of authenticity is largely independent from the dimensions of personality captured by Cloninger’s model (Pinto, Maltby, & Wood, 2011). Given that one important proposed function of mindwandering is planning for self-relevant future events (Stawarczyk, Majerus, Maj, Van der Linden, & D’Argembeau, 2011), it makes some sense that individual difference variables that specifically capture self-perceptions and understanding would relate to mindwandering tendencies. Our results suggest that dispositional feelings of true self-alienation are particularly relevant to understanding who is most likely to report mentally drifting away from focal tasks.

Such findings may also have some practical implications. Because tendencies to mindwander can be disruptive and impair performance in a number of important domains (e.g., educational settings; Smallwood, Beach et al., 2007; Smallwood, Fishman et al., 2007), identifying factors that can be targeted in interventions to decrease mindwandering is important. Some work in this regard has already begun. Mrazek et al. (2013), for example, found that a 2-week mindfulness training program reliably reduced mindwandering during standardized testing and improved overall performance. Our results suggest that interventions focused on enhancing perceived true self-knowledge (reducing true self-alienation) might

also be effective. However, this possibility should only be viewed as speculative at this point due to the inability of our cross-sectional designs to directly reveal a causal effect of true self-alienation on mindwandering. This limitation is obviously important. It is possible, for instance, that mindwandering itself detracts from perceived self-knowledge. Indeed, frequent engagement in mindwandering may lead people to feel chronically disconnected from their experiences and thus alienated from themselves. Another obvious limitation is that we did not detect reliable and consistent associations between true self-alienation and task performance across the studies. This may have been due to an insensitive paradigm for testing associations between mindwandering reports, task performance, and true self-alienation. Nevertheless, our findings do encourage future research aimed at more fully delineating the ways that true self-alienation and mindwandering are linked.

Future research should also examine potential mediators of this relationship. We suspect one possibility is the availability of clear goals. Past research has suggested that people strongly endorse the idea that the true self should be used to guide decision-making (Schlegel et al., 2013). As such, individuals with high levels of trait self-alienation may feel that they are lacking the ability to “read” the compass that should guide them toward meaningful goals and experience a decrement in the ability to set, maintain, and invest in clear goals. Without clear goals, the mind may be less able to sustain attention and thus become more likely to wander. Indeed, research has demonstrated the importance of having a clear goal or purpose on the ability to persist at a boring task (e.g., completing math problems instead of watching entertaining videos or play video games; Yeager et al., 2014). While this research typically focuses on how domain-specific goals predict self-regulation in the same domain, the same pattern may exist at a dispositional level.

#### 4.1. Conclusions

In sum, this research is (to our knowledge) the first to examine how feelings of self-knowledge relate to tendencies to report being mentally disengaged from focal tasks. Two convergent studies reliably demonstrated that people who feel less sure of and disconnected from who they truly are evidence greater reports of mindwandering. These findings contribute to our understanding of the true self-alienation construct and the ways that personality dimensions relate to mindwandering reports. More importantly, they provide a fertile foundation for future research on the nature of this relationship and the ways that it can be harnessed for important and broad practical implications.

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#### Appendix A. Supplementary material

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.concog.2016.08.018>.

#### References

- Allan, B. A., Bott, E. M., & Suh, H. (2014). Connecting mindfulness and meaning in life: Exploring the role of authenticity. *Mindfulness*, 1–8. <http://dx.doi.org/10.1007/s12671-014-0341-z>.
- Baird, B., Smallwood, J., Mrazek, M. D., Kam, J. W. Y., Franklin, M. S., & Schooler, J. W. (2012). Inspired by distraction: Mind wandering facilitates creative incubation. *Psychological Science*, 23(10), 1117–1122. <http://dx.doi.org/10.1177/0956797612446024>.
- Baird, B., Smallwood, J., & Schooler, J. W. (2011). Back to the future: Autobiographical planning and the functionality of mind-wandering. *Consciousness and Cognition*, 20(4), 1604–1611. <http://dx.doi.org/10.1016/j.concog.2011.08.007>.
- Barron, E., Riby, L. M., Greer, J., & Smallwood, J. (2011). Absorbed in thought: The effect of mind wandering on the processing of relevant and irrelevant events. *Psychological Science*, 22(5), 596–601. <http://dx.doi.org/10.1177/0956797611404083>.
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84(4), 822–848. <http://dx.doi.org/10.1037/0022-3514.84.4.822>.
- Campbell, J. D., Trapnell, P. D., Heine, S. J., Katz, I. M., Lavallee, L. F., & Lehman, D. R. (1996). Self-concept clarity: Measurement, personality correlates, and cultural boundaries. *Journal of Personality and Social Psychology*, 70(1), 141–156. <http://dx.doi.org/10.1037/0022-3514.70.1.141>.
- Cloninger, C., Svrakic, D. M., & Przybeck, T. R. (1993). A psychobiological model of temperament and character. *Archives of General Psychiatry*, 50(12), 975–990. <http://dx.doi.org/10.1001/archpsyc.1993.01820240059008>.
- Diaz, B. A., Van Der Sluis, S., Benjamins, J. S., Stoffers, D., Hardstone, R., Mansvelder, H. D., ... Linkenkaer-Hansen, K. (2014). The ARSQ 2.0 reveals age and personality effects on mind-wandering experiences. *Frontiers in Psychology*, 5. <http://dx.doi.org/10.3389/fpsyg.2014.00271>.
- Feldman, G., Hayes, A., Kumar, S., Greeson, J., & Laurenceau, J.-P. (2007). Mindfulness and emotion regulation: The development and initial validation of the cognitive and affective mindfulness scale-revised (CAMS-R). *Journal of Psychopathology and Behavioral Assessment*, 29(3), 177–190. <http://dx.doi.org/10.1007/s10862-006-9035-8>.
- Gino, F., Kouchaki, M., & Galinsky, A. D. (2015). The moral virtue of authenticity: How inauthenticity produces feelings of immorality and impurity. *Psychological Science*, 0956797615575277. <http://dx.doi.org/10.1177/0956797615575277>.
- Gosling, S. D., Rentfrow, P. J., & Swann, W. B. Jr. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality*, 37(6), 504–528. [http://dx.doi.org/10.1016/S0092-6566\(03\)00046-1](http://dx.doi.org/10.1016/S0092-6566(03)00046-1).
- Jonker, T. R., Seli, P., Cheyne, J. A., & Smilek, D. (2013). Performance reactivity in a continuous-performance task: Implications for understanding post-error behavior. *Consciousness and Cognition*, 22(4), 1468–1476. <http://dx.doi.org/10.1016/j.concog.2013.10.005>.
- Kane, M. J., Brown, L. H., McVay, J. C., Silvia, P. J., Myin-Germeyns, L., & Kwapil, T. R. (2007). For whom the mind wanders, and when an experience-sampling study of working memory and executive control in daily life. *Psychological Science*, 18(7), 614–621. <http://dx.doi.org/10.1111/j.1467-9280.2007.01948.x>.
- Kernis, M. H., & Goldman, B. M. (2006). A multicomponent conceptualization of authenticity: Theory and research. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 38, pp. 283–357). Academic Press. Retrieved from: <http://www.sciencedirect.com/science/article/pii/S0065260106380069>.

- Killingsworth, M. A., & Gilbert, D. T. (2010). A wandering mind is an unhappy mind. *Science*, 330(6006), 932. <http://dx.doi.org/10.1126/science.1192439>.
- Lakey, C. E., Kernis, M. H., Heppner, W. L., & Lance, C. E. (2008). Individual differences in authenticity and mindfulness as predictors of verbal defensiveness. *Journal of Research in Personality*, 42(1), 230–238. <http://dx.doi.org/10.1016/j.jrp.2007.05.002>.
- Matthews, G., Joyner, L., Gilliland, K., Campbell, S. E., Falconer, S., & Huggins, J. (1999). Validation of a comprehensive stress state questionnaire: Towards a state big three. *Personality Psychology in Europe*, 7, 335–350.
- Mrazek, M. D., Franklin, M. S., Phillips, D. T., Baird, B., & Schooler, J. W. (2013). Mindfulness training improves working memory capacity and GRE performance while reducing mind wandering. *Psychological Science*, 24(5), 776–781. <http://dx.doi.org/10.1177/0956797612459659>.
- Mrazek, M. D., Smallwood, J., & Schooler, J. W. (2012). Mindfulness and mind-wandering: Finding convergence through opposing constructs. *Emotion*, 12(3), 442–448. <http://dx.doi.org/10.1037/a0026678>.
- Newman, G. E., Bloom, P., & Knobe, J. (2013). Value judgments and the true self. *Personality and Social Psychology Bulletin*, 0146167213508791. <http://dx.doi.org/10.1177/0146167213508791>.
- Pinto, D. G., Maltby, J., & Wood, A. M. (2011). Exploring the tripartite model of authenticity within Gray's approach and inhibition systems and Cloninger's bio-social model of personality. *Personality and Individual Differences*, 51(2), 194–197. <http://dx.doi.org/10.1016/j.paid.2011.03.040>.
- Robertson, I. H., Manly, T., Andrade, J., Baddeley, B. T., & Yiend, J. (1997). 'Oops!': Performance correlates of everyday attentional failures in traumatic brain injured and normal subjects. *Neuropsychologia*, 35(6), 747–758. [http://dx.doi.org/10.1016/S0028-3932\(97\)00015-8](http://dx.doi.org/10.1016/S0028-3932(97)00015-8).
- Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the rosenberg self-esteem scale. *Personality and Social Psychology Bulletin*, 27(2), 151–161. <http://dx.doi.org/10.1177/0146167201272002>.
- Schlegel, R. J., & Hicks, J. A. (2011). The true self and psychological health: Emerging evidence and future directions. *Social and Personality Psychology Compass*, 5(12), 989–1003. <http://dx.doi.org/10.1111/j.1751-9004.2011.00401.x>.
- Schlegel, R. J., Hicks, J. A., Arndt, J., & King, L. A. (2009). Thine own self: True self-concept accessibility and meaning in life. *Journal of Personality and Social Psychology*, 96(2), 473–490. <http://dx.doi.org/10.1037/a0014060>.
- Schlegel, R. J., Hicks, J. A., Davis, W. E., Hirsch, K. A., & Smith, C. M. (2013). The dynamic interplay between perceived true self-knowledge and decision satisfaction. *Journal of Personality and Social Psychology*, 104(3), 542–558. <http://dx.doi.org/10.1037/a0031183>.
- Schlegel, R. J., Hicks, J. A., King, L. A., & Arndt, J. (2011). Feeling like you know who you are: Perceived true self-knowledge and meaning in life. *Personality and Social Psychology Bulletin*, 37(6), 745–756. <http://dx.doi.org/10.1177/0146167211400424>.
- Smallwood, J., & Andrews-Hanna, J. (2013). Not all minds that wander are lost: The importance of a balanced perspective on the mind-wandering state. *Frontiers in Psychology*, 4. <http://dx.doi.org/10.3389/fpsyg.2013.00441>.
- Smallwood, J., Beach, E., Schooler, J. W., & Handy, T. C. (2007). Going awol in the brain: Mind wandering reduces cortical analysis of external events. *Journal of Cognitive Neuroscience*, 20(3), 458–469. <http://dx.doi.org/10.1162/jocn.2008.20037>.
- Smallwood, J., Fishman, D. J., & Schooler, J. W. (2007). Counting the cost of an absent mind: Mind wandering as an underrecognized influence on educational performance. *Psychonomic Bulletin & Review*, 14(2), 230–236. <http://dx.doi.org/10.3758/BF03194057>.
- Smallwood, J., Fitzgerald, A., Miles, L. K., & Phillips, L. H. (2009). Shifting moods, wandering minds: Negative moods lead the mind to wander. *Emotion*, 9(2), 271–276. <http://dx.doi.org/10.1037/a0014855>.
- Smallwood, J., Mrazek, M. D., & Schooler, J. W. (2011). Medicine for the wandering mind: Mind wandering in medical practice. *Medical Education*, 45(11), 1072–1080. <http://dx.doi.org/10.1111/j.1365-2923.2011.04074.x>.
- Smallwood, J., & O'Connor, R. C. (2011). Imprisoned by the past: Unhappy moods lead to a retrospective bias to mind wandering. *Cognition and Emotion*, 25(8), 1481–1490. <http://dx.doi.org/10.1080/02699931.2010.545263>.
- Smallwood, J., O'Connor, R. C., & Heim, D. (2004). Rumination, dysphoria, and subjective experience. *Imagination, Cognition and Personality*, 24(4), 355–367. <http://dx.doi.org/10.2190/AE18-AD1V-YF7I-EKBX>.
- Smallwood, J., Schooler, J. W., Turk, D. J., Cunningham, S. J., Burns, P., & Macrae, C. N. (2011). Self-reflection and the temporal focus of the wandering mind. *Consciousness and Cognition*, 20(4), 1120–1126. <http://dx.doi.org/10.1016/j.concog.2010.12.017>.
- Stawarczyk, D., Majerus, S., Maj, M., Van der Linden, M., & D'Argembeau, A. (2011). Mind-wandering: Phenomenology and function as assessed with a novel experience sampling method. *Acta Psychologica*, 136(3), 370–381. <http://dx.doi.org/10.1016/j.actpsy.2011.01.002>.
- Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology*, 53(1), 80–93. <http://dx.doi.org/10.1037/0022-0167.53.1.80>.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063–1070. <http://dx.doi.org/10.1037/0022-3514.54.6.1063>.
- Wood, A. M., Alex, L. P., Maltby, J., Baliouis, M., & Joseph, S. (2008). The authentic personality: A theoretical and empirical conceptualization and the development of the Authenticity Scale. *Journal of Counseling Psychology*, 55(3), 385–399. <http://dx.doi.org/10.1037/0022-0167.55.3.385>.
- Yanko, M. R., & Spalek, T. M. (2013). Driving with the wandering mind: The effect that mind-wandering has on driving performance. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, 0018720813495280. <http://dx.doi.org/10.1177/0018720813495280>.
- Yeager, D. S., Henderson, M. D., Paunesku, D., Walton, G. M., D'Mello, S., Spitzer, B. J., & Duckworth, A. L. (2014). Boring but important: A self-transcendent purpose for learning fosters academic self-regulation. *Journal of Personality and Social Psychology*, 107(4), 559–580. <http://dx.doi.org/10.1037/a0037637>.