



# Validation of the Chinese version of the Mind-Wandering Questionnaire (MWQ) and the mediating role of self-esteem in the relationship between mind-wandering and life satisfaction for adolescents



Yangmei Luo<sup>a</sup>, Rongjuan Zhu<sup>a</sup>, Enxia Ju<sup>b</sup>, Xuqun You<sup>a,\*</sup>

<sup>a</sup> Key Laboratory for Behavior and Cognitive Neuroscience of Shaanxi Province, School of Psychology, Shaanxi Normal University, Xi'an 710062, China

<sup>b</sup> College of Mathematics and Information Science, Shaanxi Normal University, Xi'an 710062, China

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## ABSTRACT

Mind-wandering is associated with adverse effects on life satisfaction. However, the potential mechanism that might explain the relationship between mind-wandering and life satisfaction is unclear. Furthermore, although attention problems are widespread among adolescents, few studies have investigated mind-wandering on a sample of youth. Thus, in this study, we first sought to validate the Chinese version of the Mind-Wandering Questionnaire and then investigated the mediating role of self-esteem in the relationship between mind-wandering and life satisfaction. A total of 1331 Chinese adolescents across middle school and high school participated. The hypothesized model was tested using structural equation modeling. The results suggested that the Chinese version of the Mind-Wandering Questionnaire is a suitable tool to measure the trait levels of mind-wandering for adolescents. Notably, supporting the study hypotheses, the negative association between mind-wandering and life satisfaction was mediated by self-esteem. Specifically, adolescents with a tendency to undertake mind-wandering reported low levels of self-esteem, which were then associated with decreased life satisfaction. The findings emphasized the role of youth self-esteem in explaining the relationship between mind-wandering and life satisfaction.

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## 1. Introduction

A person's mind does not always focus on what that person is doing; instead, it wanders away from the current task and stays on their inner thoughts, such as past memories or future events. Mind-wandering refers to the mental processes in which attention lapses from the current external task to the thoughts generated by the intrinsic self (Smallwood & Schooler, 2015). Mind-wandering is one of the most ubiquitous of all human mental activities. It happens during almost every activity in daily life and people spend about 30%–50% of waking time engaging in spontaneous intrinsic thoughts (Kane et al., 2007; Killingsworth & Gilbert, 2010). As a universal experience, mind-wandering provides an important window to understanding the features of human consciousness. Thus, there is increased scientific interest in examining the how, when, and why of mind-wandering using diverse approaches (for review, see Smallwood & Schooler, 2015). Notably, mind-wandering has recently been recognized as an important individual difference (Mrazek et al., 2013). Following on from Mrazek et al.'s (2013) study, in this study we focus on the trait levels of mind-wandering, which characterize people's tendency toward mind-wandering during a particular period.

Mind-wandering has both adaptive and maladaptive functions (Mooneyham & Schooler, 2013; Smallwood & Schooler, 2015). It is associated with a wide variety of benefits, including future planning, problem solving, and creative thinking (e.g., Baird et al., 2012); for example, it can facilitate people's performance in validated creativity problems (Baird et al., 2012). However, it comes at quite a cost, including poor performance in ongoing tasks, low mood, and ill-being (Killingsworth & Gilbert, 2010; Smallwood & O'Connor, 2011). Considerable evidence shows that mind-wandering was consistently associated with worse performance on tasks relating to attention and comprehension during reading (McVay & Kane, 2012; Mrazek et al., 2013).

Importantly, the association between mind-wandering and low levels of life satisfaction has been well-established. For example, a large-scale study using the experience sampling method revealed that people tended to be unhappier in their daily lives when their minds were wandering compared to when they were not; a follow-up time-lag analysis found that mind-wandering was an antecedent of negative mood (Killingsworth & Gilbert, 2010). Moreover, evidence from clinically depressed and dysphoric samples also found a high frequency of mind-wandering was associated with depressed symptoms (Marchetti et al., 2014; Smallwood et al., 2007). However, another experimental study induced the positive and negative emotions in the laboratory and found negative emotions resulted in a higher frequency of mind-wandering relative to positive emotions (Smallwood, Fitzgerald, Miles,

\* Corresponding author at: School of Psychology, Shaanxi Normal University, Yanta, Xi'an 710062, China.

E-mail address: [youxuqun@snnu.edu.cn](mailto:youxuqun@snnu.edu.cn) (X. You).

& Phillips, 2009). Despite the controversy in the directionality of mind-wandering and well-being, Marchetti, Koster, & De Raedt (2012) proposed that mind-wandering dampened life satisfaction by heightening the accessibility of negative thoughts or by increasing self-attention, which is associated with negative affect (Mor & Winquist, 2002). Hence, in this piece, we hypothesized the mind-wandering to be an independent variable and life satisfaction to be a dependent variable in our model. In fact, the cross-sectional design in our study cannot determine the causal relationship between mind-wandering and life satisfaction.

It is also worth mentioning that another line of clinical research showed the important role of perseverative cognition (e.g., rumination and worry) at onset and maintenance of emotional disorders (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Although these constructs are related, their meanings are different. Rumination refers to a repetitive response mode that involves elaborating on symptoms of distress and on the possible causes and consequences of these symptoms (Nolen-Hoeksema et al., 2008). Meanwhile, worrying can be defined as an apprehensive expectation of possible negative outcomes in the future (Borkovec, Robinson, Pruzinsky, & DePree, 1983). Rumination and worry are mostly maladaptive processes, while mind-wandering involves adaptive and maladaptive process. Moreover, as mentioned above, mind-wandering is a universal process and examining their relationship with life satisfaction may have more implications compared to rumination and worry.

As mentioned above, accumulating evidence indicated that mind-wandering is negatively correlated with life satisfaction. However, unobserved third variables may be responsible for the correlation between mind-wandering and life satisfaction, which may be valuable to (Mason, Brown, Mar, & Smallwood, 2013). Self-esteem, a global feeling of self-value or adequacy as a person (Rosenberg, 1965), might act as an important role in this relationship. One of the defining features of mind-wandering is intrinsic spontaneous cognition (Smallwood & Schooler, 2015), which has been associated with increased attention on one's inner thoughts, emotions, and experience (Marchetti et al., 2012, 2014). Increased mind-wandering may lead to the excessive self-attention (Mor & Winquist, 2002), which may increase the risk of self-evaluation and can be related to negative emotion. Ultimately, frequent mind-wandering may undermine people's self-values. Therefore, a negative association between mind-wandering and self-esteem has been identified (Mrazek et al., 2013). Furthermore, mindfulness, a contrasting construct to mind-wandering (Mrazek, Smallwood, & Schooler, 2012) that is characterized by attention to the present, is found to be positively associated with self-esteem (Brown & Ryan, 2003; Kong, Wang, & Zhao, 2014; Rasmussen & Pidgeon, 2011). This is because mindfulness develops a sense of self-awareness that involves non-self-evaluation (Brown, Ryan, & Creswell, 2007; Mrazek et al., 2013). Regarding the relationship between self-esteem and life satisfaction, considerable evidence indicates that self-esteem is one of the strongest predictors of life satisfaction (Diener & Diener, 1995; Mäkikangas & Kinnunen, 2003), while depression is pre-occupied by the loss of self-esteem (Kuster, Orth, & Meier, 2012; Pyszczynski & Greenberg, 1987). Taken together, we hypothesized that self-esteem might mediate the relationship between mind-wandering and life satisfaction.

We sought to investigate the mediating role of self-esteem in the relationship between mind-wandering and life satisfaction in a sample of Chinese adolescents. Most previous studies investigated the emotional cost of mind-wandering among adults; however, the attention problems persist and are significant among adolescents (Mrazek et al., 2013; Polderman, Boomsma, Bartels, Verhulst, & Huizink, 2010; Stawarczyk, Majerus, Catale, & D'Argembeau, 2014). For instance, a meta-analysis study demonstrated the association between attention problems and academic problems, varying from grade repetition and need for special education to poor performance on achievement tests (Polderman et al., 2010). Understanding the characteristic of mind-wandering in the younger population might facilitate a

full understanding of the attention problems among middle school and high school students.

Moreover, few studies have examined mind-wandering among Chinese (some examples include Song & Wang, 2012; Ye, Song, Zhang, & Wang, 2014). Specifically, Song and Wang (2012) used the experience-sampling method to collect mind-wandering experiences among Chinese undergraduates and Ye et al. (2014) investigated the temporal focus of mind-wandering in a pupil's sample. Therefore, an appropriate Chinese scale does not exist to measure the trait levels of mind-wandering among adolescents. As previous scales commonly assessing mind-wandering lack face validity, Mrazek et al. (2013) developed the Mind-Wandering Questionnaire (MWQ), which is a simple, validated scale that directly measures trait levels of mind-wandering. The MWQ has demonstrated high reliability and convergent validity in adolescents and adults (Mrazek et al., 2013). We first tested the reliability and validity of the Chinese version of the MWQ. As mentioned above, mindfulness is a contrasting construct to mind-wandering. Thus, dispositional mindfulness served as the criterion-related validity. Additionally, we predicted that there might be a negative correlation between mindfulness and mind-wandering. Second, we examined whether self-esteem mediated the relationship between mind-wandering and life satisfaction. Based on the previous literature, we determined the following hypotheses: (1) mind-wandering may be negatively associated with life satisfaction, (2) mind-wandering may be negatively associated with self-esteem, (3) self-esteem may be positively correlated with life satisfaction, and (4) self-esteem may mediate the association between mind-wandering and life satisfaction.

## 2. Materials and methods

### 2.1. Participants

A convenience sample of 1400 adolescents from middle schools and high schools in nine provinces of Mainland China were recruited between December 2014 and March 2015. In all, 69 questionnaires were deleted because more than half of these questionnaires were left blank. The final sample comprised 1331 respondents. The response rate was 95.07%. The mean age of the sample was 15.79 years ( $SD = 1.16$ , 95% CI: 15.73–15.85) with a range from 12 to 18 years. Of these, 48.8% were male, 50.1% were urban residents, 27.6% were middle school students, and 95.1% were ethnically Han. Moreover, a subsample of participants ( $n = 86$ ; male:  $n = 39$ ; female: 47; age:  $15.55 \pm .70$ , 95% CI: 15.40–15.70) was re-administered the Chinese version of the MWQ within two weeks to examine the test-retest reliability. Each participant volunteered to participate in this study, and written informed consent was obtained from all participants. The study protocol was approved by the local ethics committee.

### 2.2. Measures

#### 2.2.1. Mind-wandering

The MWQ is a self-reported questionnaire with five items, assessing the trait levels of mind-wandering (Mrazek et al., 2013). Items were rated on 6-point scale from 1 (almost never) to 6 (almost always). Examples of items include "I have difficulty maintaining focus on simple or repetitive work" and "While reading, I find I haven't been thinking about the text and must therefore read it again." The total score of the MWQ was the sum of the five items, with a range from 5 to 30. After obtaining permission from the original author of the MWQ, the original MWQ was translated into Chinese by a bilingual psychological researcher using the back-translation method. Then, two experienced researchers reviewed the translated version and provided feedback. The translated version was modified until it was comparable to the original English version. The reliability and validity of the scale are described in later sections of this paper.

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