

Half-Year Retest-Reliability of the *Barratt Impulsiveness Scale–Short Form (BIS-15)*

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Abstract

One of the most widely used instruments for the measurement of impulsivity is the *Barratt Impulsiveness Scale (BIS-11)*. The short form of the BIS-11, the BIS-15, consists of 15 items representing the three subscales *Attentional*, *Motor*, and *Non-Planning Impulsivity*. In the current study, retest-reliabilities of BIS-15 scores were examined. Female university students completed the BIS-15 at the beginning of the first ($n = 133$) and second ($n = 120$) semesters. Half-year retest-reliability was $r_{tt} = .79$ for the BIS-15 total score and ranged between $r_{tt} = .61$ and $.78$ for the subscales. Considering the long time span of almost half a year between measurements, the total score of the BIS-15 has high retest-reliability and, thus, measures impulsivity as a stable personality trait.

Keywords

Barratt Impulsiveness Scale, BIS-11, BIS-15, impulsivity, retest-reliability

Introduction

Impulsivity can be defined as a “predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions to the impulsive individual or to others” (Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001, p. 1784). One of the most widely used measures for the assessment of impulsivity is the 11th revision of the *Barratt Impulsiveness Scale (BIS-11)*; Patton, Stanford, & Barratt, 1995). It consists of 30 items that are answered on a 4-point scale ranging from *rarely/never* to *almost always/always*. A total score and three subscale scores can be calculated, representing *Non-Planning Impulsivity* (i.e., lack of future orientation or forethought), *Motor Impulsivity* (i.e., acting without thinking), and *Attentional Impulsivity* (i.e., inability to focus attention or concentrate; Patton et al., 1995; but note that many studies failed to replicate this three-factorial structure; cf. Vasconcelos, Malloy-Diniz, & Correa, 2012).

Spinella (2007) developed a short form of the BIS-11, which consists of 15 items only, and each subscale contains 5 items. Scores of the BIS-15 are highly correlated with the full version, suggesting that it may be used as an alternative to the full version without losing a significant amount of information (Spinella, 2007). Psychometric properties such as factor structure, internal consistency, and validity could be replicated in German and Spanish (Meule, Vögele, & Kübler, 2011; Orozco-Cabal, Rodríguez, Herin, Gempeler, & Uribe, 2010).

Impulsivity is supposed to be a stable personality trait, particularly when it is measured with self-report questionnaires. Accordingly, for the BIS-11, high 1-month retest-reliability has been reported for the total scale ($r_{tt} = .83$), and values were somewhat lower for the subscales ($r_{tt} = .61-.72$; Stanford et al., 2009). To date, retest-reliability has not been investigated using the BIS-15, and, thus, the aim of the present study was to examine retest-reliability for this short version. Moreover, we used a longer time span (almost half a year) than previous studies on the BIS-11 (Stanford et al., 2009) to get a more appropriate indication for the assumption that impulsivity is a stable trait.

Method

This study adhered to the guidelines outlined in the Declaration of Helsinki as revised in 2008. Female university freshmen ($N = 133$; age $M = 20.08$ years, $SD = 2.68$; body mass index $M = 22.01$ kg/m², $SD = 2.66$) were recruited at the University of Würzburg (Würzburg, Germany). They

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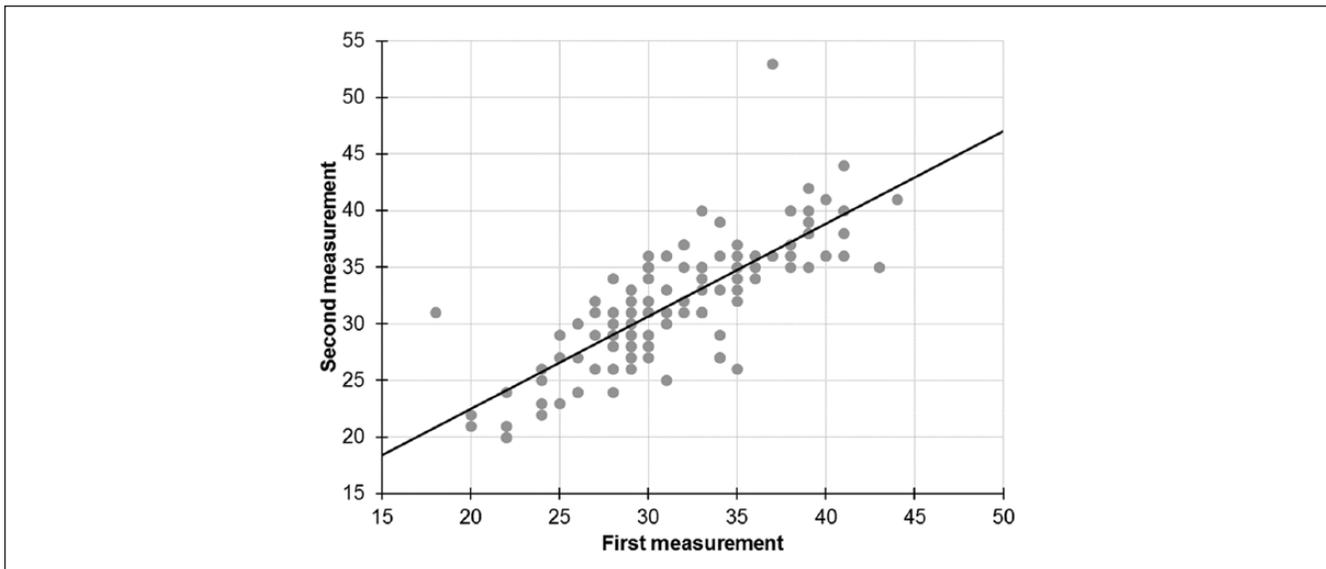


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Table 1. Descriptive Statistics, Internal Consistencies, and Retest-Reliabilities of the *Barratt Impulsiveness Scale–Short Form (BIS-15)*.

First measurement	Second measurement				$M_1 (SD_1)$	Range ₁	$M_2 (SD_2)$	Range ₂
	Non-planning impulsivity ($\alpha = .84$)	Motor impulsivity ($\alpha = .75$)	Attentional impulsivity ($\alpha = .51$)	Total score ($\alpha = .80$)				
Non-planning impulsivity ($\alpha = .78$)	.78	—	—	—	10.84 (2.95)	5-17	10.88 (3.16)	5-19
Motor impulsivity ($\alpha = .65$)	—	.69	—	—	11.29 (2.39)	6-18	11.43 (2.40)	6-17
Attentional impulsivity ($\alpha = .60$)	—	—	.61	—	9.61 (2.23)	6-18	9.70 (2.07)	6-17
Total score ($\alpha = .74$)	—	—	—	.79	31.73 (5.28)	18-44	32.00 (5.59)	20-53

Note. Correlations are significant at $p < .001$.

**Figure 1.** Scatterplot showing the correlation between scores on the *Barratt Impulsiveness Scale–Short Form (BIS-15)* between the two measurements ($r_{tt} = .79$).

completed a paper-and-pencil version of the BIS-15 among other measures in the laboratory at the beginning of the first semester. One hundred twenty participants completed those measures again at the beginning of the second semester. Participants received either course credits or 7,- € for compensation. Mean time between measurements was $M = 170.65$ days ($SD = 9.00$).

Cronbach's alpha was calculated for BIS-15 subscales and the total scale for both measurements separately to evaluate internal consistency. Pearson correlation coefficients were calculated for BIS-15 subscale and total scores between the two measurements to evaluate retest-reliability. Finally, BIS-15 subscale and total scores between the two measurements were compared with paired t tests.

Results

Descriptive statistics of BIS-15 scores are presented in Table 1. Scores did not differ between measurements, all $t_{(119)} < 1.13$,

$ps > .26$. Retest-reliability of the BIS-15 subscales ranged between $r_{tt} = .61$ and $.78$ and was $r_{tt} = .79$ for the total score (Table 1, Figure 1).

Discussion

The current study examined half-year retest-reliability of the BIS-15. Overall, values were comparable with those reported for 1-month retest-reliability of the BIS-11 (Stanford et al., 2009). A general rule of thumb is that retest-reliability is acceptable or high at $r_{tt} > .80$ (Bühner, 2011). Although values were below $.80$ in the current study, we would nonetheless argue that at least the total score of the BIS-15 has high retest-reliability, considering the long time span of almost half a year between the two measurements. Moreover, retest-reliability of the total score was higher than in some studies, in which versions of the BIS-11 were used (Vasconcelos et al., 2012).

Similar to results obtained with the BIS-11, retest-reliabilities were lower for the subscales than for the total scale, which may

be due to their lower internal consistencies (Table 1). The attentional impulsivity subscale showed the lowest internal consistency and retest-reliability. This is in line with observations that this subscale appears to be the most unstable one in studies, in which the factor structure of the BIS-11 was examined (Vasconcelos et al., 2012). Nevertheless, correlation coefficients were still higher than .60, indicating large-sized correlation coefficients (Cohen, 1988).

Interpretation of the current findings is limited by the fact that only female university students were investigated. Future studies may investigate other samples such as men or individuals with lower education or higher age to reveal whether the BIS-15 also has high retest-reliability in these populations. For example, impulsivity has been found to decline with age (Steinberg et al., 2008), and, thus, retest-reliability would probably be lower in samples with wider age range or when retest-reliability would be examined for several years. Other avenues for future research may be to examine whether BIS-15 scores are sensitive to treatment in mental disorders that are marked by high impulsivity such as borderline personality disorder, attention deficit/hyperactivity disorder, bulimia nervosa, binge eating disorder, obesity, or substance use disorders (Guerrieri, Nederkoorn, & Jansen, 2008; Meule, 2013; Moeller et al., 2001; Orozco-Cabal et al., 2010; Waxman, 2009). That is, although impulsivity appears to be a stable trait in non-clinical samples, it may be modifiable (Guerrieri, Nederkoorn, & Jansen, 2012; Guerrieri, Nederkoorn, Schrooten, Martijn, & Jansen, 2009; Guerrieri et al., 2007), and scores may decrease in the course of psychotherapy in clinical samples.

Declaration of Conflicting Interests

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