Psychometric qualities of the White Bear Suppression Inventory in a Dutch sample of children and adolescents

Manon J.B. Vincken [a], Cor Meesters [b,*], Iris M. Engelhard [c], Erik Schouten [b]

[a] Orbis Medical Centre, Sittard-Geleen, The Netherlands
[b] Clinical Psychological Science, Maastricht University, The Netherlands
[c] Clinical and Health Psychology, Utrecht University, The Netherlands

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ABSTRACT

The White Bear Suppression Inventory [WBSI; Wegner and Zanakos (1994)] was developed to assess the tendency to suppress unwanted thoughts. Most psychometric studies of the WBSI have included healthy students and adults with obsessive–compulsive disorder. There has been increasing interest in thought suppression in children and adolescents, especially after a traumatic event, but little is known about the psychometric properties of the WBSI for children. The aim of this research was to examine the psychometric qualities of the WBSI in a Dutch sample of children and adolescents. Two studies were conducted. First, the WBSI's factor structure, internal consistency and test–retest stability were examined in a sample of 203 primary school children (9–13 years). Second, the factor structure and content validity were assessed in 89 children and adolescents (8–18 years) who attended the emergency room after a road traffic accident. Results demonstrated that the WBSI items contribute to a single factor measuring the suppression of unwanted thoughts and that the reliability is satisfactory. Associations between the WBSI and PTSD-symptoms demonstrated sufficient content validity. The findings suggest that the WBSI can appropriately be used in child and adolescent samples.

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1. Introduction

The classic work of Wegner, Schneider, Carter, and White (1987) has shown that suppression of unwanted thoughts leads to a higher frequency of such thoughts. An immediate and/or delayed rebound effect has been replicated several times (e.g., Lavy & van den Hout, 1990; Muris, Merckelbach, & Horselenberg, 1996). The White Bear Suppression Inventory (WBSI) is a 15-item self-report scale designed to measure an individual's propensity to suppress unwanted thoughts (Wegner & Zanakos, 1994). The reliability of the original and translated versions of the WBSI in different cross-cultural samples is satisfactory. For example, studies have found high internal consistency of the WBSI in student samples in the Netherlands (Cronbach's α = .89; Muris et al., 1996; Rassin, 2003), United States (Blumberg, 2000), Iceland (Rafnsson & Smari, 2001), Germany (Hoping & de Jong Meyer, 2003), Spain (Fernandez Berrocal, Extremera, & Ramos, 2004), France (Schmidt et al., 2009) and Turkey (Altin & Gençöz, 2009). High internal consistency has also been found in population-based samples of adults (González Rodríguez, Avero Delgado, Rovella, &

Cubas Leon, 2008; Luciano et al., 2006) and clinical samples (Rassin, 2003; Spinhoven & van der Does, 1999). Test–retest reliability (3–12 weeks) is also sufficient (range .60–.85; Altin & Gençöz, 2009; Fernandez Berrocal et al., 2004; González Rodríguez et al., 2008; Hoping & de Jong Meyer, 2003; Muris et al., 1996; Rafnsson & Smari, 2001).

The WBSI was originally considered to be a one-factor measure for thought suppression (Muris et al., 1996; Wegner & Zanakos, 1994), which has been supported by factor analytic studies on the basis of scree-plots (Altin & Gençöz, 2009; Rafnsson & Smari, 2001; Spinhoven & van der Does, 1999) and research based on item response theory (Palm & Strong, 2007). However, there is also support for a two-factor model of "thought suppression" and "intrusive memories" (e.g., González Rodríguez et al., 2008; Hoping & de Jong Meyer, 2003; Luciano et al., 2006). For example, Hoping and de Jong Meyer (2003) used PCA with orthogonal varimax rotation, and found that two WBSI-factors (suppression and intrusions) accounted for 50% of the variance. Similarly, Rassin (2003) conducted PCA with direct oblimin rotation in undergraduates ($N = 674$), a female subsample ($N = 519$) and mental health care patients ($N = 106$), and preferred a two-factor-solution based on the scree plots. These factors were highly correlated (student sample: $r = .70$; clinical sample: $r = .63$), which suggests that several items overlap and measure thought suppression and intrusive thoughts

* Corresponding author. Address: Clinical Psychological Science, Maastricht University, Universiteitssingel 40, P.O. Box 616, 6200 MD Maastricht, The Netherlands. Tel.: +31 43 3881488.
E-mail address: c.meesters@maastrichtuniversity.nl (C. Meesters).

(Rassin, 2003). In sum, prior research generally supports a one or two-factor structure: thought suppression with or without intrusive thoughts (see Schmidt et al., 2009). These inconsistencies may be partly due to different statistical techniques and samples (student, clinical or general population samples).

There has been much interest in the role of thought suppression and intrusive thoughts in trauma-exposed individuals (e.g., Ehlers & Clark, 2000; Engelhard & Arntz, 2005; Engelhard, van den Hout, Kindt, Arntz, & Schouten, 2003). For example, studies have shown that suppression of trauma-related thoughts predicts intrusive memories in adults with acute stress disorder (ASD) or posttraumatic stress disorder (PTSD; e.g., Aikins et al., 2009; Amstadter & Vernon, 2006; Nixon et al., 2008), and WBSI-scores predict (later) PTSD symptoms (see Aaron, Zaglul, & Emery, 1999; Engelhard et al., 2003). This is consistent with influential cognitive models (e.g., Ehlers & Clark, 2000) that propose that PTSD arises from excessive negative appraisals of the traumatic event and/or its sequelae (e.g., initial symptoms), and poorly integrated traumatic memories. Avoidance strategies, like suppression of trauma-related thoughts, are thought to prevent disconfirmation of negative appraisals and prevent a change in meaning of traumatic memories, which maintains the sense of current threat that is characteristic of PTSD (Ehlers & Clark, 2000).

In recent years, increasing attention has been directed to children with PTSD, and cognitive theories of PTSD seem to be applicable to them (e.g., Bryant, Salmon, Sinclair, & Davidson, 2007; Ehlers, Mayou, & Bryant, 2003; Meiser-Stedman, Dalgleish, Smith, Yule, & Glucksman, 2007), including the maintaining role of thought suppression (e.g., Ehlers et al., 2003; Salmon & Bryant, 2002; Salmon, Sinclair, & Bryant, 2007). Several studies have administered the WBSI to children and adolescents (Aaron et al., 1999; Gosselin et al., 2007; Najmi, Wegner, & Nock, 2007; Soetens, Braet, & Moens, 2008), but to our knowledge, little is known about the psychometric properties of the WBSI in children and adolescents.

As data on the psychometric properties of the WBSI in child and adolescent samples are largely lacking, the aim of the current research was to examine the factor structure, internal consistency, test–retest reliability, and content validity of the WBSI in two Dutch child and adolescent samples: a nonclinical sample and a clinical sample exposed to a single traumatic event.

2. Study 1

The aim of study 1 was to examine the factor structure, internal consistency, and test–retest stability of the WBSI in a sample of primary school children.

2.1. Method

2.1.1. Participants and procedure

Parents of 240 children attending grade six, seven, and eight from three primary schools in the Southern part of the Netherlands were approached by postal mail to recruit children for a study of the WBSI. Parents of 203 children (100 girls) agreed to participate and returned signed consent forms. Children completed the WBSI in their classroom during school-hours. Besides the teacher, a clinical psychology student was present to answer questions and ensure confidentiality. The mean age of the children was 10.7 years (SD = 1.0; range 9–13 years). Six weeks after the initial administration, 192 (95%) children were re-assessed to obtain test–retest reliability.

2.1.2. Measures

The Dutch translation (Muris et al., 1996) of the 15-item WBSI (Wegner & Zanakos, 1994) was used. Items are answered on a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*). Responses are summed to yield a total score (range: 15–75). Higher scores indicate stronger tendencies to suppress unwanted thoughts.

2.2. Statistical analysis

Data-analysis was performed with SPSS. Assumptions regarding parametric analyses were met. Because of prior inconsistent results concerning the WBSI's factor structure, and the fact that this was the first psychometric study in children, an exploratory factor analysis was conducted with PCA and direct oblimin rotation (cf. Schmidt et al., 2009). After inspecting the scree-plot, oblimin rotation was conducted and the factor structure was interpreted. The eigenvalues-greater-than-1 trend was not applied (cf. Cliff, 1988). Parallel analysis was used to determine the optimum number of factors. Psychometric data of the distracted factor(s) were calculated (see Table 1).

2.3. Results

The mean WBSI-score was 48.1 (SD = 11.5), which is comparable to mean scores found in undergraduate student samples (Blumberg, 2000; Hoping & de Jong Meyer, 2003; McKay & Greisberg, 2002; Muris et al., 1996; Rassin, 2003). A small but significant sex-difference was found: girls had higher scores. As factor-analyses for boys and girls separately showed similar findings, results for the sample as a whole will be presented. Exploratory factor analysis extracted three components with eigenvalues greater than 1 (i.e., 5.1, 1.3, and 1.1), but inspection of the scree plot suggested a one-factor solution that accounted for 34.5% of the variance. Factorial solutions consisting of two or three factors did not appear to be meaningful, so the single factor solution was preferred. Parallel analysis (O'Connor, 2000) confirmed a unifactorial structure (1.60, 1.45 and 1.36). With the exception of item 7 and item 8, all WBSI-items convincingly loaded on one single factor (factor loadings > .44). Cronbach's α was .85, which indicates good reliability. Concerning test–retest stability, scores were rather stable over a time interval of 6 weeks (intraclass correlation = .64).

Table 1
Mean WBSI-scores and factor loading of the items.

Item	Mean (SD)	Factor loading
1. There are things I prefer not to think about.	3.52 (1.19)	.50
2. Sometimes I wonder why I have the thoughts that I do.	3.13 (1.32)	.44
3. I have thoughts that I cannot stop.	3.24 (1.30)	.74
4. There are images that come to mind that I cannot erase.	3.31 (1.64)	.72
5. My thoughts frequently return to one idea.	3.17 (1.24)	.56
6. I wish I could stop thinking.	3.53 (1.37)	.65
7. Sometimes my mind races so fast I wish I could stop it.	2.77 (1.44)	.37
8. I always try to put problems out of mind.	3.41 (1.33)	.20
9. There are thoughts that keep jumping onto my head.	3.33 (1.25)	.61
10. Sometimes I stay busy just to keep thoughts from intruding on my mind.	3.32 (1.30)	.65
11. There are things that I try not to think about.	3.60 (1.30)	.75
12. Sometimes I really wish I could stop thinking.	2.56 (1.44)	.48
13. I often do things to distract myself from my thoughts.	2.83 (1.35)	.62
14. I often have thoughts that I try to avoid.	3.07 (1.36)	.72
15. There are many thoughts that I have that I don't tell anyone.	3.36 (1.44)	.51