
**Body-Focused Repetitive Behaviour:
The influence of Alexithymia and Impulsivity**

Bachelor thesis

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Abstract

Body-Focused Repetitive Behaviours (BFRBs; e.g., hair pulling, nail biting, skin picking, mouth/cheek/lip biting) can cause significant physical and psychological distress which can lead to more severe engagement in self-harming behaviors. However, data examining BFRBs among non-clinical samples is limited. As BFRBs seem to be connected to impulsivity and alexithymia, the inability to detect one's own emotions, this study investigates the extent to which the engagement and the urge to engage in BFRBs is associated with both impulsivity and alexithymia in a non-clinical sample (N=106). The study aimed to find an answer to whether there is a moderation effect of alexithymia on the relationship between impulsivity and BFRB. The focus of this study lied on the influence on the urge, and the engagement in BFRBs, thus two models were tested. An interaction effect between impulsivity and alexithymia was assumed, as both seem to influence the engagement in BFRBs positively. The data were gathered through an online survey, including questionnaires regarding alexithymia (TAS-20), impulsivity (BIS-15 (11)) and BFRBs (adapted form of MGH-HS). For both models, one considering only the urge for BFRBs and the other one the actual engagement in BFRB did not show a significant interaction effect ($b=.17, t(103)=.43, p=.67$; $b=.00, t(103)=-.037, p=.71$). However, there was a significant moderate correlation ($r=.42, p<.01$) found between impulsivity and alexithymia. Moreover, there were significant mild correlations ($r=.29, p<.01$; $r=.26, p<.01$) between impulsivity and the urge as well as the engagement in BFRBs. The results of this study provide insights into what influences the individual's urge and engagement in BFRB. The findings that the BFRB correlates moderately with impulsivity provide a base for treatment development for BFRBs. Furthermore, as it was found out that alexithymia might not influence these behaviors, further research can concentrate on researching other factors influencing these behaviors. Also, impulsivity and alexithymia seem to be related. By knowing about these relations this study provides a basis for developing treatments for alexithymia as well as BFRBs. This study expands the knowledge, and therefore rises awareness about BFR. Hence, indirect support for individuals engaging in BFRBs is provided.

Keywords: alexithymia, impulsivity, BFRB, non-clinical

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Introduction

Body-focused repetitive behaviors (BFRB) include behaviors such as nail biting, skin picking, lip/mouth/cheek biting, or hair pulling (Grant, Stein, Woods, & Keuthen, 2012). These are categorized as habitual behaviors which are directed towards one's own body (Snorrason et al., 2012; Stein et al., 2008; Teng, Woods, Marcks, & Twohig, 2004; Teng, Woods, Twohig, & Marcks, 2002). This kind of behavior is relatively highly represented in clinical as well as, non-clinical populations (Boudjouk, Woods, Miltenberger, & Long, 2000; Ricketts, Brandt, & Woods, 2012). Engaging in BFRBs can lead to physical injuries and significant socio-pathological impairment and distress (Snorrason et al., 2012; Teng et al., 2004). The chronological engagement in skin picking, namely excoriation disorder, and hair pulling, namely trichotillomania, is listed in the DSM-5 as a disorder (Association, 2013). The overall engagement in BFRBs is often negatively viewed by peers, as it is seen as unhygienic behavioral manifestations of anxiety (Houghton et al., 2016; Weingarden & Renshaw, 2015). This perception leads to misunderstanding, and undertreatment of individuals engaging in BFRBs (Weingarden & Renshaw, 2015). Individuals with BFRBs are hesitant in consulting professional help, and when doing so, the practitioners often only offer limited psychoeducation as well as unproven and ineffective interventions (Franklin et al., 2008; Tucker, Woods, Flessner, Franklin, & Franklin, 2011). This is despite the fact that there are a few treatments present. These are habit reversal training (HRT), differential reinforcement of other behaviors (DRO), and aversion therapy (Houghton et al., 2016). Research of Woods and Houghton (2015) investigated the effectiveness of these treatments. The results emphasize that HRT, DRO, and aversion therapy can only be categorized as possibly effective or experimental. Furthermore, Franklin et al. (2008) investigated the perception of treatment in participants. Their results suggest that the participants generally viewed the treatments as ineffective. Furthermore, the more effective help is provided, the lower are the chances that individuals engage in more severe repetitive behaviours, such as cutting, and possibly ending in attempting suicide. Also, through choosing a treatment more concisely and effectively upcoming costs of treatments can get reduced. The absence of effective treatments is credited to a lack of attention and knowledge about BFRBs as this field is not well researched (Franklin et al., 2008; Weingarden & Renshaw, 2015). Therefore, practitioners are compelled to make suggestions which cannot be based on evidence.

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Due to the presented reasons, greater attention for BFRB is needed. By researching this field more thoroughly, this could improve treatment for these behaviors. In order to do so, it is essential to gain insights into what influences an individual to engage in BFRBs. This study aims to investigate the urge and the engagement in BFRBs among a non-clinical sample. It aspires to gain an insight into specific characteristics which influence these behaviors. Hereby, the focus lies on how one of these characteristics, namely impulsivity, is related to the degree of being in touch with one's feelings. Specifically, this study's aim is to test whether there is an interaction effect existing between impulsivity and alexithymia.

BFRB is categorized as self-injurious behavior (Solley & Turner, 2018). Also falling into this category is non-suicidal self-injury. Furthermore, Wells suggests that nail-biting has a similar function as self-cutting, which in turn is defined as an NSSI. NSSI is defined as bodily harm with no intention to die (Nock & Favazza, 2009). As BFRB and NSSI show similar aspects and fall into the same category of behavior it is assumed that also other aspects are similar. A meta-analysis in an American community sample indicates that 17.5% of adolescents and 13.4 % of young adults engage in NSSI (Allen, Fox, Schatten, & Hooley, 2019). A less severe and more prevalent phenomenon associated with this is then BFRB. The prevalence rates for BFRB vary in non-clinical samples between 34-64% for nail-biting (Hansen, Tishelmian, Hawkins, & Doepke, 1990; Woods, Miltenberger, & Flach, 1996), 25% for skin picking (Solley & Turner, 2018) and 10.5 % for hair pulling (Selles et al., 2015). Evidence has shown that BFRBs and more severe self-harming behaviors (i.e. NSSI) consist of overlapping, obsessive-compulsive characteristics, i.e. negative affect, and increased somatization (Croyle & Waltz, 2007; Stanley, Gameroff, Michalsen, & Mann, 2001). Also, cross-sectional research has suggested that BFRBs might be representing a part of a continuum of self-harm behaviours which ranges from mild to severe self-harm (Croyle & Waltz, 2007; Houghton, Alexander, Bauer, & Woods, 2018; Stanley, Winchel, Molcho, Simeon, & Stanley, 1992). Croyle and Waltz (2007) suggested that 91% of their sample that reported to engage in self-harming behavior also report behaviors such as nail biting, hair pulling, cheek biting et cetera. Thus, a strong connection between BFRBs and NSSI seems to exist. Even though there is a strong link between NSSI and BFRB existing, BFRBs should be differentiated from NSSI as BFRBs are usually not performed to inflict self-harm deliberately (Croyle & Waltz, 2007). This contradicts the purpose of NSSI.

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Considering theories of self-injurious behaviors, impulsivity is one of the prominently integrated constructs (O'Connor, Cleare, Eschle, Wetherall, & Kirtley, 2016; Swannell, Martin, Page, Hasking, & St John, 2014; Van Heeringen & Mann, 2014; Van Orden et al., 2010). Impulsivity is defined as the engagement in actions that are prematurely expressed, poorly conceived, unduly risky, or inappropriate to the situation (Evdenden, 1999). Allen et al. (2019) investigated the relationship between impulsivity and NSSI. Their research provided evidence that impulsive decision-making during criticism was correlated with more past-year NSSI episodes, even when taking other correlates of NSSI in accountancy. Furthermore, the correlation was increased when measuring NSSI frequency over longer periods. The strongest association occurred between NSSI and impulsive personality traits, specifically negative urgency; the tendency to show a rash reaction towards negative emotions (Cyders & Smith, 2008; Hamza, Willoughby, & Heffer, 2015). However, studies using behavioral tasks did not show increased impulsivity among participants with engagement in NSSI (Liu, Trout, Hernandez, Cheek, & Gerlus, 2017). This inconsistency is due to several facts. When comparing self-reported personality traits, here impulsivity, to task-based impulsivity measures, the former is considered as relatively stable (MacKillop et al., 2016; Stahl et al., 2014). In contrast, task-based measures are found to be more state-sensitive.

Even though differentiating BFRBs from NSSI is needed, the connection between them seems relevant and important (Croyle & Waltz, 2007; Houghton et al., 2018; Woods et al., 1996). As NSSI is strongly connected to impulsivity the strong connection to BFRB let one assume that BFRBs are influenced by impulsivity as well. BFRBs were shown to be moderately associated with impulsivity ($r(45) = .35, p = .017$) (O'Connor, Lavoie, Desaulniers, & Audet, 2018). Repetitive hair pulling or skin picking can develop into an impulse-control disorder, as listed in the DSM 5 (APA, 2013). This implies that BFRBs are seen as related to trait impulsivity.

A construct strongly connected to impulsivity is alexithymia. Alexithymia (literally “no words for feelings”) was first introduced by Sifneos. He defined alexithymia as the inability to identify or express emotions (Sifneos, 1973). Nowadays, it is referred to alexithymia when an individual is showing difficulties in identifying, understanding and describing emotions as well as having difficulties in distinguishing feelings from sensations of emotional arousal. Furthermore, individuals being alexithymic display externally oriented thinking styles and limited imaginal processes which lead to paucity of fantasy life. This

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concept was first introduced by Sifneos. In research, alexithymia is frequently connected to emotion dysregulation as it is difficult for an individual to regulate emotions effectively when not being aware of them or their origins (Berking et al., 2011; Gratz & Roemer, 2004).

Nowadays, alexithymia is understood as a form of emotion regulation deficit. Several studies found that there is a correlation between self-reported impulsivity and alexithymia. In a study by Teten et al. (2008), it was shown that poor impulsive control, which suggests high levels of impulsivity, is positively correlated with alexithymia in a sample of impulsive-aggressive veterans. Furthermore, it was stated that difficulty in identifying feelings, which goes along with the definition of alexithymia, are core aspects of impulsive aggression (Fossati et al., 2009). Thus, it seems as there is substantial evidence for a correlation between self-reported impulsiveness and alexithymia.

Roberts et al. (2015) ascribe BFRBs an emotion-regulating function by using a model, the emotion regulation model. This model indicates that BFRBs are triggered by negative emotions, such as frustration, and reinforced by the mitigation of unpleasant affect. When the urge to engage in BFRBs is satisfied the engagement in BFRB serves as some form of regulation and, thus, as a reward. The emotion regulation model assumes that individuals engaging in BFRBs have problems regulating unpleasant emotions, which is referred to emotion dysregulation, and thus engage in body-focused behaviors to avoid, harmonize or alleviate aversive affect (Roberts, O'Connor, & Bélanger, 2013; Teng et al., 2004). One aspect influencing emotion dysregulation is alexithymia. Being alexithymic leads to impaired emotion awareness as well as maladaptive emotional processing, which in turn, eventuates in the poor ability to mentalize. All of these factors lead to emotional dysregulation. BFRBs serve as emotion-regulation strategy, which might be effective in the short term but ultimately result in heightened emotional and physiological distress (Roberts et al., 2013). Specifically, it could contribute to physical, personal, or psychosocial impairment (Murphy & Flessner, 2017). This indicates that BFRB can be categorized as a maladaptive style of emotion regulation. In this study, it was reported that persons affected by clinical skin picking indicated higher levels of alexithymia than persons unaffected by this behavior. Research conducted by Rufer et al. (2014) suggests that 15% of their hair pulling sample displayed higher levels of alexithymia than people with no engagement in BFRB. However, the findings of Roberts et al. (2013) are only partially in line with these results. Their research suggests that people engaging in BFRB showed higher levels in only one component of alexithymia indicated by the TAS-20, namely emotional awareness.

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Alexithymia was shown to be a significant predictor for NSSI when comparing individuals with NSSI to individuals without NSSI (Norman & Borrill, 2015; Zlotnick et al., 1996). Based on this, Norman and Borrill (2015) reported that there is evidence, that alexithymic individuals engage in NSSI in order to regulate their emotions. In line with this are the findings of Cerutti, Zuffianò, and Spencieri (2018). Their hypothesis was supported, that the lack of regulating and communicating emotions in a normal adjusting way plays a crucial role in NSSI behaviors (Cerutti, Zuffianò, & Spensieri, 2018). This can be used as a hint for the assumption that there is also an influence of alexithymia, as it is part of emotion dysregulation, on the engagement in BFRBs as it is seen as a form of NSSI (Croyle & Waltz, 2007; Stanley et al., 2001).

In this study, the used scale (MGH-HS) for investigating the participants' BFRB differentiates between the urge for BFRBs and the actual engagement in these. In order to provide greater insight into the topic of BFRBs, this research differentiated these two variables in the analysis to see whether a relevant difference is existing between them. Given the differentiation between the urge and the engagement in BFRB two models, one testing the interaction between alexithymia and impulsivity on the urge to BFRBs (Figure 1, A), and one testing this interaction regarding the engagement in BFRBs (Figure 1, B) were created.

By testing whether alexithymia is a moderator between impulsivity and BFRB, one can foresee whether there is an interaction occurring between impulsivity and alexithymia. **Therefore,** it will be estimated whether this affects the individual's urge or engagement in BFRB. Yet, despite its relevance, this relationship has not been researched. This research aims to add insights into the interrelationships between these three constructs. By doing so, it is expected to answer the research question 'How does alexithymia moderate the relationship between impulsiveness and BFRBs?'. The research suggests a connection between all three concepts, BFRBs, impulsivity, and alexithymia. For the tested model following hypothesis are arising: 1) Alexithymia moderates the relationship between impulsiveness and the urge to BFRBs, 2) Alexithymia moderates the relationship between impulsiveness and the engagement in BFRBs, 3) There is a correlation between impulsiveness and alexithymia, 4) Alexithymia correlates with the urge and engagement in BFRB, 5) The individual's level of impulsiveness correlates with the urge and the engagement in BFRB.

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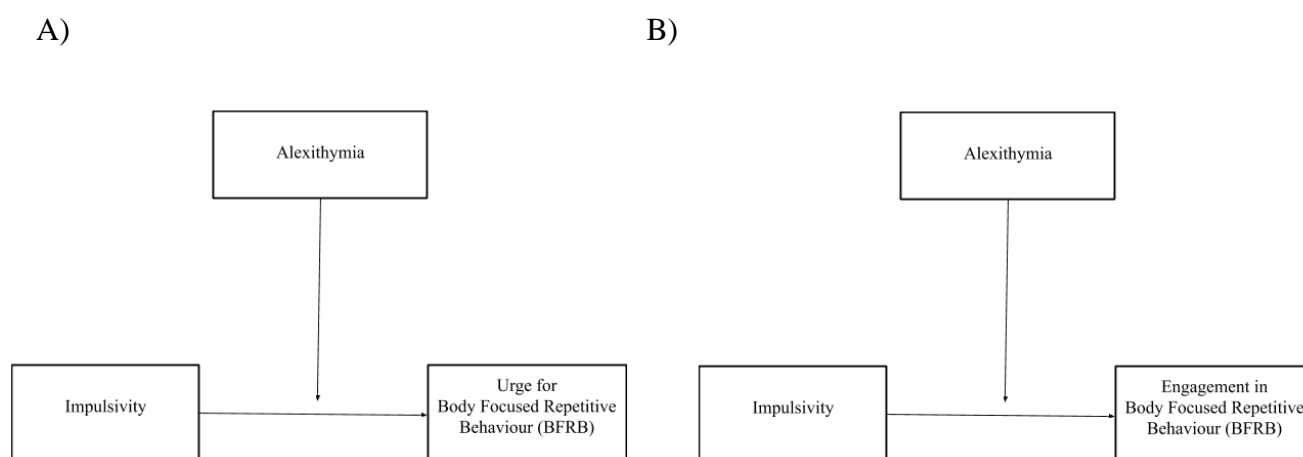


Figure 1. A) The model depicts a moderation model whereby the independent variable Impulsivity is hypothesized to impact the dependent variable urge to BFRB directly. Hereby, this effect is influenced by the moderating variable alexithymia. B) The model shows a moderation model whereby the independent variable Impulsivity is hypothesized to affect the dependent variable engagement in BFRB directly. Hereby, this effect is influenced by the moderating variable alexithymia.

Methods

Design

In order to examine whether there is a moderation effect of alexithymia on the relationship between impulsiveness and BFRB, a cross-sectional study was conducted. This study consisted of an online survey. The relationship between the independent variable impulsivity and the dependent variables alexithymia and BFRB was examined. To gather enough participants, the created questionnaire also included items measuring concepts of other research of other student projects which are outside the scope of the present study. Given that all research topics were related to alexithymia, a shared questionnaire was considered to be

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useful. This study consisted of self-inventory surveys; hence, the questionnaires were filled out by the participants themselves.

Participants

This study comprised a convenience sample of 139 participants. The participants were gathered through University of Twente's online application system SONA, where students of the University of Twente receive SONA study points as a reward for participation. Also, participants were approached through the researcher's social environment. Participation in the study was voluntary. Data of participants was excluded when the questionnaire was not completed, and when the duration of the filling out was shorter than 15 minutes (900 seconds) given that the survey cannot be filled out conscientiously. After applying these exclusion criteria, and thereby excluding the data of 33 participants, the final sample consisted of 106 participants. The sample consisted of 38 male participants and 68 female participants. The age ranged between 18 and 55 years, with an average age of 22 years ($SD = 5,41$). Most of the participants were German, namely 77.4%, 10.4% were Dutch, and 12.3% of the participants indicated having another nationality. The gathered data was handled confidentially, which was clarified in the informed consent. All procedures that were applied in this study were approved by the ethics committee of the Faculty of Behavioural, Management and Social Sciences of the University of Twente.

Materials

To answer the research question whether alexithymia moderates the relationship between impulsiveness and BFRB, several scales were used. The participant was asked to fill out the Twenty-Item Toronto Alexithymia Scale (TAS-20), the Barret Impulsiveness Scale (BIS-15 (11)) and the Massachusetts General Hospital Hairpulling Scale (MGH-HS) and several other questionnaires (Inventory of Interpersonal Problems-Circumplex IRT (IIP-C-IRT), Humor Styles Questionnaire, Emotional Intelligence Questionnaire, Binge-watching Engagement and Symptoms" (BWESQ) questionnaire, Alexian Brothers Urge to Self-Injure Scale (ABUSI))¹. The additional questionnaires were part of other studies which also concerned alexithymia but

¹ (Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003; Petrides, 2009; Walton-Pattison, Dombrowski, & Presseau, 2018; Washburn, Juzwin, Styer, & Aldridge, 2010)

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were not used for the results of this study. All questionnaires were provided in English language.

Alexithymia. The TAS-20 (Taylor, Bagby, & Parker, 1991) is a widely used self-report measure of Alexithymia. The TAS-20 consists of 20 items which contain three subscales or facets, including two affective facets: Difficulty identifying feelings (DIF; e.g. “I am often confused about what emotion I am feeling”; 7 items) and difficulty describing feelings (DDF; “It is difficult for me to find the right words for my feelings”; 5 items). Moreover, there is one cognitive facet, externally oriented thinking (EOT; I prefer talking to people about their daily activities rather than their feelings”; 8 items) (Taylor et al., 1991; Zackheim, 2007). The total scores range between 20 and 100, whereby the higher the score is the greater is the impairment. Following the scoring of the TAS-20, scores below 51 are categorized as non-alexithymic and scores above 61 as alexithymic (Eiden, 1998). Scores between 51 and 61 are a grey zone where individuals are categorized as possibly alexithymic. The TAS-20 has shown good test-retest reliability in a non-patient sample, cross-culturally (Demers et al., 2019; Kooiman, Spinhoven, & Trijsburg, 2002; Roberts et al., 2015; Taylor, Bagby, & Parker, 2003). Also, the value of 0.83 for Cronbach’s alpha shows good internal consistency (Parker, Taylor, & Bagby, 2001).

Impulsiveness. The BIS-15 (11) (Spinella, 2007) consists of 15 items including three factors, non-planning (BISnp; “I plan tasks carefully”), motor impulsivity (BISm; “I act on impulse”), and attention impulsivity (BISa; “I concentrate easily”) (Spinella, 2007). The items were rated on a 4-point Likert-type scale (1=rarely/never, 4=almost always) (Spinella, 2007). The validity of the BIS-15 (11) has shown to have high reliability with a Cronbach’s alpha of .81. Thus, internal consistency is assumed to be good.

Body-Focused Repetitive Behaviour (BFRB). The Massachusetts General Hospital Hairpulling Scale (MGH-HS) is a scale that consists of seven items and relies on the participant’s self-report. The individual’s frequency and intensity to pull their hair is measure, using a 5-point scale. The participant could score between 1 and 5. Hereby, 1 indicated no urge or engagement in BFRB. Scores equal or above 2 suggest at least occasional urge or engagement in BFRB. In order to estimate the participant’s engagement in other BFRBs too, the scale was extended to measure not only hair pulling behavior, but also nail-biting, skin picking, and lip/mouth and cheek biting (e.g. ‘On an average day, how often did you feel the urge to pull your hair OR pick your skin OR bite your nails OR bite your lip, mouth or

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cheek?') (see Appendix D). As this researcher is only interested in the participant's urge and engagement in BFRB the item measuring the individual's distress caused by the BFRBs was taken out. The MGH-HS is a homogeneous scale which shows good internal consistency ($\alpha = .89$), exceptional test-retest reliability ($r = .97$) and good convergent and divergent validity (Roberts et al., 2015).

Procedure

Once the participants followed the hyperlink in Qualtrics, they were welcomed to the study and introduced to the topic of the study. Moreover, a brief definition of alexithymia was provided in order to introduce the main topic of the studies to the participant. Afterward, the participant was introduced to the researcher's backgrounds and the content of the questionnaire. Also, it was stated that the participant is asked to fill out a set of nine questionnaires, which will take approximately 30 minutes. The participant was briefed that there is no right and no wrong answer and that there is a slight risk that the questions can come across confronting or sensitive. Also, it was stated that the participant could stop taking part in the study at any time. Subsequently, an informed consent is presented and afterward, the participant is thanked for his or her participation. Below this, contact information about the researchers are presented, and the participant is asked to agree to take part in the study (see Appendix A). Furthermore, a note with contact details of the ethics committee is given in case of arising complaints about the research. On the next page, the participants were asked for their demographics (Age, Gender, and Nationality). Then, the TAS-20 is presented, and the participant is asked to answer the belonging 20 items (see Appendix B). After filling out several questionnaires, which are irrelevant for this research, concerning different topics, the questionnaires for impulsivity and BFRB occur. The previous questionnaires are part of other Bachelor thesis and are not included in the analysis of the questionnaires for this thesis. In total, the questionnaires concerning this study included 37 items.

Data analysis

The data analysis was carried out by using the 24th version of the Statistical Package for Social Sciences (IBM SPSS). Items of the TAS-20 and the BIS-15 (11) were reversed, and the scoring for all scales was adapted. As stated above, exclusion criteria were applied to the data set. This exclusion was necessary in order to conduct the moderation analysis, which is relevant for answering the research question and the related hypothesis. In order to determine the reliability of the scales, Cronbach's alpha was calculated for the TAS-20, BIS-15, and

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MGH-HS. After screening and preparing the data to detect any irregularity, frequencies, and descriptives were analyzed. Frequencies for the variable 'engagement in BFRB' were estimated. All means above two were categorized as engagement in BFRB. For evaluating the total variance of the data set from its mean, the sum scores were calculated. For interpreting the descriptives and conducting correlation analysis, the kurtosis and skewness of the scales were taken into account. The skewness and kurtosis values in this sample lied between -3 and +3, and thus, indicated a normal distribution of the population (Field, 2013). Based on this parametric distribution, Pearson R was used for estimating correlations. For all variables relevant for this study, the mean scores and standard deviations have been computed in order to see how the participants scored on the used scales.

To answer the research question and the stated hypothesis, various analyses have been conducted. A correlation matrix was created in order to test the possible relationship between the variables. For this analysis, a significance level of $p < .001$ (two-tailed) was used. The add-on PROCESS was installed in order to conduct moderation analysis (Hayes, 2017). This add-on was chosen as it standardizes all variables and also computes the interaction term automatically (Hayes, 2017). This provides a uniform overview of the results. Hereby, the independent variable is impulsivity, the moderator is alexithymia and the dependent variable the urge or the engagement in BFRB. The moderation hypothesis was tested by using the bootstrap moderation method, as indicated by Hayes (2012). Bootstrapping has shown to be more effective in testing moderation and is the most recently used method to test moderation (Edwards & Lambert, 2007). This method estimates the conditional effect of impulsiveness on the urge or the engagement in BFRB(s) at different values (-1 SD, mean, +1 SD) of the moderator variable, alexithymia, through bootstrapping, set at 5000 samples. (Hayes, 2012; Preacher & Hayes, 2008). Also, a 95% convenience interval was used for bootstrapping. For testing moderation by conducting a regression analysis, it is analyzed whether there is an interaction effect between alexithymia and impulsivity and whether such an effect is predicting the urge or the engagement in BFRB. To avoid multicollinearity with the interaction term of alexithymia, the variables impulsivity and alexithymia were centered, and an interaction term between these two variables was created. If this effect is significant ($p < .05$), it is concluded whether it is enhancing or buffering the effect of impulsivity on BFRB.

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Results

Preliminary analysis

Analysis of the frequencies for the engagement in BFRBs suggests that 46% of the participants engaged in BFRB at least once. When applying the TAS-20 cut-off scores: 8 participants (7.55%) are categorized as alexithymic, as their total scores were above 61. However, 69 participants (65.09) of the sample scored below 51, which accordingly, the TAS-20's criteria counts as non-alexithymic. The remaining participants scored between 51 and 61. Values for skewness and kurtosis were estimated to be between -3 and +3, therefore it was assumed that the values of the scales are normally distributed². The calculated Cronbach's alpha for the TAS-20 was .82, which can be interpreted as good internal consistency. Subsequently, the Cronbach's alpha for the BIS-15 (11) is .76. The adapted version of the MGH-HS showed excellent internal consistency ($\alpha=.96$).

Descriptives and Correlations

In Table 1, the descriptives and the bivariate correlation matrix between the variables are presented³. The moderate correlation between impulsivity and alexithymia support the hypothesis that there is a correlational effect between these two variables (H3). Also, the mild correlations between impulsivity and the urge and engagement in BFRB serve as confirmation for the hypothesis suggesting a correlational effect between these variables (H5). In turn, the correlation between alexithymia and the urge and engagement in BFRB is insignificant. Therefore, the hypothesis (H4) that it is assumed that there is a correlation occurring between them can be rejected.

² Alexithymia (*Skewness*=.616, *Kurtosis*=.765), Impulsivity (*Skewness*=.796, *Kurtosis*= .1319, Urge to BFRB (*Skewness*=.688, *Kurtosis*=-.794), Engagement (*Skewness*=.754, *Kurtosis*=-.747)

³ A Pearson's correlation was suitable as all data were normally distributed.

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Table 1

Descriptives and Bivariate correlation matrix, Pearson's correlations between the variables (N=106) (moderator: alexithymia; independent: impulsivity; dependent: urge to BFRB/engagement in BFRB)

Variables	M	SD	Min	Max	1	2	3	4
1. Alexithymia	47.46	10.55	27	82	1.00			
2. Impulsivity	31.68	5.82	21	53	0.42**	1.00		
3. Urge to BFRB	6.01	3.26	3	13	0.17		1.00	
						0.29**		
4. Engagement in BFRB	5.74	3.09	3	14	0.16			1.00
						0.26**	0.90**	

**correlation is significant at the 0.01 level (two-tailed)

Moderation

Multiple Regression Analysis for the *urge to BFRB* as Criterium Variable and *impulsivity* as Predictor Variable.

Conduction of regression analysis shows that there is a main effect between impulsivity and the urge to BFRB ($b=.28$, $t(103)=2.85$, $p<.05$), also after adding the variable alexithymia. However, the moderation analysis confirms that there is no moderation effect apparent ($b=.00$, $t(103)=.34$, $p=.74$). Therefore, there is no evidence that a moderation effect of alexithymia on the relationship between impulsivity and the urge to BFRB is existing (Hayes, 2012). There is no enhancing effect that low alexithymia at high impulsivity leads to significantly more urge for BFRB compared to high alexithymia at high impulsivity (Figure 3). Therefore, the hypothesis assuming this can be rejected (H1).

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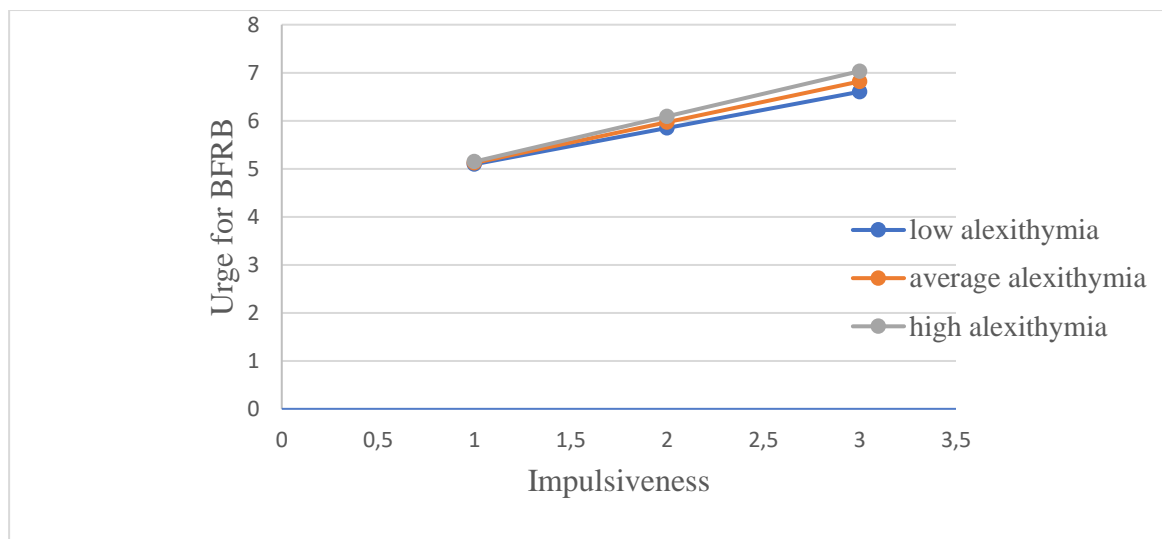


Figure 3. Simple slopes of impulsiveness predicting the urge in BFRB for 1 SD below the mean of alexithymia, the mean of alexithymia, and 1 SD above the mean of alexithymia.

Multiple Regression Analysis for the *engagement* in BFRB as Criterium Variable and Impulsivity as Predictor Variable.

Regression analysis with the variables, impulsivity (predictor variable), alexithymia (predictor variable), and engagement in BFRB (criterium variable) showed that there is a main effect of impulsiveness on the engagement in BFRB ($b=0.24$, $t(103)=2.41$, $p=.02$). Additionally, there is no significant interaction between alexithymia and impulsiveness on the engagement in BFRB ($b=.00$, $t(103)=.037$, $p=.71$.) Therefore, it can be assumed that there is no moderation effect apparent, which leads to rejecting the stated hypothesis (H2) (Figure 4).

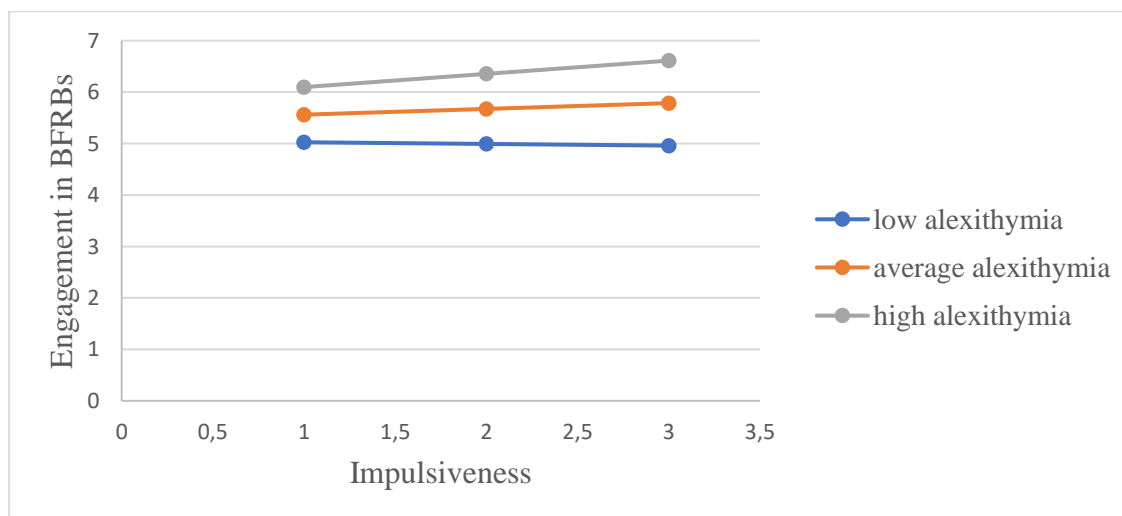


Figure 4. Simple slopes of impulsiveness predicting the urge in BFRB for 1 SD below the mean of alexithymia, the mean of alexithymia, and 1 SD above the mean of alexithymia.

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Discussion

The objective of this study was to test whether an interaction effect between impulsivity and alexithymia exists in the relationship to BFRB. To the researcher's knowledge, this is the first study assessing these domains in this constellation, thus it provides an essential addition to the existing literature in this topic. Overall, there was no interaction found between impulsivity and alexithymia for both models, neither for the urge to BFRB nor the engagement in BFRB. However, the results of this examination suggest that (1) there is a correlation between impulsivity and alexithymia and (2) it was shown that impulsivity and the urge *to*, as well as the engagement *in* BFRB, correlate. Following, the results of this research will be further scrutinized, and the potential importance of acquiring a more thorough comprehension of BFRBs will be provided.

Previously assumed in this study was that there is a correlation apparent between impulsivity and alexithymia. In line with other research, the results of this study have shown an effect of impulsivity on alexithymia (Fossati et al., 2009; Teten, Miller, Bailey, Dunn, & Kent, 2008). Teten et al. (2008) indicated that in a sample of impulsive-aggressive veterans, poor impulsive control is positively correlated with alexithymia. The results of our current study, which tested a non-clinical sample, suggests the same correlational effect. This finding suggests the correlational effect between impulsivity and alexithymia is also occurring among individuals not belonging to a clinical sample. According to the research of Fossati et al. (2009), the poor identification of feelings, which is one of the attributes of alexithymia, is one of the main contributors to impulsive aggression. This supports the findings of the study at hand that there is a correlation between impulsivity and alexithymia. Further, research found that emotion dysregulation is connected to impulsivity (Leshem, van Lieshout, Ben-David, & Ben-David, 2019). This is primarily occurring in the domain of inhibitory control of emotionally aroused states, such as anger. When individuals experience these emotionally aroused states and are additionally being unaware of his or her own feeling this may contribute to the engagement in impulsive, uncontrollable behavior (Anderson & Bushman, 2002). It would be interesting to investigate these emotionally aroused states to get a closer insight into this connection. Also, looking into the individual's state impulsivity might provide a broader insight into the connection between alexithymia and impulsivity.

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This study tested the participants' trait impulsivity. The findings of Leshem et al. (2019) show that alexithymia correlates with trait impulsivity. This goes along with the findings of this study. It substantially supports the assumption that alexithymia and trait impulsivity correlate. As this study provides evidence that there is a correlation between alexithymia and impulsivity individuals who suffer from alexithymia can be treated more easily. Reducing their impulsivity and working on their impulse control through, for example, mindfulness training also their alexithymia can be tackled (Carmona i Farrés et al., 2019; Didonna et al., 2019). Recognizing one's own impulses in order to control them can be related to identifying one's own emotions and thus as being more aware of one's own emotions and knowing how to handle them. This might reduce alexithymia too (Lyvers, Bremner, Edwards, & Thorberg, 2018).

A further assumption of this study was that there is a correlation between impulsivity and BFRBs. The obtained results supported the assumption that there is a relationship between impulsivity and BFRB. When looking into current research regarding several BFRBs, most behaviors of such kind are connected to impulsivity. Chamberlain and Odlaug (2014) reported that hair pulling is associated with high levels of trait impulsivity. Furthermore, Croyle and Waltz (2007) indicated that mild forms of self-harm, which include, for example, skin picking and nail biting, are strongly connected to the individual's self-reported levels of impulsivity. As it seems, there are also other character traits influencing the individual's engagement in BFRB. However, Chamberlain and Odlaug (2014) reported that there is a link between neuroticism, extraversion, and BFRB. Thus, other character traits are interesting to be researched related to BFRBs. However, this study investigated the influence of impulsivity and alexithymia on BFRB and provides additional insights into one of the characteristics influencing BFRBs. This studies results suggest that there is a mild correlation between trait impulsivity and BFRBs. By analyzing the data, the researchers did not differentiate between the several BFRBs as well as certain aspects of impulsivity as the overall effect of impulsivity on BFRBs was the focus of the study. In contrast, other research was differentiating the factors of impulsivity. Hereby, it was found that motor impulsivity plays a crucial role in the engagement in BFRB, especially in skin picking (Murphy & Flessner, 2017). This might be interesting for further research because it might be that some aspects of impulsivity affect the engagement in BFRBs stronger than others. This could be done by using a non-clinical sample and conducting cross-sectional research. When considering state impulsivity, a longitudinal study design might be advantageous.

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Interestingly, the obtained results do not confirm that there is a connection between alexithymia and BFRBs. Alexithymia is seen as part of emotion regulation (Swart, Kortekaas, & Aleman, 2009), which is, in turn, highly connected to BFRBs (Gratz & Roemer, 2004). Based on the connection between emotion regulation and BFRBs, the assumption arose that there is a connection between alexithymia and BFRBs too. The results of research investigating skin picking behaviors show that individuals engaging in skin picking show more difficulties in regulating emotions and show higher emotion reactivity (Roberts, O'Connor, & Bélanger, 2013). Further, the existing research mainly suggests that the engagement in BFRBs is triggered by emotions which increase tension, such as boredom, frustration, or impatience (Eastwood, Cavaliere, Fahlman, & Eastwood, 2007; Roberts et al., 2013). However, these studies did not investigate the relation to alexithymia itself, and no connection between alexithymia and BFRBs was found in this study. Therefore, it might be possible that specific aspects of emotion regulation, for example, emotional reactivity, influence the engagement in BFRBs. Furthermore, one could assume that, in order to engage in BFRBs and thus regulate the emotions, one must be aware of one's emotions. This is not the case for individuals showing high levels in alexithymia. Grounded on this assumption, the belief arises that alexithymia must be low in order to engage in BFRB, instead of, as previously assumed, high. This is opposing what the study at hand was expecting. Roberts et al. (2013) investigated the relationship between alexithymia and BFRB. Their results also indicated that there is no connection between alexithymia and BFRBs except for one component of alexithymia, emotional awareness. In this study, the separate components of alexithymia were not taken into account independently, as the interest lied in the overall level of alexithymia. It would, thus, be interesting to gain an insight into the aspects of alexithymia and whether these influence BFRB.

The assumption that there is a relationship between alexithymia and BFRB was based on the findings that there is such a relationship between alexithymia and NSSI. In contrast to BFRBs, there is much research conducted on NSSI. The impact of alexithymia on NSSI was researched, and it was shown that alexithymia serves as a predictor for the occurrence of NSSI (Norman & Borrill, 2015; Zlotnick et al., 1996). Based on the connection between NSSI and BFRB, the assumption that alexithymia has a predicting impact on BFRBs too was created. Moreover, research suggested that BFRB and NSSI are included in a continuum and, thus, have similar predictors (Stanley et al., 1992). However, this research did not find any connection between alexithymia and BFRBs. This suggests that there is a possible difference

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between the factors influencing the engagement in BFRBs and NSSI (Keeler, 2018). Contrasting this study's results other research's results suggest there is a link between alexithymia and NSSI (Allen et al., 2019; Cyders & Smith, 2008; Hamza, Willoughby, & Heffer, 2015). The research at hand did not find a correlation between alexithymia and BFRB. As this link does not seem to be apparent between alexithymia and BFRBs a difference between NSSI and BFRBs could be detected. Supporting this assumption, the findings of Croyle and Waltz (2007) can be taken into account. Their findings suggest that BFRBs are more habitual than NSSI. Therefore, BFRBs are categorized as impulsive rather than compulsive. For NSSI the opposites accounts. According to these reasons, the assumption that BFRB and NSSI are part of the same continuum can be doubted. Contrasting this assumption is the finding that BFRBs and NSSI are predicted by impulsivity (Croyle & Waltz, 2007). In order to express a clear statement about these assumptions, further research investigating these relationships and the existence of a continuum is needed.

In order to cover multiple forms of BFRBs, the MGH-HS was extended by the researchers to include also skin picking, nail-biting and lip/mouth/cheek biting. This idea was based on other research that also included different BFRBs in the MGH-HS (Gould, 2017; Mathew, 2015). However, these studies left the participants the choice to fill in a behavior by themselves. In this study, after estimating Cronbach's Alpha, it became clear that the reliability of the MGH-HS increased, so, that internal consistency increased from good to excellent. This suggests that the measure could be used for further research investigating in BFRBs. An advantage of extending the MGH-HS is that if the participant does not have to specify a BFRB, so when a participant is showing more than one BFRB, multiple BFRBs can be considered (Snorrason et al., 2012). This might have contributed to the increased reliability.

The evaluation of the scores on the MGH-HS showed that almost half of the participants showed at least some engagement in BFRBs. This supports the estimates of other research, indicating that the prevalence of BFRBs is relatively high (Bohne et al., 2002; Hansen et al., 1990; S. L. Hayes et al., 2009; Teng et al., 2002; Woods et al., 1996). As the prevalence of the engagement in BFRBs is high, the importance of providing treatments for such behavior becomes evident. Yet, there seem to be too few insights into BFRB for creating useful treatments (Franklin et al., 2008; Weingarden & Renshaw, 2015). Regarding the correlation between BFRBs and impulsivity, it can be suggested to develop treatments

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triggering the individual's impulse control in order to prevent engaging in BFRBs. Yet, the existing treatments do not directly trigger impulsivity. One example of an intervention decreasing the individual's impulsivity is mindfulness-based intervention (Mantzios & Giannou, 2014). Investigating in such treatments might be interesting for further research.

Even though there was no significant moderation effect of alexithymia found, this study provides essential insights into BFRBs. It was found that there is a significant moderate correlation, a main effect, between impulsivity and the urge and the engagement in BFRB. There was no evidence found that there is an effect between alexithymia and BFRB and that there is an interaction between alexithymia and impulsivity. However, this suggests further investigation into emotion regulation, in general, might be useful in the future. Also, these insights contribute to broadening the knowledge about BFRBs and what is influencing these, as this research field is mainly unexplored. Concluding, this study provided evidence that BFRBs are influenced by trait impulsivity. This contributes substantially to an increase in the knowledge about BFRBs as well as showing a factor which could be triggered in a treatment. Hence, through expanding the knowledge about BFRB, individuals engaging in BFRB receive indirect support as awareness about these behaviors is created.

Limitations and Recommendations

This study shows some limitations which are relevant to mention. One major limitation is that this study was a cross-sectional study. Hereby, the measurement is limited to one point of time, where the participant answers the questionnaire. Therefore, inferences related to the time causality of events could not be justified. For further research, applying a longitudinal research design might be useful. Especially when investigating in state impulsivity, measuring the individual's impulsivity multiple times, it might be essential to apply a longitudinal research design.

Additionally, the data were gathered through a self-inventory online survey. Hereby, the researchers were not able to control how honest and realistic the participants filled out the questionnaires. Also, the questionnaire included several surveys of other research. Given this inclusion, the general questionnaire became relatively long and took about approximately 30 minutes to fill out. As the general attention span of an adult lies between 10 and 20 minutes (Wilson & Korn, 2007), it can be assumed that the participant's attention decreased with

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filling out the questionnaire. This is especially relevant for this study as the surveys pertinent for this research occurred at the end of the overall questionnaire. Therefore, it might have appeared that the participants did not read items precisely and thus misunderstood them.

Further, this study did not differentiate between several BFRBs. The items testing the participant's urge and engagement in BFRB included the behaviors of skin picking, hair pulling, nail-biting, and lip/mouth/cheek biting. By investigating the BFRBs separately, it might occur that there is an interaction effect of impulsivity and alexithymia on the relationship between impulsivity and one specific BFRB (such as hair pulling or skin picking). In the used questionnaire the behaviors were not differentiated because this would have made the survey very long and unclear. Also, providing the participants with certain behaviors might have encouraged them to actively think about whether they show these behaviors. However, differentiating several BFRBs might significantly contribute to gaining greater insight into BFRBs which can be used when developing treatments for individuals who engage in BFRBs. However, there are more BFRBs which were not included in the used items. It might have occurred that a participant is engaging in BFRBs, but his or her behavior was not listed in the items.

Therefore, it can be suggested that in future research, an opportunity is given to indicate further behaviors which are not listed. Furthermore, the scale measuring the BFRB was originally a hair pulling scale, which was extended to include also skin picking, nail-biting, and lip/mouth/cheek biting. However, this did not impair the reliability of the scale. Additionally, the participants might not have been aware of what the specific terms (i.e. skin picking) mean exactly. This might have led to participants indicating not engaging in BFRBs, even though, following the definition, they are actually engaging in BFRBs. For future research, it might be helpful to provide short definitions of the included behaviors, which state clearly what characterizes the behaviors. So, the participant actively thinks about the behaviors before indicating it on the scale.

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Appendices

Appendix A

Informed consent.

Dear Participant,

You are about to participate in a research study about alexithymia. 'Alexithymia' can be defined as the way a person is or is not able to perceive and express his or her emotions or points of view. In this study, the relationship between alexithymia and other topics will be investigated, such as humour style, urges to self-harm and adaptive and maladaptive coping behaviours. The study is conducted by the psychology students Silke Hoffmann, Jan-Niklas Gimth, Mirjam Römer and Linda Brumme from the University of Twente in order to complete their bachelor theses. You are asked to fill out a set of nine questionnaires. This will take approximately 30 minutes of your time. There is no wrong or right answer to any of the questions since all are a reflection of your perception. As the questions will inquire on your personality and behaviour, these questions can come across as confronting or sensitive for some people, although this is generally not to be expected for most.

If you do not wish to participate in this research you can close the survey at any time. If you want to stop participating during this survey close the survey on whatever page you reached. Data entered up on that point will be recorded and will be used for analysis. If problems of any sort occur, please contact the researchers via e-mail (see listed below).

Before continuing, please read the following statement and indicate whether you agree to take part in the study:

'I hereby declare that I have been informed in a manner which is clear to me about the nature and method of the research as described in the aforementioned introduction of the research. I agree with my own free will to participate in this research. I am aware of my right to retract this consent without the need to give any reason and I have been informed that I may withdraw from the study at any time. All information about me, that could lead to the identification of my identity in a direct or indirect way (including your IP-address) will be anonymized. If I request further information about the research, now or in the future, I may contact the researchers.'

Thank you for participating in our study!

The research team:

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BODY FOCUSED REPETITIVE BEHAVIOUR: THE INFLUENCE OF ALEXITHYMIA AND IMPULSIVITY

Appendix B

TAS-20 (Part 1).

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
I am often confused about what emotion I am feeling.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's difficult for me to find the right words for my feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have physical sensations that even doctors don't understand.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to describe my feelings easily.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to analyze problems rather than just describe them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am upset, I don't know if I am sad, frightened or angry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am often puzzled by sensations in my body.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to just let things happen rather than to understand why they turned out that way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have feelings that I can't quite identify.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being in touch with emotions is essential.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

TAS-20 (Part 2).

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
I find it hard to describe how I feel about people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People tell me to describe my feelings more.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't know what's going on inside me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often don't know why I am angry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer talking with people about their daily activities rather than their feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to watch "light" entertainment shows rather than psychological dramas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is difficult for me to reveal my innermost feelings, even to close friends.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can feel close to someone, even in moments of silence.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find examination of my feelings useful in solving personal problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Looking for hidden meanings in movies or plays distracts from their enjoyment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BODY FOCUSED REPETITIVE BEHAVIOUR: THE INFLUENCE OF ALEXITHYMIA AND IMPULSIVITY

Appendix C

BIS-15 (11).

	Rarely/never	Occasionally	Often	Almost always/always
I act "on impulse."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I act on the spur of the moment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do things without thinking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I say things without thinking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I buy things on impulse.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I plan for job security.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am future oriented.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I save regularly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I plan tasks carefully.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a careful thinker.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am restless at the theater or lectures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I "squirm" at plays or lectures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I concentrate easily.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't "pay attention."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get easily bored when solving thought problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix D

Adapted MGH-HS (urge).

For each question, pick the one statement in that group which best describes your behaviors and/or feelings over the past week. If you have been having ups and downs, try to estimate an average for the past week. Be sure to read all the statements in each group before making your choice. The test will continue on the following page.

For the next three questions, rate only the urges to pull your hair OR pick your skin OR bite your nails OR bite your mouth, lip(s), or cheek(s).

On an average day, how often did you feel the urge to pull your hair OR pick your skin OR bite your nails OR bite your lip, mouth or cheek?

This week I felt **no urges** to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s).

This week I felt an urge to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s) **often**.

This week I felt an urge to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s) **very often**.

This week I felt **near constant** urges to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s).

BODY FOCUSED REPETITIVE BEHAVIOUR: THE INFLUENCE OF ALEXITHYMIA AND IMPULSIVITY

On an average day, how intense or "strong" were the urges to pull your hair OR pick your skin OR bite your nails OR bite your lip(s), mouth or cheek(s)?

This week I **did not feel any urges** to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s).

This week I felt **mild urges** to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s).

This week I felt **moderate urges** to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s).

This week I felt **severe urges** to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s).

This week I felt **extreme urges** to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s).

On an average day, how much control do you have over the urges to pull your hair OR pick your skin OR bite your nails OR bite your lip, mouth or cheek?

This week I could **always** control the urges, or I did not feel any urges to pull my hair, OR pick my skin, OR bite my nails, OR bite my lip(s), mouth or cheek(s).

This week I was always able to distract myself from the urges to pull my hair, OR pick my skin, Or bite my nails, OR bite my lip(s), mouth or cheek(s) **most of the time**.

This week I was able to distract myself from the urges to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s) **some of the time**.

This week I was able to distract myself from the urges to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s) **rarely**.

This week I was **never** able to distract myself from the urges to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s).

BODY FOCUSED REPETITIVE BEHAVIOUR: THE INFLUENCE OF ALEXITHYMIA AND IMPULSIVITY

Adapted MGH-HS (engagement).

For the next three questions, rate only the actual hairpulling, skin picking, nail biting, OR lip/mouth/cheek biting.

On an average day, how often did you actually pull your hair OR pick your skin OR nail biting OR lip, mouth or cheek biting?

This week I did not pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s).

This week I pulled my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s) occasionally.

This week I pulled my hair OR picked my skin OR bite my nails OR bite my lip(s), mouth or cheek(s) often.

This week I pulled my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s) very often.

This week I pulled my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s) so often it felt like I was always doing it.

On an average day, how often did you make an attempt to stop yourself from actually pulling your hair OR picking your skin OR biting your nails OR biting your lip, mouth or cheek?

This week I felt no urges to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s).

This week I tried to resist the urge to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s) almost all of the time.

This week I tried to resist the urge to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s) some of the time.

This week I tried to resist the urge to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s) rarely.

This week I never tried to resist the urge to pull my hair OR pick my skin OR bite my nails OR bite my lip(s), mouth or cheek(s).

BODY FOCUSED REPETITIVE BEHAVIOUR: THE INFLUENCE OF ALEXITHYMIA AND IMPULSIVITY

On an average day, how often were you **successful at actually stopping** yourself from pulling your hair OR picking your skin OR biting your nails OR biting your lip, mouth or cheek?

This week I **did not pull my hair** OR picking my skin OR biting my nails OR biting my lip(s), mouth or cheek(s).

This week I was able to resist pulling my hair OR picking my skin OR biting my nails OR biting my lip(s), mouth or cheek(s) **almost all of the time**.

This week I was able to resist pulling my hair OR picking my skin OR biting my nails OR biting my lip(s), mouth or cheek(s) **most of the time**.

This week I was able to resist pulling my hair OR picking my skin Or biting my nails OR biting my lip(s), mouth or cheek(s) **some of the time**.

This week I was **rarely** able to resist pulling my hair OR picking my skin OR biting my nails, OR biting my lip(s), mouth or cheek(s).