A cross-sectional examination of non-suicidal self-injury, disordered eating, impulsivity, and compulsivity in a sample of adult women

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ABSTRACT

Non-suicidal self-injury has been classed as having both impulsive and compulsive characteristics (Simeon & Favazza, 2001). These constructs have been related to disordered eating behaviors such as vomiting (Favaro & Santonastaso, 1998). Utilizing an international sample of adult females, this paper further explored this model, aiming to identify whether all types of disordered eating could be classified as impulsive or compulsive, and whether the impulsive and compulsive groupings reflect underlying trait impulsivity and compulsivity. The hypothesized impulsive and compulsive dimensions did not emerge from the data. Notably however, all self-injurious and disordered eating behaviors were linked to Urgency (an impulsivity facet) to varying degrees; no relationship with trait compulsivity was found. These findings are discussed, study limitations are noted, and relevance for clinical practice is outlined.

1. Introduction

Non-suicidal self-injury (NSSI) involves deliberately damaging one's body without intent to die that is not culturally accepted (American Psychiatric Association, 2013). Favazza and Rosenthal (1990) classified NSSI according to the severity or pattern of harm caused: Major, Stereotypic, or Superficial/Moderate types (Favazza & Rosenthal, 1990). This model was later revised to involve grouping the Superficial/Moderate category (indicating light to moderate tissue damage) into Impulsive and Compulsive types (Simeon & Favazza, 2001). According to Simeon and Favazza, Compulsive NSSI includes hair-pulling, nail-biting, skin picking, scratching, and biting, tends to be habitual or automatic, and may be symbolic. Compulsive NSSI tends to alleviate tension, occurs with high frequency (several times a day), and can be difficult to resist, according to Simeon and Favazza, In contrast, Impulsive NSSI involves separate, spontaneous incidents (often in response to triggers), and may provide rapid relief or short-term gratification. Simeon and Favazza identified common Impulsive NSSI to be hitting, cutting, burning, or pin-sticking oneself. There is evidence that Compulsive NSSI and Impulsive NSSI are distinct and poorly correlated dimensions (Favaro & Santonastaso, 1998, 2000).

Research has shown a strong link between disordered eating (DE) and NSSI, and indeed they are often co-morbid (for example, Herpertz, 1995; Solano, Fernandez-Aranda, Aitken, Lopez, & Vallejo, 2005; Svirko & Hawton, 2007). Simeon and Favazza's (2001) model has also been applied to classify DE behaviors (Favaro & Santonastaso, 1998, 2000). In Favaro and Santonastaso's (1998) sample of 125 females

with bulimia nervosa (BN), some of whom self-injured, principal component analysis (PCA) revealed two dimensions. The first dimension, labeled Compulsive, comprised severe nail biting, hair pulling, and vomiting. The second component, termed Impulsive, consisted of suicide attempts, cutting and burning, substance/alcohol abuse, and laxative abuse. Consistent with this, another study also found that laxative misuse in BN was linked to greater behavioral impulsivity (Bruce, Koerner, Steiger, & Young, 2002).

It is therefore of interest to know whether this model is applicable to all types of DE. Further, it is worth examining whether the proposed Impulsive and Compulsive characteristics are expressions of trait impulsivity and compulsivity, as this would advance theoretical knowledge and classification of NSSI and DE, and could have important assessment and treatment implications. In the current study, it is hypothesized that Simeon and Favazza's (2001) Impulsive and Compulsive dimensions will emerge from the data (classifying both NSSI and DE behaviors) and that these dimensions will correlate with trait impulsivity and compulsivity, respectively.

2. Method

2.1. Participants

A total of 626 participants completed the questionnaire; 70 cases were excluded (see Results). The sample consisted of 556 women aged 18 to 73 years ($M = 26.4$ years) from multiple continents. Reported ethnicities were: Caucasian/European ($n = 481$, 86.5%); mixed heritage ($n = 23$, 4.1%); Asian ($n = 11$, 2%); Hispanic ($n = 11$, 2%); African-American ($n = 5$, 0.9%); Mediterranean ($n = 5$, 0.9%); Aboriginal ($n = 2$; 0.4%); Native American ($n = 1$, 0.2%); Sri Lankan ($n = 1$,

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0.2%); Middle Eastern ($n = 1$, 0.2%); Mauritian ($n = 1$, 0.2%); Metis ($n = 1$, 0.2%); or undisclosed ($n = 13$, 2.3%).

2.2. Materials

The questionnaire consisted of five sections: demographics; the Urgency, lack of Premeditation, lack of Perseverance, and Sensation seeking (UPPS) Impulsive Behavior Scale (Whiteside & Lynam, 2001); the Dimensional Assessment of Personality Pathology — Basic Question-naire (DAPP-BQ) Compulsivity Scale (Schroeder, Wormworth, & Livesley, 1992); the Deliberate Self-Harm Inventory (DSHI; Gratz, 2001); and the BULImia Test — Revised (BULIT-R; Thelen, Farmer, Wonderlich, & Smith, 1991).

2.3. Procedure

Recruitment was web-based, with information about the research being placed on a variety of health and related websites.

3. Results

3.1. Data preparation

Cases were deleted for: substantial missing data ($n = 18$); meeting exclusion criteria ($n = 34$); or being multivariate outliers ($n = 18$). According to Simeon and Favazza's (2001) model, Compulsive NSSI in-cludes hair-pulling, skin-picking, nail-biting, and scratching. In the current study, preventing wound healing was also considered Compul-sive due to its similarity to skin-picking. The Impulsive NSSI includes cutting, burning, self-hitting, pin-sticking (Simeon & Favazza, 2001), and carving of words, designs, or other images (Favazza & Rosenthal, 1993).

3.2. Descriptive statistics

Most participants ($n = 466$; 83.8%) reported at least one episode of NSSI at some point in their lives. Multiple NSSI methods were common-ly ranging from 1 to 15 types ($M = 4.43$; $Mode = 1$, $SD = 3.53$). The most common NSSI behaviors were cutting (67.1%; $n = 373$), scratching (48%, $n = 267$), and carving (41.4%, $n = 230$). One year prevalence for NSSI was 71.2% ($n = 396$), with the most common behaviors being cutting ($n = 278$, 50%) and scratching ($n = 159$, 28.6%).

3.3. Exploratory principal component analysis

The DE and NSSI types were entered into a PCA with orthogonal (varimax) rotation to explore how many components would emerge and which variables would group together. The PCA revealed five reliable components, each with eigenvalues greater than one and accounting for more than 5% variance before rotation. A cut-off value of .45 was used for variable inclusion on a principle component; four variables did not load on any component. Inspection of the components after rotation revealed that all components were substantive. As only the first three components were distinctive, a three component model was retained, which explained 34.95% of the total variance (see Table 1).

The first component extracted 15.86% of the variance, comprised solely NSSI variables, and was labeled Self-Injury. The second compo-nent named Disordered Eating was loaded on by disordered eating and compensation variables, and explained 10.98% of the variance. The third component explained 8.11% of the variance and had very good loadings from Diuretics and Medication, and good loading from the Laxative variable. As these variables have medical purposes and are misused in this context for weight control, this component was named Medical Abuse.

The hypothesized two-factor model did not emerge from the data; instead a three component model emerged where NSSI and DE

Table 1
The principal components, their variable loadings and communalities, sums of squared loadings, and proportion of variance explained after varimax rotation.

Variables	Components			Communalities (h^2)
	Self-Injury	Disordered Eating	Medical Abuse	
Cutting	.74	.19	.04	0.59
Scratching	.69	.09	.10	0.49
Punching	.65	−.07	.05	0.44
Pin-sticking	.59	−.11	.15	0.38
Carving	.53	.31	−.18	0.41
Preventing wound healing	.53	.07	.15	0.30
Burning	.46	.17	−.12	0.25
Exercise	−.05	.67	.12	0.47
Restricting	.18	.65	.12	0.47
Vomiting	.25	.62	.20	0.49
Bingeing	−.01	.57	.20	0.37
Diuretics	.04	.18	.69	0.99
Medication	.03	.02	.64	0.41
Laxatives	.09	.38	.60	0.51
Sums of squared loadings	1.65	1.96	1.93	
Proportion of variance (%)	15.86	10.98	8.11	
Eigenvalues	3.61	1.87	1.34	

appeared independent of each other. Planned correlations were still undertaken to see if the components were correlated with impulsivity and compulsivity (Table 2).

Urgency had a moderate and significant positive correlation with Self-Injury; it was also moderately and significantly correlated with DE, and weakly correlated with Medical Abuse. Thus it appears that Urgency is correlated, to some degree, with all components of the model. Other significant correlations between the traits and behaviors tended to be weak ones.

4. Discussion

4.1. Descriptive statistics

The most common NSSI reported were cutting and scratching for both one-year and lifetime prevalence, consistent with prior research (Briere & Gil, 1998; Gratz, 2006; Heath, Toste, Nedecheva, & Charlebois, 2008; Herpertz, 1995; Klonsky, 2007; Polk & Liss, 2007). Many participants had used multiple NSSI methods, consistent with prior findings (Gratz, 2006; Gratz & Chapman, 2007; Herpertz, 1995; Pattison & Kahan, 1983).

4.2. Principal component analysis

It was predicted that Simeon and Favazza's (2001) impulsive and compulsive dimensions would emerge from the data, and be loaded on by certain DE and NSSIs. This prediction was not supported, as a three-factor model emerged that classified these behaviors by type (Self-Injury, Disordered Eating, and Medical Abuse). The extracted model explained 34.95% of the variance, which while modest, comprised three well defined components. While the hypothesized di-mensions did not emerge, it is interesting to note that the Self-Injury

Table 2
One-tailed Pearson's correlations between the principal components and trait variables.

Variables	Components		
	Self-Injury	DE	Medical Abuse
Compulsivity	−.04	.08[*]	.06
Urgency	.32[**]	.27[**]	.15[**]
Lack of premeditation	.09[*]	.11[**]	−.01
Lack of perseverance	.15[**]	.11[**]	.06
Sensation seeking	.02	.15[**]	−.05

[*] $p < .05$.
[**] $p < .01$.