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Symptom Severity and Its Clinical Correlates in Kleptomania

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Abstract

Background—Kleptomania (Compulsive Stealing) remains poorly understood with limited data regarding its underlying pathophysiology and appropriate treatment choices.

Methods—112 adults aged 18 to 65 with a primary, current diagnosis of kleptomania were assessed for the severity of their stealing behavior and urges to steal, along with related mental health symptoms. To identify clinical and demographic measures associated with variation in disease severity, we utilized the statistical technique of partial least squares (PLS).

Results—Greater kleptomania symptom severity was associated with having more frequent urges to steal, feeling excited by stealing, having a current eating disorder, and having a current diagnosis of OCD. Furthermore, worse symptom severity was associated with a shorter transition time (between first stealing and developing kleptomania), as well as with more chance of stealing from relatives and seeking treatment at some point.

Conclusions—Feeling some type of reward from stealing and co-occurrence of certain disorders associated with compulsivity (OCD, anorexia nervosa) were strongly associated with worse illness severity in kleptomania. Treatment approaches should incorporate these as possible treatment targets. These data may also support conceptualization of kleptomania as an obsessive-compulsive related disorder rather than being allied to substance use or impulsive disorders.

Introduction

Kleptomania is characterized by repetitive stealing behavior precipitated by significant and uncontrollable urges to steal items not needed for their personal use (1). The National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) assessed rates of stealing (not a formal diagnosis of kleptomania) among 43,000 adults. The lifetime prevalence of shoplifting in the United States population was 11.3% (2). Although no large scale epidemiologic studies have been conducted to assess the prevalence of kleptomania in the general population, a survey of college students (N=791) found that 3 (0.38%) met criteria for kleptomania (3), suggesting that this disorder is relatively uncommon and/or that it is often concealed.

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The behaviors that characterize kleptomania (e.g., urges to steal, inability to stop) might be conceptualized as impulsive in that they are often premature, poorly thought out, risky, and result in deleterious long-term outcomes. Psychological testing has, in some studies, demonstrated greater cognitive impulsivity, larger deficits in inhibition, and greater sensation-seeking among individuals with kleptomania compared to controls (4). One neuroimaging study comparing individuals with kleptomania to healthy controls found decreased white matter microstructural integrity in inferior frontal brain regions consistent with difficulties in impulse control (5). Alternatively, kleptomania could be viewed as compulsive in that stealing without getting caught requires fore-planning; and involves a complex rewarding **behavior** (as opposed to unplanned impulses) (6–7).

Despite being described in the medical literature for nearly two hundred years (8), kleptomania still remains poorly understood with limited data regarding its underlying pathophysiology and appropriate treatment choices. There has been only one placebo-controlled trial of pharmacotherapy published for the treatment of kleptomania. In that study, 25 subjects were randomized in a 1:1 fashion to either naltrexone or placebo for 8 weeks (9). By study endpoint, 66.7% of those assigned to naltrexone compared to 7.7% on placebo ($p < .001$) reported symptom remission. To date, there have been no controlled clinical trials of any psychosocial interventions for kleptomania. Thus, data are still lacking regarding optimal treatment options, duration and who with kleptomania would benefit more from medication or psychotherapy.

One approach to refining our treatment of kleptomania might be to better understand the range of illness severity and the clinical associations with severity. The DSM-5 criteria stipulate the minimal level of severity to meet diagnostic threshold (i.e. recurrent failure to resist impulses to steal objects) but do not provide details about severity levels and whether those can be meaningful in terms of treatment approaches. Thus the goal of this study was to identify clinical and demographic measures associated with variation in disease severity in a large sample of adults with kleptomania. Given the associations between impulsivity, compulsivity, and kleptomania (4, 6), we hypothesized that greater kleptomania symptom severity would be associated with a greater degree of both.

Methods

Subjects

Men and women aged 18 to 65 with a primary, current DSM-5 diagnosis of kleptomania (“primary” kleptomania was defined by the participant as the primary problem for which they sought help) were recruited by newspaper advertisements and referrals for neuroimaging or treatment studies (criteria for kleptomania were left unchanged from DSM-IV to DSM-5 and therefore participants seen prior to DSM-5 continued to meet the criteria). Exclusion criteria included: 1) unstable medical illness; 2) history of seizures; 3) lifetime history of bipolar disorder, dementia, or psychotic disorder; 4) current (past 3 months) substance use disorder; 5) current risk of suicide (defined as endorsing any symptom on the Columbia Suicide Severity Scale) (10); and 6) current pregnancy or inadequate contraception in women of childbearing potential.

Data were collected from July, 2005 to June, 2012 at the University of Minnesota and then from December, 2012 to the present time at the University of Chicago. The Institutional Review Boards for the University of Minnesota and the University of Chicago approved the studies and the informed consent procedures. After complete description of the studies and an opportunity to ask questions, participants provided written informed consent. This research was carried out in accordance with the principles of the Declaration of Helsinki.

Assessments

The diagnosis of kleptomania was made using the Structured Clinical Interview for Kleptomania (SCI-K) (11). Demographics and clinical features of kleptomania were assessed with a semi-structured interview. The semi-structured interview included questions regarding the phenomenology of kleptomania. Race/ethnicity was defined by the study subjects and was included to learn more about this variable in kleptomania. Psychiatric comorbidity was assessed using the Structured Clinical Interview for DSM-IV (SCID) (12).

All participants were assessed for the severity of their kleptomania symptoms using the clinician-rated Clinical Global Impression Severity scale (CGI-S) (13). The CGI-S is a 7-point scale that requires the clinician to rate the severity of the patient's illness at the time of assessment using a range of responses from 1 (normal) through to 7 (amongst the most severely ill patients).

Depressive and anxiety symptoms were further assessed using the following valid and reliable clinician-administered measures: Hamilton Anxiety Rating Scale (HAM-A) (14), and Hamilton Depression Rating Scale (HAM-D) (15).

In addition, to examine impulsivity, each participant completed the Eysenck Impulsiveness Questionnaire (EIQ) (16). The EIQ is a 54 question self-report measure comprised of three subscales: impulsivity, venturesomeness, and empathy.

Data Analysis

To identify clinical and demographic measures associated with variation in disease severity, we utilized the statistical technique of partial least squares (PLS) (17–20). PLS is a multivariate, iterative technique that constructs one or more latent factors (referred to as PLS components) that optimally explain variation in X and Y. The Y variable was the score on the CGI-S and X variables were as follows: age, educational level, gender, age when starting stealing, time between starting to steal and feeling it was out of control, history of kleptomania or substance use disorder in one or more first-degree relatives, current smoking status (smoker or non-smoker), Hamilton Anxiety and Depression scale total scores, triggers to stealing, presence of major depressive disorder, presence of any anxiety disorder, presence of any substance use disorder, presence of OCD, presence of ADHD, legal issues, and Eysenck scores (impulsivity, empathy, venturesomeness). Unlike traditional regression, PLS is ideal in situations in which variables are correlated with each other; and when the number of variables is large in comparison to the number of cases, as was the case here (17–20). Analysis was conducted using JMP Pro software Version 13.0. Any missing data points were imputed automatically by JMP using study means. The PLS model was fitted using leave-one-out cross-validation (non-linear iterative partial least squares, NIPALS algorithm), and

the optimal number of latent factors was selected by minimizing the predictive residual sum of the squares (PRESS). X variables significantly contributing to the model (i.e. explaining significant variance in disease severity) were identified on the basis of 95% confidence intervals for bootstrap distribution of the standardized model coefficients not crossing zero (N=1000 bootstraps).

Results

A total sample of 112 participants (mean age = 39.2 ± standard deviation 14.9 years; 71.4% female) were recruited. The participants reported a mean age at the onset of stealing of 17.5 (11.9) years. The mean score on the CGI-S was 5.0 (1.1) [range 3 to 7]. The mean amount of current stealing was 1.5 (1.8) times per week. 71 (63.4%) had been arrested in their lifetime due to shoplifting.

Cross-validation showed that the optimal fit PLS model to minimize PRESS had one latent variable (Figure 1) and hence this model was selected. This model accounted for total 6.6% of the variation in the clinical/demographic measures, and 42.5% of variation in disease severity (CGI-S scores).

The standardized model coefficients for each variable of interest are presented in Table 1. Variables with positive coefficients had a positive relationship with CGI-S scores, and vice versa. Those measures shown in bold and with an asterisk retained statistical significance by bootstrap, i.e. the 95% confidence interval of the bootstrap distribution of the model coefficient did not cross zero. Thus, greater kleptomania symptom severity was significantly associated with having more frequent urges to steal, spouses knowing about the person's stealing, stealing from relatives, having OCD, having an eating disorder, mood affecting stealing, experiencing urges when trying to quit stealing, getting excited when stealing, and having tried to quit. Greater kleptomania symptom severity was also significantly associated with lower ADHD symptoms, shorter lag time (shorter period between first stealing act and developing kleptomania), and lower family history of substance use disorder (s).

Discussion

To our knowledge, this is the first study to examine the clinical correlates of illness severity in a large sample of adults with kleptomania. There were several important findings from this analysis, which was conducted using the statistical methodology of partial least squares (PLS). This technique optimally explained the co-variation between demographic/clinical measures and symptom severity by constructing a single latent factor from the data. Frequency of urges to steal, reporting a positive feeling from the act of stealing, and certain comorbidities (anorexia nervosa, bulimia nervosa, and OCD) were significantly and positively associated with illness severity. Aspects of impulsivity (specifically domains EIQ) were not significantly associated with illness severity, and in fact ADHD was significantly associated with lower levels of illness severity.

Taken together, these data suggest that very specific clinical variables are associated with illness severity in kleptomania and they are also begin to suggest where kleptomania may fit in the taxonomy of psychiatric disorders. The urges to steal and the rewarding emotional

aspects of stealing were associated with greater illness severity. Interestingly, **some** traditional aspects of impulsivity (EIQ, ADHD) were not significantly and positively associated with greater kleptomania symptoms. On the other hand, compulsivity (categorical OCD and anorexia nervosa) was significantly and positively associated with illness severity in the model. These findings suggest that the rewarding aspects of stealing appear important in terms of disease severity but so too is the presence or absence of some compulsive disorders. More severe kleptomania symptoms were also linked, in the PLS model, with more likelihood of stealing from relatives and (perhaps due to this) with spouses being more likely to know about their partners' stealing behaviors; as well as with trying to quit at some point, and a shorter transition time, as one may expect. Surprisingly, we found that worse symptoms were associated with a lower rather than higher chance of having a first-degree relative with a substance use disorder. One possible explanation is that those with some genetic or familial protection against substance addiction may manifest other compulsive behaviors.

The association of worse kleptomania severity with stealing-related reward and disorders of compulsivity (OCD, **anorexia nervosa**) may provide clues to appropriate targets for cognitive behavioral therapy or pharmacotherapy. Medications capable of dampening urges (such as naltrexone and others) may be worth exploring in clinical trials. However, the addition of compulsivity as a target may suggest that different subgroups of individuals with kleptomania may need treatments focusing on different targets or that a combination of approaches to dampening reward and improving compulsivity may be needed simultaneously.

Although this study represents a potentially beneficial approach to understanding kleptomania, there exist several limitations. Our approach of defining the statistical significance of individual measures in the PLS model by using bootstrap is quite conservative and so some variables may have been overlooked (false negatives). However, this approach does mean that one can have a high degree of statistical confidence in the significant results (low risk of false positive error). As with any such study, the current data cannot show that the findings would generalize to kleptomania patients presenting in other settings such as to family doctors.

From these findings, it seems that aspects of reward and compulsivity are both strongly associated with worse illness severity in kleptomania. As such, treatment approaches should incorporate these as possible treatment targets when developing new treatment approaches to this disorder.

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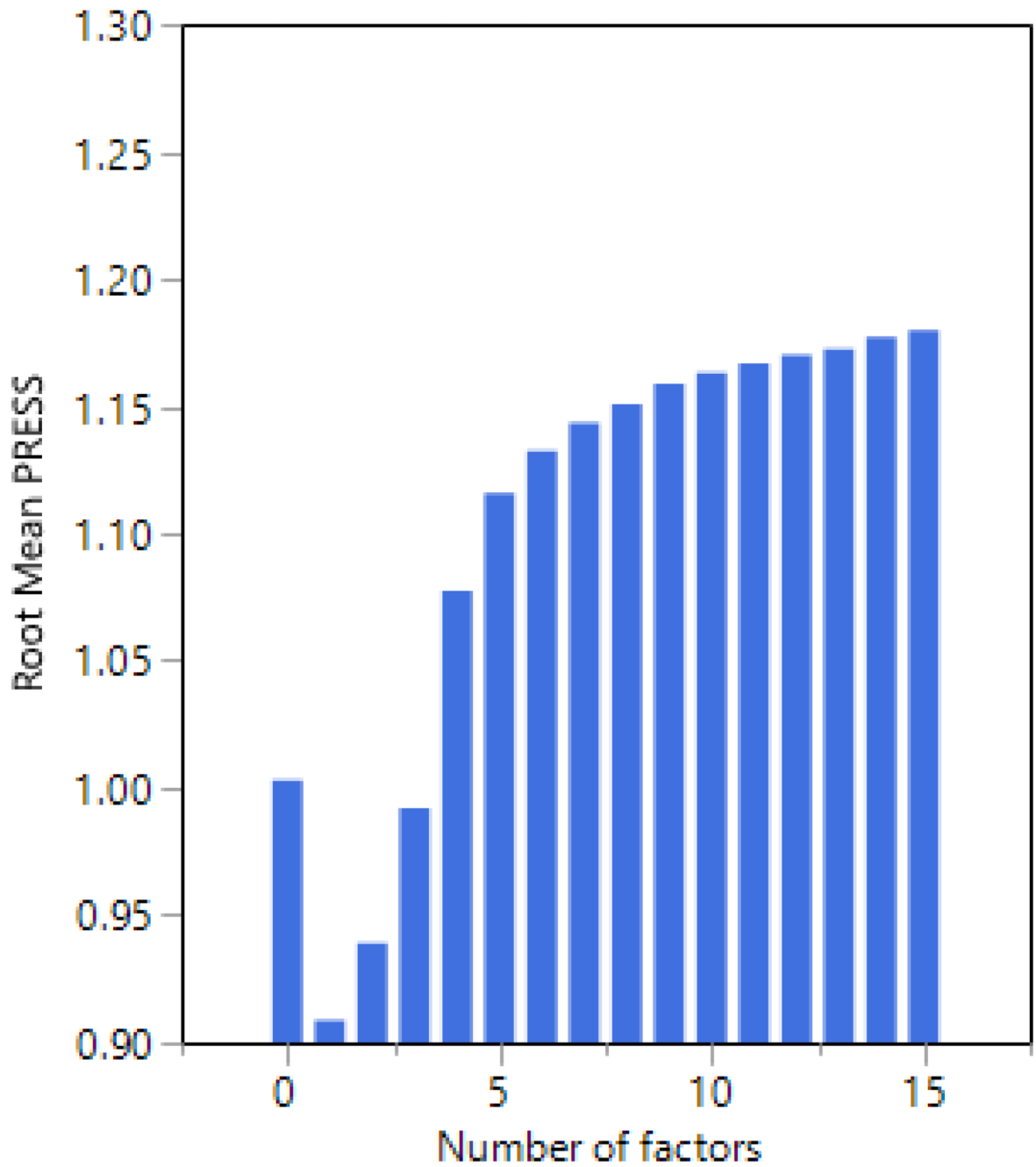


Figure 1. Predictive residual sum of the squares (PRESS) as a function of the number of latent factors.

Table 1
Standardized model coefficients for each X variable of interest in the optimal PLS model
(one latent variable). * : statistically significant predictive variable by bootstrap.

Coefficient	CGI	
Days per week have urges *	0.1291	
Does Spouse Know *	0.0986	
Stealing from relatives *	0.0894	
OCD *	0.0816	
Anorexia *	0.0816	
Bulimia *	0.0816	
Mood Effect from Stealing *	0.0795	
Urges When tried to Quit *	0.0778	
Excited When Stealing *	0.0615	
Education	0.0548	
Gender	0.0425	
Triggered by loneliness	0.0414	
Age When Started Stealing	0.0404	
Have Tried to Quit *	0.0344	
Triggered by boredom	0.0314	
MDD	0.0240	
Race	0.0175	
Family history of stealing	0.0107	
Number of Arrests	0.0106	
EIQ-Empathy	0.0051	
EIQ-Venturesomeness	0.0016	
Intercept	0.0000	
Marital Status	-0.0044	
Suicide Attempts	-0.0145	
EIQ-Impulsivity	-0.0235	
Smoking packs per day	-0.0239	
Anxiety D/O Nos	-0.0298	
ADHD *	-0.0341	
Triggered by feeling anxious	-0.0429	
Age	-0.0526	
Lagtime (years) *	-0.0535	
Family history of AUD *	-0.0631	