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# Harm avoidance moderates the relationship between internalized stigma and depressive symptoms in patients with schizophrenia



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## ABSTRACT

This study investigated the associations between internalized stigma, depressive symptoms, and temperament dimension Harm avoidance. One hundred and seventeen stable outpatients with schizophrenia completed a battery of self-report instruments. Internalized stigma was significantly positively related to depressive symptoms, while Harm avoidance moderated the internalized stigma–depressive symptoms relationship.

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## 1. Introduction

Previous studies have found high levels of internalized stigma (or self-stigma) among patients with schizophrenia, and these subjective experiences have been linked with numerous negative outcomes, such as low self-worth, social isolation, increased symptom severity, and poorer treatment adherence (see Gerlinger et al., 2013). Further, internalized stigma is often associated with depressive symptoms (Park et al., 2013) and hopelessness (Yanos et al., 2008) among schizophrenia patients, even in prospective research (Lysaker et al., 2007; Corrigan et al., 2011). However, the literature is somewhat mixed as several studies have not confirmed these associations (see Gerlinger et al., 2013).

Despite these relatively robust associations, little is known about potential factors that contribute to the development and intensity of internalized stigma, and processes that lie behind its relationship with depression and hopelessness. Indeed, a recent meta-analysis has called for more studies investigating moderator variables, such as personality traits, of the complex association between stigma and various relevant outcomes (Livingston and Boyd, 2010).

The relevance of personality traits with regard to various psychopathological outcomes in patients with schizophrenia has been receiving increased attention. The psychobiological model of personality developed by Cloninger et al. (1993) might be especially relevant as temperament dimensions are conceptually linked with different genetic and neurobiological underpinnings. The temperament dimension Harm avoidance (HA), defined as

sensitivity to aversive stimuli that evoke negative emotions such as anticipatory worry and fear (Cloninger et al., 1993), is known to be elevated and associated with depressive symptoms in schizophrenia patients (Aukst Margetić et al., 2009). It should be noted, however, that HA is increased and related to depression in various psychiatric populations, while the combination of high HA with low Reward Dependence may be a more specific characteristic of schizophrenia (Miettunen and Raevuori, 2012). Moreover, it was previously shown that HA serves as a unique predictor of internalized stigma in this population (Aukst Margetić et al., 2010). Having in mind the need for identifying conditions and patients' characteristics that can intensify the negative consequences of stigma (Livingston and Boyd, 2010), it might be prudent to examine whether HA potentiates depressive symptoms among patients experiencing internalized stigma (i.e., acts as a moderating factor). To our knowledge, no previous study has examined personality as a potential moderator of this relationship.

Based on the abovementioned findings, we hypothesized that internalized stigma would be positively associated with depressive symptoms. We also expected temperament dimension HA to be a significant moderator of the stigma–depression relationship, such that experienced stigma would be associated with depressive symptoms to a larger extent in patients who also exhibited higher levels of HA.

## 2. Methods

### 2.1. Participants

A sample of 117 Caucasian outpatients (68 male), with a diagnosis of schizophrenia established through the Mini International Neuropsychiatric Interview

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(Lecrubier et al., 1997), were recruited throughout the course of a year at two psychiatric institutions. The mean age of the patients was 34.1 years, S.D. 10.51 (range 19–64), while the mean duration of illness was 7.2 years, S.D. 6.90 (range 0.3–30). The patients were clinically stable for a minimum of three months and all were at least once hospitalized for mental illness. Exclusion criteria were mental retardation, organic brain disease, severe physical disorders, lifetime and current drug/alcohol abuse, and low comprehension skills. Eleven patients refused to participate, but they showed no significant differences in age and gender. Informed consent was obtained after the aim of the study was thoroughly explained. The study was approved by the ethics committees of the two institutions.

## 2.2. Measures

The temperament dimension HA was assessed with the self-report scale of the Temperament and Character Inventory (TCI; Cloninger et al., 1994). It consists of 35 items requiring a true/false response. The scale comprises four subscales but we used the total HA score for the current study. Cronbach's  $\alpha=0.79$ .

The Internalized Stigma of Mental Illness (ISMI; Ritscher et al., 2003) was used to assess the participants' subjective experience of stigma. This self-report questionnaire consists of 29 items rated on a 4-point Likert scale and contains five subscales (Alienation, Stereotype Endorsement, Discrimination Experience, Social Withdrawal, and Stigma Resistance). We used the total ISMI score for the current study. Cronbach's  $\alpha=0.89$ .

The Beck Depression Inventory (BDI; Beck et al., 1979) total score was used as a self-report measure of acute depressive symptoms. It consists of 21 items assessed on a 3-point Likert scale. Cronbach's  $\alpha=0.90$ .

## 2.3. Data analyses

We performed all the data analyses by using the SPSS 17.0. Descriptive analysis included means and standard deviations. Pearson correlations were computed to examine the zero-order relationship among the variables. The possible moderating role of HA on the internalized stigma–depressive symptoms association was estimated by performing a hierarchical regression analysis in which depressive symptoms were the dependent variable. Age and gender were entered as covariates at step one to control for these theoretically relevant factors. Internalized stigma as the independent variable was entered in the second block, HA as the possible moderator was entered in the third block, and the interaction variable (independent variable multiplied by the moderator variable) was entered in the fourth block. As recommended by Kraemer and Blasey (2004), we standardized and centered all three variables in order to reduce multicollinearity and to facilitate interpretation of the coefficients. Further, separate regression analyses were conducted for participants who scored in the upper quartile and for those who scored in the lower quartile on the HA measure, while the statistical difference in the two  $\beta$  coefficients was analyzed using the Fisher *r*-to-*z* transformation method (Cohen et al., 2003). We defined the level of statistical significance as *P* less than 0.05.

## 3. Results

The total mean score of internalized stigma was 62.2 (S.D. 12.88), while the mean depression score was 10.7 (S.D. 9.73). Finally, the mean HA score was 19.1 (S.D. 7.04). Internalized stigma was highly positively correlated with depressive symptoms ( $r=0.57$ ,  $P<0.001$ ) and moderately with HA ( $r=0.47$ ,  $P<0.001$ ). There was also a large positive correlation between HA and depressive symptoms ( $r=0.60$ ,  $P<0.001$ ).

The results of the hierarchical multiple regression analysis are presented in Table 1. After controlling for age and gender, internalized stigma was found to account for a significant 33% of the variance in depressive symptoms. Moreover, HA was found to account for a significant amount of additional variance in depressive symptoms ( $\Delta R^2=13\%$ ). Finally, the interaction between HA and internalized stigma significantly predicted depressive symptoms over and above previous steps ( $\Delta R^2=3\%$ ) (Table 1).

To further analyze the interaction effect, we conducted separate regression analyses for participants who scored in the upper quartile ( $n=36$ ) and for those who scored in the lower quartile ( $n=32$ ) on the HA measure. These analyses confirmed the moderating effect of HA, as the association of internalized stigma with depressive symptoms was stronger among participants in the upper quartile ( $\beta=0.65$ ,  $P<0.01$ ) compared with those in the

**Table 1**

Hierarchical regression analysis showing amount of variance accounted for in depressive symptoms by internalized stigma, Harm avoidance, and the Harm avoidance  $\times$  internalized stigma interaction.

Depressive symptoms	B	$\beta$	$R^2$	$\Delta R^2$	F
<b>Step 1</b>			0.03	0.03	2.66
Age	0.02	0.21*			
Gender	0.05	0.02			
<b>Step 2</b>			0.33	0.30	51.88**
Internalized stigma	0.56	0.56**			
<b>Step 3</b>			0.46	0.13	27.24**
Harm avoidance	0.41	0.41**			
<b>Step 4</b>			0.49	0.03	6.28*
Harm avoidance $\times$ internalized stigma	0.18	0.17*			

*N*=117;  $\beta$  (B)=(non)standardized regression coefficient;  $\Delta R^2$ =additional variance explained in the step of regression analysis.

\*  $P<0.05$ .

\*\*  $P<0.01$ .

lower quartile ( $\beta=0.37$ ,  $P<0.05$ ). Finally, the Fisher *r*-to-*z* transformation method showed a marginally significant difference in these two  $\beta$  coefficients ( $z=1.52$ ,  $P=0.06$ ) when a one-tailed statistical approach was used.

## 4. Discussion

As hypothesized, we observed a strong positive association between internalized stigma and depressive symptoms in schizophrenia outpatients. This is in accordance with some of the previous research (Lysaker et al., 2007; Park et al., 2013), although a recent meta-analysis (Gerlinger et al., 2013) indicated mixed results concerning this association. However, we believe some of these inconsistencies are due to certain measurement issues. For example, the lack of a significant correlation between internalized stigma and depression (although a positive trend was observed) in the study by Yanos et al. (2008) could be in part attributed to the single-item measure of depressive symptoms and the consequential variance reduction. Our results provide additional support that depression might be one of the psychopathological outcomes of internalized stigma in schizophrenia patients.

More importantly, the results of this study supported our hypothesis that schizophrenia patients' personality acts as a significant moderating factor in the internalized stigma–depression relationship. Internalized stigma was significantly associated with depressive symptoms at various levels of temperament dimension HA, but the strength of the association increased as HA increased, even after controlling for age and gender. Besides being a risk factor for internalized stigma (Aukst Margetić et al., 2010), HA also seems to function as an 'emotional amplifier' that potentiates subjective experience of internalized stigma to augment the risk of depression. In other words, schizophrenia patients who are sensitive to aversive stimuli (i.e., high on HA) are more likely to endorse stigmatizing beliefs and anticipate social rejection. They are also prone to passive and avoidant coping strategies (Cloninger et al., 1993) that seem to increase the risk of depressive reactions following the development of internalized stigma. However, the relationship between internalized stigma and negative outcomes is complex and includes numerous potential moderating and mediating effects (e.g., social network, self-esteem, and hope) (Corrigan et al., 2011; Mashiach-Eizenberg et al., 2013). Thus, future studies should examine the role of

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