The relation between negative symptoms and socially (un)mindful decision making in psychotic illness.

Maxine Harland
Abstract

Background: Disorders of the schizophrenia spectrum are associated with impaired social functioning. There is inconsistency in the results of studies investigating the relations between impaired social functioning and symptoms. For building up and maintaining social relationships, social mindfulness is important. Social mindfulness is being considerate of others or polite; it is about minding the needs and interests of other people. Method: It was expected that socially unmindful choices, measured with the Social Mindfulness (SoMi) Paradigm, are related to the severity of negative symptoms of psychotic illness, measured with the Positive and Negative Syndrome Scale (PANSS). It was also expected that patients with a proself Social Value Orientation (SVO, measured with the SVO-questionnaire) have more severe negative symptoms, compared to patients with a prosocial SVO (required will for social mindfulness). For this cross-sectional, observational study 27 adolescent patients with a first-episode psychosis or relapse were investigated. Results: No significant correlation was found between the outcomes of the SoMi Paradigm and the severity of the negative symptoms of the PANSS ($p = .425; \rho(21) = -.18$). Although there was no significant correlation between the outcomes of the SoMi Paradigm and negative symptoms subscale of the PANSS nor for the other subscales of the PANSS, there was a trend for the relation between the disorganization symptoms subscale and socially unmindful choices ($p = .052; \rho(21) = .41$). The mean ranks of the negative symptoms subscale did not differ significantly between the SVO groups, proself and prosocial ($p = .397; Mann-Whitney U(24) = 63.5$). Although the two groups did not differ significantly, the prosocials did seem to show less severe symptoms in every subscale of the PANSS than the proselfs. Conclusion: There were no significant relations between the severity of negative symptoms and these two aspects of social functioning. Future studies with larger sample sizes are recommended.
Introduction

Disorders of the schizophrenia spectrum are associated with impairments in social functioning (American Psychiatric Association, 2013). Impaired social functioning is a source of great distress for patients and family members (Bellack, Morrison, Wixted & Mueser, 1990), has an impact on quality of life and predicts outcome in schizophrenia (e.g. relapse, course, unemployment; Couture, Penn & Roberts, 2006). For social functioning, social cognition is an important aspect. Fett et al. (2012) state that patients’ functioning in social cognition is an important independent treatment target. It is important to know which group of symptoms underlie social cognitive dysfunctions in order to make more effective and efficient treatment programs for people with psychotic illness. Symptoms of schizophrenia are most commonly divided into two different groups: positive (e.g. delusions, hallucinations, positive formal thought disorder, bizarre behaviour) and negative symptoms (e.g. avolition, anhedonia-asociality, affective flattening, attentional impairment, alogia; Andreasen & Olsen, 1982). Both positive and negative symptoms are related to patients’ impairments in social cognitive aspects (Fett et al., 2011; Sergi et al., 2007; Shean & Meyer, 2009). More severe negative (Bratlien et al., 2013) and positive symptoms are related to patients’ social dysfunction (Norlelawati et al., 2015; Stouten, Veling, Laan, Van der Helm & Van der Gaag, 2014) and to their (social) quality of life (Jelastopulu et al., 2014; Rabin et al., 2014). However, most of the research about social cognitive functioning of patients is conducted with questionnaires. These questionnaires can give valuable theoretical insights, but they lack information about the actual behaviour in dyadic interactions.

To date it is unknown how symptoms of psychotic illness and social cognitive functioning of patients are related to social dysfunction within social interactions. This is an important omission, because the association might be different in real-time social interactions, which are complex social cognitive processes, and require decision making (Addington and Addington, 1999). A social decision making task, Social Mindfulness Paradigm (SoMi), can help to investigate dyadic interactions as an aspect of the big concept social cognitive functioning. The task measures participants’ (social) behaviour towards strangers (anonymous others) in social interactions, which can be important for building up social relations and which can give insight in patients’ deficits in social functioning.

Social Mindfulness

Social mindfulness is a relatively new concept, which has not been investigated in psychotic patients before. Social mindfulness is being considerate of others or polite; it is
about minding the needs and interests of other people (Van Doesum, Van Lange & Van Lange, 2013). When someone acts socially mindful, he is leaving (instead of limiting) choice options for other people. Social mindfulness is important for building up and maintaining social relationships. Van Doesum et al. (2013) investigated the socially mindful choices of healthy people with the ‘SoMi Paradigm’ (see methods for a detailed explanation). It is a computer task where participants have to make (social) decisions, picking one out of three items. Two items are identical and one is different only in one aspect (e.g. two green caps and one yellow cap). Participants need to keep in mind that they are playing together in a dyadic interaction with another person choosing after them. An unmindful choice is when someone takes the unique object and leaves the other player with no choice (with two identical objects). Social mindfulness requires the skill to see it and the will to do it. Although there is no literature about the outcomes of psychotic patients on this new task, there is some literature about people with psychotic illness and these components skill and will.

Required skills for social mindfulness are Theory of Mind (ToM) and perspective taking. ToM is a skill necessary for successful complex social interactions, it is the ability to understand other people’s mental states (e.g. beliefs, intentions, knowledge; Premack & Woodruff, 1978). It is found that a ToM impairment in people with psychosis is associated with higher levels of positive (Frith & Corcoran, 1996; Marjoram et al., 2005; Pousa et al., 2008) or negative symptoms (Mazza, De Risio, Surian, Roncone & Casacchia, 2001), but also with both positive and negative symptoms (Bora, Gökçen, Kayahan & Veznedaroglu, 2008; Pickup & Frith, 2001; Shamay-Tsoory, Shur, Barcai-Goodman, Medlovich et al., 2007; Stratta et al., 2011). Perspective taking is considering the viewpoint of others (Schiffman et al., 2004) and is a necessary skill for adjusting behaviour for the sake of others (Van Doesum et al., 2013). Patients’ difficulty with perspective taking is associated with the severity of both positive (Haker, Schimansky, Jann & Rössler, 2012) and negative symptoms (Langdon, Coltheart & Ward, 2006).

The required will for social mindfulness is related to empathic concern and a pro-Social Value Orientation (SVO). Empathic concern is believed to relate to the will to adjust behaviour for the sake of others and is found to be positively related to social mindfulness (Van Doesum et al., 2013). Patients’ difficulty with empathic concern is associated with negative symptoms (Bora, Gökçen & Veznedaroglu, 2008; Shamay-Tsoory, Shur, Barcai-Goodman, Harari and Levkovitz, 2007; Shamay-Tsoory, Shur, Barcai-Goodman, Medlovich et al., 2007; Sparks et al., 2010). In healthy people pro-SVOs are related to social mindfulness. Being socially mindful is being prosocial in the way that other people, who get
to choose after you, get the same level of control over their options as you (Van Doesum et al., 2013). SVOs are stable preferences for outcome patterns for oneself and others (McClimintock, 1978 as cited in Van Lange, Otten, De Bruin & Joireman, 1997) and they are predictive of behaviour in social dilemma tasks (Van Lange et al., 1997). There are three major types of SVOs: prosocial, individual and competitive orientation. People who are prosocial are cooperative and tend to minimize differences between outcomes for themselves and others. Individualists tend to maximize their own outcomes without regard for the outcomes of others. Competitors are the people who seek advantage over others by maximizing their own outcomes relative to the outcome of others (Van Lange et al., 1997).

In summary, previous studies found that the skills and will as measured with questionnaires (except for the SVOs, which are not yet investigated in people with psychosis) required for social mindfulness are impaired in people with psychosis with both severe negative and positive symptoms. However, whether this translates into deficits into SoMi, which measures actual behaviour in dyadic interactions, is still unknown. Until this moment this task has only been used in the healthy population, but not in patients with psychotic disorders. How are people with negative and positive symptoms of psychotic illness performing on the SoMi Paradigm?

**Research goal and hypotheses**

In order to understand the social dysfunctions of patients with psychotic disorders better and to improve treatment programs for them, it is important to know which (groups of) symptoms are related to the social dysfunctions. But which symptoms of psychotic illness are associated with the social problems patients encounter? To have a closer look at one aspect of the social problems of people with psychotic illness the degree of minding the concerns of others was measured by the SoMi Paradigm in relation to the severity of the negative symptoms subscale measured with the Positive and Negative Syndrome Scale (PANSS). The relations between choices in the SoMi Paradigm and the other subscales of the PANSS (severity of positive and disorganization symptoms, excitement, emotional distress and the total score) were also exploratory investigated for the completeness of the study. The relations between the SVOs and the severity of symptoms of psychotic illness have never been reported before, but a prosocial SVO is seen as one of the requirements for social mindfulness (Van Doesum et al., 2013). For this reason the relations between SVOs and the severity of negative symptoms were investigated. The other subscales of the PANSS were also exploratory investigated for the completeness of the study.
The literature about the requirements for social mindfulness showed that the required will (empathic concern) for social mindfulness is found to be associated with negative symptoms. The required skills (ToM and perspective taking) for social mindfulness are found to be associated with both negative and positive symptoms. However, even if patients have the capacity to make socially mindful choices, due to negative symptoms deficits in motivation, persistence and goal-directed behaviour are expected to be related to social dysfunctions (Couture, Granholm & Fish, 2011). Van Doesum et al. (2013) also concluded that skill alone is not enough, before people are willing to behave socially mindful they need to be motivated to be mindful of others. It was expected that the severity of negative symptoms is associated with more socially unmindful choices, because patients with severe negative symptoms might not have the will (motivation) for acting socially mindful. They might not be motivated to act in a prosocial way towards strangers (related to negative symptoms). If they are willing to act socially mindful they might not understand how they can be socially mindful, because patients with severe negative symptoms show deficits in the ability to apply their understanding of mental states of others (Abu-Akel, 2003) or just might not take account of the intentions of others (Frith, 2004), which might influence their choice in the SoMi paradigm in a socially unmindful way.

Disorders of the schizophrenia spectrum are associated with impairments in social functioning (American Psychiatric Association, 2013). Patients with severe negative symptoms, like social withdrawal and asociality, might be less interested in the outcomes of others. This association leads to the second expectation that patients with a proself SVO have more severe negative symptoms, compared to patients with a prosocial SVO.

Methods

Sample

For this correlational and cross-sectional, observational study patients were recruited from the department ‘Early Psychosis’, AMC, UvA Amsterdam, and from the ‘Early Intervention Psychosis’ (VIP), AMC, Amsterdam, with agreement to collaboration from the head of the department. After giving study presentations to patients and therapists, patients were asked if they were willing to participate. Patients themselves signed up for participation. This study was approved by the medical-ethics committee of the VU medical centre. The participants read the information about the study and gave written informed consent. A parents’ consent was obtained in addition for patients under 18. For participating the patients received 25 €.
Patients with a first-episode psychosis or relapse (according to the Research Diagnostic Criteria) were included for this study. To be included the participants had to be between 16-21 years old, with good command of the Dutch language. Only patients with atypical antipsychotics were included, because of the influence on the dopaminergic reward system, which is less in atypical antipsychotics compared to typical antipsychotics. Participants with intellectual impairment (IQ < 80) or comorbid autism spectrum disorder were excluded from the study. Another exclusion criterion was use of drugs or alcohol 48 hours prior to participation. Because this study is part of a larger study including fMRI, participants were also excluded if they had any contraindications to fMRI (claustrophobia or irremovable metal in their body).

For this study 27 adolescent patients with a first-episode psychosis or relapse were investigated. The characteristics of the participants are shown in Table 1.

Table 1. Sample characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender male</td>
<td>19</td>
<td>70.4</td>
</tr>
<tr>
<td>Mean age in years (SD)</td>
<td>19.9 (1.65)</td>
<td></td>
</tr>
<tr>
<td>Dutch ethnicity *</td>
<td>9</td>
<td>36</td>
</tr>
<tr>
<td>Education level **</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VMBO</td>
<td>3</td>
<td>11.5</td>
</tr>
<tr>
<td>MAVO</td>
<td>3</td>
<td>11.5</td>
</tr>
<tr>
<td>HAVO</td>
<td>2</td>
<td>7.7</td>
</tr>
<tr>
<td>VWO</td>
<td>2</td>
<td>7.7</td>
</tr>
<tr>
<td>MBO</td>
<td>11</td>
<td>42.3</td>
</tr>
<tr>
<td>HBO</td>
<td>3</td>
<td>11.5</td>
</tr>
<tr>
<td>UNIVERSITY</td>
<td>2</td>
<td>7.7</td>
</tr>
</tbody>
</table>

Note. N = 27. * Ethnicity of two participants is unknown. ** Education level of one participant is unknown. VMBO = Voorbereidend Middelbaar Beroeps Onderwijs; MAVO = Middelbaar Algemeen Voortgezet Onderwijs; HAVO = Hoger Algemeen Voortgezet Onderwijs; VWO = Voorbereidend Wetenschappelijk Onderwijs; MBO = Middelbaar Beroeps Onderwijs; HBO = Hoger Beroeps Onderwijs.

Measures

PANSS

The severity of the symptoms of the participants over the past two weeks was measured with the Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein & Opler, 1987). It is a thirty-item structured interview, where the symptoms are categorized in three subscales: the positive (delusions, hallucinations, disorganized thinking), negative (deficits in cognitive, affective and social functions) and general symptoms. The severity of the symptoms is scored in seven levels of psychopathology: 1 = absent, 7 = extreme. For this study a five-factor
model for the items of the PANSS was used, because it reflects the clinical complex reality of schizophrenia better than the original three-factor model (Van der Gaag et al., 2006). Table 2 shows how the subscales of the two different factor models are represented by the symptom items.

Table 2. PANSS three- and five-factor model scorings formulas and potential ranges

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Three-factor model scorings formulas (Kay et al., 1987)</th>
<th>Range (potential)</th>
<th>Five-factor model scorings formulas (Van der Gaag et al., 2006)</th>
<th>Range (potential)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative symptoms =</td>
<td>N1 + N2 + N3 + N4 + N5 + N6 + N7</td>
<td>7 to 49</td>
<td>N6 + N1 + N2 + N4 + G7 + N3 + G16 + G8 + G13 – P2</td>
<td>2 to 62</td>
</tr>
<tr>
<td>Positive symptoms =</td>
<td>P1 + P2 + P3 + P4 + P5 + P6 + P7</td>
<td>7 to 49</td>
<td>P1 + P3 + G9 + P6 + P5 + G1 + G12 + G16 – N5</td>
<td>1 to 55</td>
</tr>
<tr>
<td>General psychopathology =</td>
<td>G1 + G2 + G3 + G4 + G5 + G6 + G7 + G8 + G9 + G10 + G11 + G12 + G13 + G14 + G15 + G16</td>
<td>16 to 112</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Disorganization symptoms =</td>
<td>-</td>
<td>-</td>
<td>N7 + G11 + G10 + P2 + N5 + G5 + G12 + G13 + G15 + G9</td>
<td>10 to 70</td>
</tr>
<tr>
<td>Excitement =</td>
<td>-</td>
<td>-</td>
<td>G14 + P4 + P7 + G8 + P5 + N3 + G4 + G16</td>
<td>8 to 56</td>
</tr>
<tr>
<td>Emotional distress =</td>
<td>-</td>
<td>-</td>
<td>G2 + G6 + G3 + G4 + G6 + P6 + G1 + G15 + G16</td>
<td>8 to 56</td>
</tr>
<tr>
<td>PANSS total score =</td>
<td>N1 + N2 + N3 + N4 + N5 + N6 + N7 + P1 + P2 + P3 + P4 + P5 + P6 + P7 + G1 + G2 + G3 + G4 + G5 + G6 + G7 + G8 + G9 + G10 + G11 + G12 + G13 + G14 + G15 + G16</td>
<td>30 to 210</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. PANSS = Positive and Negative Syndrome Scale; N1 = blunted affect; N2 = emotional withdrawal; N3 = poor rapport; N4 = passive-apathetic social withdrawal; N5 = difficulty in abstract thinking; N6 = lack of spontaneity and flow of conversation; N7 = stereotyped thinking; P1 = delusions; P2 = conceptual disorganization; P3 = hallucinatory behaviour; P4 = excitement; P5 = grandiosity; P6 = suspiciousness; P7 = hostility; G1 = somatic concern; G2 = anxiety; G3 = guilt feelings; G4 = tension; G5 = mannerisms and posturing; G6 = depression; G7 = motor retardation; G8 = uncooperativeness; G9 = unusual thought content; G10 = disorientation; G11 = poor attention; G12 = lack of judgment and insight; G13 = disturbance of volition; G14 = poor impulse control; G15 = preoccupation; G16 = active social avoidance.
The SoMi Paradigm was used to investigate social interactions of people with psychotic illness with strangers. The SoMi Paradigm is introduced by Van Doesum et al. (2013) and inspired by the pen-choice paradigm (Hashimoto, Li & Yamagishi, 2011; Kim & Markus, 1999; Yamagishi, Hashimoto & Schug, 2008). The SoMi Paradigm is a computer task where participants have to make (social) decisions, while keeping in mind that they are playing together with another person in a dyadic interaction. In this study an adapted version of the SoMi Paradigm of Van Doesum et al. (2013) was used, the modifications were necessary for other studies which investigated the same sample using the SoMi Paradigm in the functional magnetic resonance imaging (fMRI) scanner. The task consisted of 60 trials, each during five seconds. In every trial participants needed to choose one out of four objects (see Figure 1). These objects were identical, except for a small detail (e.g. boiled eggs and fried eggs). In the 24 experimental trials there was a 3-1 ratio where the first player’s choice could influence the options for the second player if he chose the single item. In the 24 control trials, where the items were presented in a 2-2 ratio, the choice of the first player did not influence the choice options of the second player. Because this study is part of a larger study, participants played this task while they were in an fMRI scan. For this fMRI scan it was necessary to include 12 empty trials. The participants were told to imagine that they both got to take home one of the objects and once chosen, an object would no longer be available to the other. Participants were always the first person to choose. A socially mindful score was when someone did not take the unique object, but the object of which there were three, so the other player would still have a choice. An unmindful score was when someone did take the unique object and left the other player with no choice options. The total amount of socially unmindful choices was used for the analyses. Because the SoMi is a new task, it is not extensively tested on reliability and validity, but Van Doesum et al. (2013) suggested the early validation of social mindfulness.
Social Value Orientation

The SVO of the participants was tested with the computerized 9-item SVO questionnaire (Van Lange et al., 1999). It is a measure with nine triple dominance items with choices between the self and an unknown other. In each round there are three options: the prosocial choice, where the outcome of both the self and the other is equal; a competitive choice that has the largest difference between points for the self and the other; an individualistic choice, where the outcome of the self has the largest outcome of all options, regardless of the points of the other (see Figure 2). The participant is considered prosocial, individualistic or competitive when he has six or more responses, in that specific category.

When someone does not have at least six responses of one type, he cannot be categorized as one of the three types and is excluded from the analyses. Individualist and competitors were combined into a single category of proself orientation (Van Doesum et al., 2013) because for this study it is important to know whether the participants are social (other) - or self-oriented.
Data analysis

The two hypotheses were tested two-tailed with IBM SPSS Statistics 22. A significance level of $\alpha \leq .05$ was used and a trend was considered when $0.05 < p < .1$. All data were non-parametrically tested, because of the small sample size. Spearman’s rank correlation was used to test whether the sum score of the negative symptoms subscale of the PANSS was associated with the number of the socially unmindful choices of the SoMi Paradigm. Furthermore Mann-Whitney U was used to test whether the sum score of the negative symptoms subscale of the PANSS (dependent variable) was different for the two SVO types: prosel and prosocial (grouping variable). The other subscales of the PANSS (positive and disorganization symptoms, excitement, emotional distress and the total score) were, like the negative symptoms subscale, also analyzed.
Results

Relation between negative symptoms and SoMi Paradigm

Table 3 shows the main findings of the analysis of the relation between the PANSS (negative) symptoms subscales and the socially unmindful choices in the SoMi Paradigm.

Table 3. Medians (inter quartile ranges) of the symptoms of the PANSS, including the correlations with socially unmindful choices and p-values

<table>
<thead>
<tr>
<th>PANSS subscales</th>
<th>Median (IQR)</th>
<th>Spearman’s Rho of the association between socially unmindful choices and PANSS subscales</th>
<th>N = 27</th>
<th>N = 23</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative symptoms</td>
<td>25 (12)</td>
<td>-.18</td>
<td>.425</td>
<td>.425</td>
<td></td>
</tr>
<tr>
<td>Positive symptoms</td>
<td>19 (7)</td>
<td>.24</td>
<td>.280</td>
<td>.280</td>
<td></td>
</tr>
<tr>
<td>Disorganization symptoms</td>
<td>16 (8)</td>
<td>.41</td>
<td>.052</td>
<td>.052</td>
<td></td>
</tr>
<tr>
<td>Excitement</td>
<td>14 (4)</td>
<td>.30</td>
<td>.168</td>
<td>.168</td>
<td></td>
</tr>
<tr>
<td>Emotional distress</td>
<td>16 (6)</td>
<td>.23</td>
<td>.290</td>
<td>.290</td>
<td></td>
</tr>
<tr>
<td>PANSS total score</td>
<td>56 (17)</td>
<td>.13</td>
<td>.546</td>
<td>.546</td>
<td></td>
</tr>
</tbody>
</table>

Note. IQR = Inter Quartile Range; N = number of participants; PANSS = Positive and Negative Syndrome Scale.

SoMi data of 23 participants were analyzed, because SoMi data of four participants are missing. One of these four participants did not accomplish the SoMi Paradigm, because the testing procedure took too long for this participant. The data of the other three participants were unusable, because these participants did not follow the SoMi Paradigm instructions properly.

The participants made, out of the 24 trials, on average 11.3 socially unmindful choices (47.1%; SD =3.9; 1 participant left 1 choice unanswered and 1 participant left 2 choices unanswered). No significant correlation was found between the outcomes of the SoMi task and the severity of the negative symptoms subscale of the PANSS ($p = .425; \rho(21) = -.18$; see Table 2 and Figure 3). No correlations were found for the other subscales.
Although there was no significant correlation between the outcomes of the SoMi task and negative symptoms subscale of the PANSS nor for the other subscales of the PANSS, there was a trend for the relation between the disorganization symptoms subscale of the PANSS and socially unmindful choices ($p = .052; \rho(21) = .41$; see Table 2 and Figure 4).
Relation between SVO groups and negative symptoms

Measured with the SVO, ten participants were defined as proself, 16 participants as prosocial and one participant was indefinable (excluded from this analysis). The mean ranks of the negative symptoms subscale did not differ significantly between the proself group and the prosocial group ($p = .397$; Mann-Whitney $U(24) = 63.5$; see Table 4). Although the two groups did not differ significantly, the prosocials did seem to show less severe symptoms in every subscale (negative, positive and disorganization symptoms, excitement and emotional distress) of the PANSS than the proselfs.
Table 4. Mean Ranks of the severity of the symptoms of the PANSS for the two SVO groups, including the Mann-Whitney U and the p-values of the differences between the two groups

<table>
<thead>
<tr>
<th>PANSS subscales</th>
<th>Prosocial SVO</th>
<th>Proself SVO</th>
<th>Mann-Whitney U of the difference in symptom severity between the prosocials and the proselfs</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative symptoms subscale</td>
<td>12.5</td>
<td>15.2</td>
<td>63.5</td>
<td>.397</td>
</tr>
<tr>
<td>Positive symptoms subscale</td>
<td>11.9</td>
<td>16.1</td>
<td>54.5</td>
<td>.185</td>
</tr>
<tr>
<td>Disorganization symptoms subscale</td>
<td>12.3</td>
<td>15.5</td>
<td>60.5</td>
<td>.315</td>
</tr>
<tr>
<td>Excitement subscale</td>
<td>12.9</td>
<td>14.5</td>
<td>70.5</td>
<td>.629</td>
</tr>
<tr>
<td>Emotional distress subscale</td>
<td>12.2</td>
<td>15.7</td>
<td>58.5</td>
<td>.264</td>
</tr>
<tr>
<td>PANSS total score</td>
<td>12.3</td>
<td>15.5</td>
<td>60.0</td>
<td>.304</td>
</tr>
</tbody>
</table>

Note. N = number of participants; PANSS = Positive And Negative Syndrome Scale; SVO = Social Value Orientation.

Discussion

The goal of the present study was to better understand the relationship between the negative symptoms of psychotic illness and social problems which patients might encounter: socially unmindful decision making and proself value orientation. We found that the severity of negative symptoms was not associated with more socially unmindful choices. We also found that patients with a proself SVO did not have more severe negative symptoms, compared to patients with a prosocial SVO.

Relation between negative symptoms and SoMi Paradigm

There was no significant positive correlation between the severity of negative symptoms and socially unmindful choices. Against the expectation, the relation seemed to be negative and can be considered as weak. However, the proportion of the socially mindful choices suggests that patients might be slightly less socially mindful than the general population. The proportion of socially mindful decisions made by the patients (52.5%) seems to be lower than the proportion of the socially mindful decisions of the general population (60%; Van Lange & Van Doesum, 2015). This ratio should be further investigated and tested with a bigger sample of patients and a non-psychotic control group, in order to analyze whether patients with psychotic illness indeed make less socially mindful decisions or not.

The hypothesis was based on results of earlier described studies which were conducted with questionnaires, but not with interactive paradigms like SoMi, which measures actual behaviour instead of theoretical behaviour. This different form of measurement might be a
reason for the difference between the results of the current study and the earlier described literature. Fett (2012) also found that ‘online’ and ‘offline’ measures seem to capture different aspects of the social cognitive mechanisms associated with psychotic psychopathology. The absence of a correlation between negative symptoms and social mindfulness is, however, in line with other studies which also did not show a significant relationship between negative symptoms and deficits in ToM (Mancuso, Horan, Kern & Green, 2011; Penn, Sanna & Roberts, 2008), perspective taking (required skills for social mindfulness; Achim, Ouellet, Roy & Jackson, 2011) and empathic concern (required will for social mindfulness; Achim, Ouellet, Roy & Jackson, 2011).

There seems to be a marginally significant, positive correlation with medium effect between socially unmindful choices and the disorganization symptoms subscale of the PANSS. This result is in line with earlier studies which investigated the relation between ToM and disorganization symptoms (Sarfati & Hardy-Baylé, 1999; Sarfati, Hardy-Baylé, Besche & Wildöcher, 1997; Sarfati, Hardy-Baylé, Brunet & Wildöcher, 1999; Sprong, Schothorst, Vos, Hox & Van Engeland, 2007; Urbach, Brunet-Gouet, Bazin, Hardy-Baylé & Passerieux, 2013). Disorganization is also found to be predictive of difficulties in personal and social performance in relationships (and of the other subscales of the Personal and Social Performance Scale; Norlelawati et al., 2015). This result of the current study together with the literature suggests that (disorganized) cognition might play a role in patients’ social (dys)functioning, which should be further investigated.

Relation between SVO groups and negative symptoms

The severity of negative symptoms was unexpectedly, not significantly different for the proselves and the prosocials. Although the difference was not significant, the distribution was in the expected direction: patients with an individualistic SVO did seem to have slightly more severe (negative) symptoms, compared to patients with a prosocial SVO. The ratio of proselves and prosocials of the patients was in line with previous research in the general population (Van Lange et al., 1997). This result suggests that patients’ distribution over the two SVOs might be comparable with the distribution of the general population. This possibly normal distribution over SVOs together with no significant difference between SVO groups in negative symptoms and the other the subscales of the PANSS might suggest that symptoms of psychotic illness are not related to differences between the SVOs prosocial and proself. It should be further investigated in future studies whether there is indeed no relation between symptom severity and SVOs. This should be investigated with a control group to compare patients’ and non-psychotic controls’ distributions over the SVOs. Prosocials of this current
study showed less severe symptoms overall. An appropriate sample size of patients with more severe symptoms should also be used. This might show a significant difference earlier between the SVO groups.

**Critical comments, strengths and recommendations**

The unexpected weak, negative relation between the severity of negative symptoms and socially unmindful choices and no significant difference between negative symptoms severity of SVOs proself and prosocial could suggest that there are no relations between negative symptoms and these social functions. These results might suggest that treatment programs do not have to focus on social mindfulness and SVOs in order to improve social functioning and negative symptoms. However, these relations should be further analyzed because this study has some implications. Firstly, because of the small sample size the results should be interpreted with caution. Furthermore, sample characterises may have limited our ability to detect significant relations: 1) the symptom severity in this sample can be considered as low, according to the norms and percentile ranks for the PANSS (Kay, 1991; 2) psychotic illnesses are heterogeneous illnesses, which also makes it difficult to see relations with symptoms (Harrington Siegert, & McClure, 2005; 3) many participants are outpatients who receive(d) treatment, which makes it more difficult to show the pure relation between symptoms and socially unmindful decision making and SVO; 4) the sample is a relatively young sample, and contains patients with a first episode of psychosis, while the expected relations might be more visible in older patients with a longer illness duration or chronic schizophrenia (Fretland et al., 2015; Pousa et al., 2008).

Although these sample characterist ics may have limited our ability to detect significant relations on the one hand, on the other hand they give insight in how this relatively low symptom severity of young (treated) patients relates to social decision making and SVOs. In the future, these results can be compared to results of studies with patients with more chronic and severe symptoms. The results of this study can therefore also be valuable to gain more insight in the ‘state or trait debate’ about impaired social functioning of patients with psychotic illness.

What makes this study interesting, is that social mindfulness itself is not investigated before in psychotic illness, because it is a relatively new concept. This is a strength of this study, but it makes it also difficult to make theory based hypotheses. The hypothesis about social mindfulness is therefore based on what is known about the relationship between the required skill and will for social mindfulness and symptoms of psychotic illness. The required skill (ToM and perspective taking) and will (empathic concern) except for the SVOs
(component of the will), are not directly measured in this study. It is therefore not possible to compare the relations described in the introduction between the required social cognitive functions and negative symptoms of psychotic illness and their relations with patients’ decisions in the SoMi Paradigm. In order to gain more insight in these relations, future studies could further investigate whether social dysfunctions of patients with psychotic illness could be found with the SoMi Paradigm, with a more appropriate sample size. They should also investigate whether the expected relation is due to social cognitive problems or social motivation, using ToM or mentalising tasks and measures for social motivation.

In this study the SoMi paradigm was played with anonymous others, in future research it might be interesting to see how patients score when they play with others they know better or even with important others they love, like friends and family, instead of with strangers. It is already shown that in the general population social mindfulness varies with the nature of interpersonal relationships (Van Doesum et al., 2014). Interactions with important others are even more interesting for social quality of life than interactions with strangers (Demir & Özdemir, 2010; Denier & Seligman, 2002).

Inconsistently results of the earlier literature about the relations between negative, positive, and disorganization symptoms with social functioning, including this study, indicate that it is difficult to investigate the social problems related to psychotic illness, which can be considered as a heterogeneous illness. Future research is at this moment still needed to better understand the relation between psychotic disorders and the social problems patients might encounter.

**Conclusion**

The current study found no significant relations between socially unmindful choices and the severity of negative symptoms. Prosocial oriented patients and proself oriented patients did not seem to differ significantly in severity of negative symptoms. The other subscales of the PANSS five factor model (positive and disorganization symptoms, excitement and emotional distress) were also, like the negative symptoms subscale, exploratory analyzed in relation to socially unmindful choices and SVOs, but no significant relations were found in this study. However, there was a trend-level association between disorganization symptoms and socially unmindful choices. Future studies with larger sample sizes are recommended.
References


