



## Deficits in anticipatory but not consummatory pleasure in people with recent-onset schizophrenia spectrum disorders



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### ABSTRACT

The majority of studies examining self-reported anticipatory and consummatory pleasure in schizophrenia, as measured on the Temporal Experience of Pleasure Scale (TEPS), have been conducted on chronically ill people with the disorder. In this study, people with a recent-onset schizophrenia spectrum diagnosis (first psychotic episode within one year of study participation) ( $n = 88$ ) and people without a schizophrenia spectrum diagnosis ( $n = 66$ ) were administered the TEPS. People with a schizophrenia spectrum diagnosis reported significantly lower scores of anticipatory, but not consummatory, pleasure on the TEPS compared to the control group. TEPS anticipatory pleasure scores were also significantly, negatively correlated with negative symptoms, but neither TEPS anticipatory nor consummatory pleasure scores were significantly correlated with functioning measures. Our results replicate previous findings with chronically ill people with schizophrenia on the TEPS.

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### 1. Introduction

Recent evidence indicates that people with schizophrenia or schizoaffective disorder experience deficits in anticipatory pleasure, or pleasure related to future activities, but not in consummatory pleasure, or pleasure experienced in-the-moment (for a review see Kring and Elis, 2013). The Temporal Experience of Pleasure Scale (TEPS) is a self-report measure of the general propensity to experience anticipatory and consummatory pleasure (Gard et al., 2006). Studies in the U.S., China, Switzerland, and France have found that people with schizophrenia or schizoaffective disorder reported lower anticipatory pleasure but comparable consummatory pleasure on the TEPS compared to healthy controls (Gard et al., 2007; Favrod et al., 2009; Loas et al., 2009; Chan et al., 2010; but see Strauss et al., 2011 for different results). Prior studies have also found that TEPS anticipatory and consummatory pleasure scores are positively correlated with functional outcome (Gard et al., 2007; Chan et al., 2010; Buck and Lysaker, 2013) and negatively correlated with negative symptoms (Gard et al., 2007; Favrod et al., 2009; Loas et al., 2009; Chan et al., 2010). TEPS anticipatory, but not consummatory, pleasure is negatively correlated with subclinical negative symptoms (Engel et al., 2013) and is lower in people who score higher

on social anhedonia measures compared to those who do not (Xie et al., 2014).

Studies that utilize the TEPS have thus far almost exclusively included chronically ill people with schizophrenia. However, studies using other self-report measures of anhedonia, such as the Chapman scales of physical and social anhedonia, have found that people early in the course of schizophrenia report more physical anhedonia than the controls (Horan et al., 2008) and people experiencing their first lifetime episode of psychosis report more social anhedonia compared to the controls (Katsanis et al., 1990). To date, two studies have administered the TEPS to people early in the course of a schizophrenia spectrum disorder (SSD). Cassidy et al. (2012) found no differences in TEPS anticipatory pleasure between people with and without a psychotic disorder. However, most participants in the study had used cannabis throughout the lifetime, thus making conclusions about the contributions of psychosis versus cannabis use on TEPS scores difficult to disentangle. Schlosser et al. (2014) found that people with recent-onset (within the last five years) schizophrenia reported less anticipatory than consummatory pleasure on the TEPS but did not differ on either scale compared to a younger, healthy control group. However, people at clinical high risk for schizophrenia reported less anticipatory pleasure than a demographically matched healthy control group.

In the current study, we examined people with a recent-onset SSD to determine if and when deficits in reported anticipatory pleasure emerge in the course of the illness. We defined “recent-onset” in our study as experiencing a first episode of psychosis within one year of study

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participation. Based on previous studies with more chronically ill samples, we hypothesized that people with an SSD would show deficits in anticipatory pleasure but not in consummatory pleasure compared to people without an SSD. We also included measures of symptom severity, occupational functioning, and social functioning in order to examine the correlates of anticipatory pleasure.

## 2. Method

### 2.1. Participants

People with schizophrenia ( $n = 71$ ), schizophreniform disorder ( $n = 11$ ), or schizoaffective disorder ( $n = 13$ ) who had their first episode of psychosis within one year of study participation were invited to participate (see Table 1 for demographic information). All SSD participants were clinically stable, defined as no inpatient hospitalization within three months of study participation. People who had never experienced a psychotic episode and did not meet the criteria for a current Axis I (DSM-IV-TR) diagnosis ( $n = 66$ ) were included as the control group. All but eight participants with an SSD were taking at least one psychiatric medication: 72 were taking a second generation antipsychotic medication, four were taking both first and second generation antipsychotic medications, and four were taking non-antipsychotic psychiatric medication(s). Fifty-five participants were taking multiple psychiatric medications at time of testing. The participants were excluded from analysis ( $n = 7$  people with an SSD) if they met criteria for current alcohol/substance abuse, a history of alcohol/substance dependence, or history of neurological disorder. In sum, 88 participants with an SSD and 66 control participants were included in the analyses.

### 2.2. Procedure

Prior to study participation, the participants completed informed verbal and written consent.

The participants were administered the Structured Clinical Interview for DSM-IV Patient Version (SCID-P; First et al., 1994) or the SCID-non-patient version (SCID-NP) to confirm diagnoses. People with an SSD were also administered the Brief Psychiatric Rating Scale

(BPRS; Overall and Gorham, 1962) and the Scale for the Assessment of Negative Symptoms (SANS; Andreasen, 1982) to assess current symptoms; the Strauss Carpenter Outcome Scale (Strauss and Carpenter, 1972) to assess social functioning (item 2) and work functioning (item 3); and the Global Assessment of Functioning (Hall, 1995).

All participants completed the TEPS (Gard et al., 2006), which is comprised of ten items assessing trait dispositions of anticipatory pleasure experiences and eight items assessing trait dispositions of consummatory pleasure experiences. An example of an anticipatory pleasure item is, "I get so excited the night before a major holiday I can hardly sleep." An example of a consummatory pleasure item is, "The smell of freshly cut grass is enjoyable to me." The participants rated each on a scale from one (very false for me) to six (very true for me) how true each item was for them "in general."

## 3. Results

### 3.1. Demographics

As shown in Table 1, the SSD group significantly differed in age and education compared to the control group. However, age and education were not significantly correlated with TEPS anticipatory or consummatory pleasure scores either within or across groups ( $p > 0.05$ ). There were no differences in the proportion of white participants between the two groups ( $\chi^2(2, N = 154) = 0.88, p = 0.35$ ). However, the groups differed in proportions of ethnic minority participants (all  $\chi^2$  tests significant,  $p < .05$ ). There were significantly more men than women in the SSD group ( $\chi^2(2, N = 88) = 26.18, p < 0.001$ ), but not in the control group ( $\chi^2(2, N = 66) = 0.24, p = 0.62$ ).

### 3.2. TEPS anticipatory and consummatory scores

As shown in Table 1, independent samples  $t$  tests revealed that the SSD group had a significantly lower TEPS anticipatory pleasure score compared to the control group,  $t(152) = 2.06, p = 0.04$ . However, the SSD group did not differ in the TEPS consummatory score compared to the control group,  $t(152) = 0.66, p = 0.49$ .

Given that there were fewer women in the SSD group compared to the control group, we examined sex differences within each group. Independent samples  $t$  tests revealed no differences between men and women on either TEPS anticipatory or consummatory pleasure scores ( $p > 0.05$ ) in either the SSD or control group, with one nonsignificant exception: female controls tended to report experiencing more consummatory pleasure ( $M = 4.54, SD = 0.69$ ) than male controls ( $M = 4.23, SD = 0.68$ ),  $t(64) = 1.81, p = 0.08$ . There were no significant ethnicity differences in either TEPS score.

### 3.3. Symptom and functioning measures

TEPS anticipatory and consummatory pleasure scores were significantly, positively correlated with one another,  $r = 0.65, p < 0.001$ . Correlations between TEPS anticipatory and consummatory pleasure scores with symptoms and functioning measures are presented in Table 2. TEPS anticipatory pleasure was significantly, negatively correlated with BPRS negative symptoms and the SANS blunted affect subscale. TEPS consummatory pleasure was significantly, negatively correlated with BPRS negative symptoms, BPRS depression, SANS total, and SANS alogia. Correlations between TEPS anticipatory and consummatory pleasure scores with the functioning measures were nonsignificant.

## 4. Discussion

In the current study, we assessed whether deficits in the propensity to experience anticipatory pleasure are evident early in the course of schizophrenia spectrum disorders. We found that people in the early course of an SSD reported lower dispositional anticipatory pleasure

**Table 1**  
Demographics, symptoms, medications and TEPS scores.

	SSD ( $n = 88$ )	Controls ( $n = 66$ )	$p$ value
% male	77%	47%	$p < 0.001$
Age (range)	20.99 (3.55) (16–33)	22.54 (2.96) (16–32)	$p = 0.005$
Education (years)	12.59 (1.70)	14.27 (2.60)	$p < 0.001$
TEPS anticipatory	4.24 (0.83)	4.48 (0.57)	$p = 0.04$
TEPS consummatory	4.30 (0.91)	4.39 (0.70)	$p = 0.49$
% White	59%	52%	$p = 0.35$
% African-American/Black	19%	0%	$p < 0.001$
% Hispanic	2%	11%	$p = 0.03$
% other/multiple ethnicities	19%	38%	$p = 0.01$
Second generation antipsychotic	81%		
First and second generation antipsychotics	5%		
Other psychiatric medication(s)	5%		
No psychiatric medication	9%		
BPRS positive	2.32 (0.80)		
BPRS negative	2.04 (0.85)		
BPRS depression	1.84 (0.83)		
SANS	1.36 (0.64)		
Social functioning	2.15 (1.51)		
Work functioning	1.72 (1.26)		
Global functioning	45.05 (8.23)		

Notes. SSD = schizophrenia spectrum diagnosis; TEPS = Temporal Experience of Pleasure Scale; BPRS = Brief Psychiatric Rating Scale; SANS = Scale for the Assessment of Negative Symptoms.

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