



Familiarity preference in schizophrenia is associated with ambivalent attitudes towards others



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ABSTRACT

Objective: Preferences or attitudes towards others are often shaped through implicit memory processes, and they serve a critical function in our social lives. Preferences driven by implicit familiarity (mere exposure effect) are particularly important when making judgments about others and forming attitudes of liking and social interaction. In schizophrenia, little is known about the effect of familiarity preference on judgments and attitudes toward others.

Methods: Subjects included 79 patients with a diagnosis of schizophrenia or schizoaffective disorder and 61 non-patient control subjects. Familiarity preference and trait judgments about others were assessed using a computer task in which neutral faces were rated on positive and negative character traits. “Attractiveness” was rated twice at the beginning and at the end, to measure familiarity preference. Clinical ratings were also obtained.

Results: Patients and controls both demonstrated a positive familiarity preference effect. However, the groups differed on the predictive value of familiarity preference for trait judgments. In both groups, the presence of a familiarity preference effect predicted greater positive trait judgments. In patients only, the presence of a familiarity preference effect also predicted, although the correlation was less significant, greater negative trait judgments.

Conclusion: The findings are consistent with a preserved familiarity preference effect in individuals with schizophrenia and that the effect is primarily associated with changes in positive attitudes. However, in individuals with schizophrenia this effect is also linked with inferences about negative traits, resulting in ambivalence towards others. This finding may contribute to the impaired social functioning of people with schizophrenia.

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1. Introduction

Preferences (or attitudes) are shaped through experiences, and serve a critical function to social lives and have a pervasive impact on human behavior (Lieberman, 2007; Stanley et al., 2008; Hofmann et al., 2010). Through their influence on attention, memory, and judgments (Fox, 2009), preferences both support and define our social identities (Lieberman, 2007). In humans, preferences are often formed through controlled or conscious processes (Stanley et al., 2008); however, more frequently, they are triggered automatically or implicitly, without conscious awareness or intent (Greenwald and Banaji, 1995; Bargh and Williams, 2006).

An important domain of preferences is familiarity preference (mere exposure effect; Zajonc, 1968). Familiarity preference is the preference or liking induced by repeated exposure to previously novel stimuli. This effect can be elicited even when subjects do not consciously recognize the stimuli to which they had previously been exposed (Bornstein, 1989; Hansen and Wanke, 2009), suggesting that familiarity preferences rely on implicit memory processes. The familiarity preference effect has been demonstrated using various stimuli (see Bornstein, 1989), although faces, in particular, elicit the effect (Park et al., 2010; Liao et al., 2011). Studies show that familiarity preference is associated with higher ratings of positive affect such as attractiveness (Hansen and Wanke, 2009), and people with attractive faces are judged more positively on personality traits of intelligence, sociality, outgoingness, and health (Eagly et al., 1991; Zebrowitz and Montepare, 2008). Attributions of greater positive personal qualities also extend to new faces resembling the previously presented faces (Rhodes et al., 2001). Preferences for familiar faces carry significant social outcomes through guiding adaptive behavior and social interaction (Zebrowitz and Montepare,

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2008), and researchers argue that familiarity preference forms the basis of social attachment (Zajonc, 2001).

However, familiarity preference is not a universal phenomenon. Not everyone shows familiarity preferences and, as Bornstein (1989) reported, these individual differences are poorly understood. Additionally, excessive stimulus repetition can lead to the opposite effect and induce boredom and aversive affect (Bornstein, 1989). Studies have also examined the role of context and found that if the depth of stimulus processing is altered and participants are asked to make a judgment during each stimulus presentation, instead of passively viewing the stimuli, not all stimuli produce a familiarity preference (Park et al., 2010; Liao et al., 2011). Faces, however, elicit familiarity preference even when in-depth processing is required during exposure (Park et al., 2010; Liao et al., 2011). These results reinforce the biological significance of faces and that familiarity preference is an important process in our social lives.

We are aware of one study that specifically examined familiarity preference in schizophrenia. Marie et al. (2001) demonstrated that participants with schizophrenia perform similarly to controls when assessing familiarity preference for both verbal and visual (faces) materials seen earlier relative to new materials. In this study, participants passively viewed stimuli during the exposure phase, and the viewing time was fixed for each presentation. Unfortunately, the generalizability of this study is limited by a small sample size (20 schizophrenia patients) and the presentation of only male and non-colored (black and white) face stimuli. Nevertheless, this null result is consistent with other studies showing that implicit memory is relatively preserved compared to other areas of cognitive functioning in schizophrenia (Marie et al., 2001; Gold et al., 2009), particularly in tasks that involve incidental learning through repeated exposures (Danion et al., 2001; Horan et al., 2008b).

Processing facilitation, when prior exposure to a stimulus facilitates processing of the same or related stimulus on later exposures (Butler et al., 2004), seems to be the cognitive process underlying familiarity preferences. Studies have shown that processing facilitation is accompanied by positive affect (Winkielman and Cacioppo, 2001), without changes in negative affect (Seamon et al., 1998; Winkielman and Cacioppo, 2001). Processing facilitation is commonly tested in priming studies, and research suggests that schizophrenia patients demonstrate similar priming effects as controls on implicit processing tasks (Minzenberg et al., 2002; Del Cul et al., 2006), suggesting preserved processing facilitation. However, it remains unclear how processing facilitation and familiarity preference affect social judgments and attitudes. The identification of preserved cognitive domains has been the subject of recent debate (Gold and Dickinson, 2013; Green et al., 2013), reinforcing the importance of studying familiarity preferences in schizophrenia.

Familiarity preference, however, does not rely on cognitive processes only, but reflects a connection between cognitive and affective processes. Studies have shown that the emotional reactivity of people with schizophrenia is rather intact; they report similar levels of pleasantness as controls when presented with pleasant stimuli (Trémeau, 2006). However, a consistent finding has also been that schizophrenia subjects, compared to controls, often experience positive and negative emotions at the same time when presented with pleasant or unpleasant stimuli (Trémeau et al., 2009; Cohen and Minor, 2010; Ursu et al., 2011); they are emotionally ambivalent. If this ambivalence applies to familiarity preference, individuals with schizophrenia who demonstrate familiarity preference may attribute greater positive and negative personality features to faces. Such ambivalence in the impressions formed from faces could play a role in the social deficits associated with schizophrenia.

The aim of the present study was twofold. First, we examined the presence of implicit familiarity preference in patients with schizophrenia and schizoaffective disorder. We used a different methodology than in Marie et al.'s (2001) study: participants completed an in-depth

processing task during exposure of faces. We hypothesized that patients would show an increase in attractive ratings after exposure of faces, and this increase in attractiveness ratings would not differ between groups. Second we grouped participants according to the presence of a familiarity preference effect, and examined the effect of familiarity preference on social judgments and attitudes. We hypothesized that patients who showed familiarity preference would give similar positive and greater negative personality trait ratings than the control subjects who showed familiarity preference.

2. Methods

2.1. Participants

Subjects included 79 individuals with schizophrenia or schizoaffective disorder and 61 non-patient controls. See Table 1 for complete demographic information. All subjects were English-speaking, ages 18–65, and had capacity to give consent. Subjects with schizophrenia/schizoaffective disorder were inpatients in a research unit at the Nathan S. Kline Institute for Psychiatric Research (NKI) or outpatients at Bellevue Hospital Center, New York. Diagnosis was confirmed using the Structured Clinical Interview for DSM-IV (SCID; First et al., 1998) or the Diagnostic Interview for Genetic Studies (DIGS; Nurnberger et al., 1994). Non-patient controls had no psychiatric history and no psychiatric diagnosis as assessed with the Non-patient version of the SCID or the DIGS. They were community subjects who responded to advertisement and volunteered to participate in research studies conducted at NKI or Bellevue Hospital Center. After complete description of the study, written informed consent was obtained from subjects. The study was approved by the local Institutional Review Boards.

2.2. Computer task for measuring familiarity preferences

Participants completed a computer task (programmed in E-Prime 2.0; Psychology Software Tools, Inc.), in which 30 neutral faces (15 females/15 males from the Karolinska Faces; Lundqvist et al., 1998¹) were rated on 10 character traits: attractive, mean, trustworthy, intelligent, dominant, fun, sociable, aggressive, emotionally stable and weird. Each participant was instructed that they would be presented with different faces and asked to rate each face according to a specific trait. For example, for the trait “intelligent,” participants watched 30 facial stimuli one by one, and were asked to rate each face according to “how intelligent the person seems to be” on a 5-point Likert scale (from “not at all” to “extremely”). Answers were not timed and each stimulus was presented until a rating was made, which always took less than 5 s. Within each trait block, the presentation order of the faces was randomized and kept constant across subjects. The order of trait blocks, however, was held constant and attractiveness was always rated twice: as the first and last conditions. Consequently, participants first rated the attractiveness of 30 novel faces, and rated again the attractiveness of these faces after seeing them nine more times (once for each trait). As recommended (Bornstein, 1989), this order and the number of stimulus exposures were specifically aimed to elicit familiarity preference.

As motivational disposition can influence familiarity preference (Kruglanski et al., 1996), we assessed excitement related to taking the computer task. Prior to task onset, participants were given a brief description of the task and asked how excited they felt about taking the task. After completion, participants were asked how exciting they found the task to be. Excitement was rated on a 5-point Likert scale from “not-at-all” to “extremely.”

¹ Karolinska faces used in the study: Female faces: 03, 04, 05, 09, 10, 16, 17, 18, 21, 23, 25, 26, 28, 31, and 33; Male faces: 37, 40, 42, 43, 46, 52, 53, 56, 57, 63, 64, 66, 67, 68, and 70.

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