Cross-Cultural Aspects of Social Cognitive Abilities in Schizophrenia

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INTRODUCTION

Social cognition is an intensively investigated field of research in healthy humans and in people with psychiatric disorders. Social cognitive abilities are a prerequisite of the individual’s ability to interact in a social environment. They comprise a set of skills related to the recognition of emotions...
and intentions in other subjects and oneself, including the ability to infer one’s own and other people’s mental states, called theory of mind (ToM) or mentalizing (Blakemore et al., 2003), or the interpretation of facial expressions (Comparelli et al., 2013).

Development of social cognitive skills varies in different cultures and throughout life. Some cultures appear to be faster in developing adequate mind reading or empathy skills than others (Liu et al., 2008). Factors that depend on the sociocultural background of a person seem to play a major role, with familial interaction styles and language education forming the most important components. In recent years, the concept of sociocultural factors influencing the neuroplasticity of the brain has been adapted by psychiatric research. Genetic, brain imaging, and comparative psychiatric research approaches were joined to create modern research models of neurodevelopmental disorders. A better insight into pathologic states and functioning has been expected from the identification of sociocultural factors impacting the development of social cognitive functions in healthy individuals. Schizophrenia is a disease where patients of different nations and cultures as well as climatic zones seem to be more alike than the healthy individuals of the respective areas (Pfeiffer, 1967; Pfeiffer and Schoene, 1980). In contrast, it has been hypothesized that schizophrenic symptomatology, which is partly due to an abnormal development of brain circuits that mediate certain functions in the brain (Pearlson, 2000), might also be subject to cultural influences. In schizophrenia, the functional integrity of self-structure, which is necessary for the interpretation of cultural behavior, is compromised. Thus, abnormalities of self/other perception in schizophrenia might form a model for the functioning of culture-based social cognition and vice versa (Fabrega, 1989).

In this chapter, we will review data on physiologic development and cross-cultural differences of social cognition in healthy humans, with ToM and facial emotion recognition as core features of this ability. Moreover, we will summarize important cross-cultural differences of schizophrenic symptomatology. We will also resume recent neuroimaging approaches in cross-cultural social cognitive research. Lastly, we will link the results of recent cross-cultural research to the application of culture-related paradigms in the diagnosis of schizophrenia and the assessment of symptomatology and will give an outlook on future research directions.

**DEVELOPMENTAL ASPECTS OF SOCIAL COGNITION**

For an active engagement in a culture, mentalizing abilities – or the ability to hypothesize about one’s own and others’ intentions and reactions – are necessary (Duffy et al., 2009, p. 358). The development of ToM abilities takes a complicated course and relies on the cultural background of an individual. Specifically with regard to such complex and sophisticated abilities as mentalizing, differences between cultures have repeatedly been found and are most
prominent in children. Only from the age of nine years, children are able to grasp the full range of interactional maneuvers forming part of ToM, including white lies, cheating, sarcasm, and the understanding of meta-expressions (Wellman et al., 2001). After learning the basic rudiments of emotion and self/other distinction, children start to acquire culture-related skills, involving, for instance, cultural practices (Callaghan et al., 2011). Northern American children have been described to develop an early understanding of the fact that two individuals (with desires) might have differing beliefs regarding a situation (Wellman et al., 2006). In contrast, Chinese children seem to understand early in their development that individuals may be knowledgeable or ignorant of facts and situations, irrespective of their beliefs or desires. Authors attributed these time-course differences of early ToM development to educational styles. For example, it is hypothesized that literacy of parents, status of the language, and home education account for observed differential ToM-related language use in Chinese-speaking, as compared with English-speaking, children (Li and Rao, 2000). In the Chinese language, ‘to believe’ can be expressed by a range of different words, resulting in a greater variety of mental state-related vocabulary (Wellman et al., 2006). The use of specific ToM-related language terms might in turn affect mentalizing abilities (Lee et al., 1999; Wellman et al., 2006). Furthermore, Naito and Koyama (2006) found that Japanese children developed false-belief task skills later than Western children, but had a tendency to interpret situations using implicit social information without receiving explicit information. Several authors hypothesize that this tendency of Japanese children may be due to early training in social behavior, specifically to implicitly infer social meanings (also see Hendry, 1986).

Taking perspectives of self and others (Galinsky et al., 2005) and recognition of contexts with regard to (social) relations are important prerequisites for mentalizing abilities. Matsuda and Nisbett (2001) found that Japanese participants made more statements about contextual information and relationships while performing a picture-viewing task than Americans did. Moreover, Kitayama and colleagues (2003) found that North Americans tended to ignore contextual information when making judgments about external objects as compared to an Asian control group. It seems that Asians pay more attention to the general emotional implication of a situation than to details, which appears to be connected to their view of personhood (Shweder et al., 1998). These findings point to the notion that the perception of the self in non-Asian cultures is more self-centered, while Asian cultures are likely to perceive social information in a contextual, interpersonal way. Wellman and colleagues (2001) proposed that equality of performance levels on social cognitive tasks across cultures is ultimately reached in older age. However, other authors found performance differences on social cognitive tasks in adulthood, mostly related to self/other distinction, which will be elaborated on later in this chapter.

Taken together, previous research on cross-cultural social cognition has shown a culture-dependent development of ToM abilities as well as
performance, for example, the use of ToM-related language and the contextual interpretation of social cues.

**CROSS-CULTURAL PSYCHIATRY**

Because ToM development is culture-dependent, it is not unlikely that pathologic states, such as for example schizophrenia, are also partly affected by the individual’s sociocultural background. While the prevalence of schizophrenia across cultures has been shown at a constant rate in studies performed by the World Health Organization (WHO), which included thousands of patients in 17 countries, the course of the disorder was shown to differ (Siegert, 2001). For example, patients with schizophrenia from less developed countries displayed a tendency to recover more quickly and completely from their illness (Sass, 1997). This might be explained by the fact that developing countries have other concepts of familiar inter-dependency, which could pose a protecting factor (Singh et al., 2013). Furthermore, the main characteristics of the disorder remain the same, yet symptom patterns vary according to the culture of an individual.

In the following, we will review findings of culture-specific symptomatology in schizophrenia. In doing so, we will focus on positive symptomatology, investigated by the majority of studies, with only a brief digression to negative and other symptomatology.

**Delusional Symptomatology in Cross-Cultural Studies**

Tateyama and colleagues (1993; 1998) compared the prevalence and contents of delusions of patients with schizophrenia in Japan to patients in Germany and Austria. The number of patients with delusional symptomatology was equal in both groups. Moreover, the number of patients with delusions about world-end scenarios and the quantity of so-called ‘negative’ (e.g., paranoid ideas) and ‘positive’ (e.g., grandiosity) delusions was the same (Tateyama, 1989). However, the quality of these delusions was different. While 20% of the German-speaking sample showed religious delusions, similar delusions could only be found in 6% of the Japanese sample. In addition, while in the German-speaking sample delusional guilt was seen often, it was rare in the Asian sample. A possible explanation is that Asian religions, such as Buddhism, do not imply apocalyptic ideation or death as penalty for, or absolution from, sin (Fujimori, 1981).

In a study by Stompe and colleagues (1999), which compared Austrian and Pakistani individuals with schizophrenia, the most frequently mentioned content of delusions in both countries was persecution. In Austrian patients, though, the frequency of delusions of grandeur, guilt, as well as religious delusions was much higher. Similar results were yielded by Veling and colleagues’ (2011) study among Dutch and ethnic minorities living in the
Netherlands. They found persecutory delusions to be more common among the Dutch. Minsky et al. (2003) found that psychiatric patients from a European-American background had a higher frequency of persecutory delusions, nervous tension, and blunted affect than did Mexican-Americans with the same diagnosis. Persecutory delusions and ideas of one’s life or personality being threatened were more common in a German-speaking sample as compared with a Japanese sample (Tateyama et al., 1998). In contrast, the ideas of shaming someone or being a burden to someone, as well as being worthless formed the most common delusions in Japanese patients. These delusions, while somewhat sketchy, also included the feeling that others spoke badly behind their backs (Tateyama et al., 1993; Tateyama et al., 1998). To interpret these findings, it is important to stress that Asian and other island states, as well as Arabic countries are considered to be collectivistic societies (Triandis, 2001). One’s own individuality is less important than the interests of one’s social groups, for example, the company or the family. Own needs and wishes might be neglected in favor of the social group’s well-being, as the good name of the group or the family is valued more highly. Thus, individuals in collectivistic societies are more susceptible to shameful experiences and the feeling of worthlessness (e.g., by ‘losing face’ or being an unworthy society member). In addition, a lower rate of delusions of being poisoned was described in the Japanese group (Tateyama et al., 1993). Fujimori and colleagues (1987) even found a difference between Japanese, Korean, and Chinese patients and argued that different cultural experience with food and poisoning, for example, dining habits, medical treatment, or war experience, might shape these kinds of delusions. A study of South Korean patients with schizophrenia showed that espionage was a major topic of delusional symptoms, most probably because of their particular political background (Kim et al., 1993; Kim et al., 2001).

Omata (1985) found in his comparison of schizoaffective patients in Japan and Germany that the delusion of being possessed occurred in Japanese schizoaffective patients only. Furukawa and Bourgeois (1984) reported that about 20% of a sample of Japanese patients had delusions of possession. Most often, the patients were under the impression that they were possessed by a nature spirit, a divine and treacherous messenger, or by a ghost of a long-dead ancestor (Fujimori, 1981). Women and inhabitants of southern, rural parts of Japan (e.g., Okinawa) more often displayed these forms of delusions, implying not only cultural but also regional influences on delusions.

Family denial syndrome known in Japanese patients with schizophrenia implies the denial of the family name, of the family origins, and of their relatives (Kimura et al., 1968). While in Western patients with schizophrenia, delusions of high-ranking lineage are quite common, it could be hypothesized that the development of the denial syndrome observed in Japan might be a way of patients coping with a rigid family system and tight social boundaries. A similar phenomenon has been described in Japanese ‘hikikomori’ patients (see Tateno et al., 2012 for a survey). This phenomenon implies that patients
withdraw from society for more than 6 months, not leaving their house during that period. It is hypothesized that this patient group might partly consist of patients with chronic schizophrenia, but also of young people who want to escape from social pressure.

**Hallucinatory Symptomatology in Cross-Cultural Studies**

While most cultural-comparative investigations focus on delusions, there is a small body of evidence of culture-dependency of hallucinations. In a study in a cross-cultural sample, visual as well as tactile hallucinations occurred most frequently in patients from Africa and the Near East (Ndetei and Vadher, 1984). Bauer et al. (2011) investigated patients from Austria, Poland, Lithuania, Georgia, Pakistan, Nigeria, and Ghana on psychotic symptomatology and found a high percentage of visual hallucinations in participants from European countries. However, the highest rates of visual hallucinations were reported in Nigeria and Ghana, while in European and Pakistani patients visual hallucinations were seen less frequently. Barrio et al. (2003) found in a large study on symptom expression on the Positive and Negative Syndrome Scale (PANSS) in schizophrenia spectrum disorder that African-Americans reported higher hallucinatory behavior and suspiciousness scores than European-Americans. Latin-Americans scored higher on the item of somatic concerns than both European-Americans and African-Americans. It seems, though, that the pattern of hallucinations depends on the place where a person is living rather than their original culture, as a study on Pakistani immigrants in the UK showed (Suhail and Cochrane, 2002). This interpretation was supported by Wang and colleagues (1998), who found that migrants hear voices not only in their first language, but also in their second or third languages, depending on the delusional content. Hallucinations and delusions may even vary regionally within the same country, suggesting that cultural effects may not necessarily be delineated by geopolitical boundaries (Gecici et al., 2010). Brekke and Barrio (1997) reported that patients with schizophrenia from minority groups were generally less symptomatic than were nonminority patients.

**Negative and Other Schizophrenic Symptomatology**

In a study on Swedish and US patients with schizophrenia, patients in Sweden lived more independently for longer periods than their US American counterparts due to differences in the cognitive challenges of the cultural context (mediated, for instance, by cultural and social support systems) (Harvey et al., 2009). Catatonic symptoms, flattening of affect, and social withdrawal can be found more frequently in Japanese patients as compared to other countries surveyed by Murphy et al. (1963). One explanation could be that social withdrawal or being in a catatonic state constitutes one way of dealing with unwanted symptomatology without shaming another person. In comparison
to that, patients with states of excitement can be seen more often in Western cultures. Veling and colleagues (2011) found more affective symptoms in Moroccans and Turkish people, who also had higher psychopathology scores and more negative symptoms compared with Dutch residents.

In conclusion, there are cross-cultural differences in schizophrenic symptomatology. Contents of delusions differ in quality. The quality of symptoms such as guilt and religious delusions seem to depend rather strongly on the sociocultural background of a person (Stompe et al., 2003). Nonetheless, data on cross-cultural differences in schizophrenic symptomatology are still sparse.

**CROSS-CULTURAL DIFFERENCES IN THE PERCEPTION OF SOCIAL CUES IN PATIENTS WITH SCHIZOPHRENIA**

While universality of facial emotional expressions (Brandt and Boucher, 1985) and the ability to judge particular emotions have been verified across cultures (Ekman and Friesen, 1971; Ekman et al., 1972), differences in the perception of social cues have been found. Ratings of emotional intensity (Ekman et al., 1972; Matsumoto and Ekman, 1989), for example, vary across different cultures. Cultural variations might relate to sanctions and appraisals of societies to specific emotional expressions (Markham and Wang, 1996) and the influence of language on emotional expressions (Matsumoto, 1992; Russell, 1991). Specific societies, as for example the Japanese, might perceive the open expression of certain emotions as too strong or inappropriate (Aune and Aune, 1996) and also rate displayed emotions more intensely even when displayed subtly (Matsumoto et al., 2000).

While in healthy populations, there is ample research on the perception of social cues with regard to culture, few data are available on cross-cultural differences in the perception of social stimuli in schizophrenia. Lee et al. (2010) were able to show that deficits in emotion recognition abilities in schizophrenia are similar across cultures. However, Brekke and colleagues (2005) found that patients with schizophrenia of American-Caucasian origin were more highly skilled at the perception of emotions compared with samples of African-Americans and Latin-Americans. Habel and colleagues (2000) investigated American, German, and Indian patients with schizophrenia as well as healthy controls on an emotion discrimination and mood induction task using Caucasian emotional faces. While the results indicated that healthy controls performed significantly better than patients with schizophrenia in each of the three groups, it was also shown that in both the Indian patients and control groups performance was significantly lower on facial discrimination than in their American and German counterparts. More recently, Pinkham and colleagues (2008) used stimuli including both Caucasian-American and African-American faces in an emotion recognition task in patients with schizophrenia of Caucasian-American and African-American origin. They demonstrated that patients with schizophrenia were more likely to recognize same-race faces than other-race faces.
RECENT CROSS-CULTURAL RESEARCH ON SOCIAL COGNITION

In recent research on social cognition, neuroimaging methods have been used more frequently to investigate the neurobiologic basis of social-cognitive abilities. As brain regions have distinct but complementary functions, specific brain networks were suggested to mediate social cognitive abilities, as when recognizing others’ intentions (e.g., in ToM; de Lange et al., 2008). In healthy humans, brain networks involving for instance the temporal, medial prefrontal cortex (mPFC), and dorsolateral prefrontal cortex (dlPFC) as well as the amygdala have been identified as parts of a mentalizing brain network (e.g., Castelli et al., 2000; Völlm et al., 2006). Due to cross-cultural differences in the mode and development of social cognitive abilities, it follows that specific brain regions are activated in a culture-specific manner during performance of social cognitive tasks. Research focused on the investigation of Caucasian and Asian groups and revealed differences in brain activation patterns in response to social cues. Comparing Asian to Caucasian cultures, the concept of individualism and collectivism needs to be discussed with regard to the processing of social stimuli. Individualists perceive their selves as stable entities, autonomous from other people and their environment, while collectivists view themselves as dynamic entities, continually defined by their social context and relationships. Thus, different self-concepts have been proposed by which interdependent individuals, as from Asian societies, view and represent themselves differently from Caucasians (Han, 2013). In a behavioral study of Japanese and American participants, Matsuda and Nisbett (2001) presented participants with animated vignettes and the instruction to report the contents. Japanese participants made more statements about contextual information and relationships than Americans did and recognized previously seen objects more accurately when presented in their original rather than in novel settings. Moriguchi and colleagues (2005) found in a functional brain imaging study comparing Japanese to Caucasian participants on a task with fearful faces (Ekman and Friesen, 1976) that Japanese participants activated the right inferior frontal cortex, premotor cortex, and left insula in response to the stimuli, while Caucasians activated the posterior cingulate, supplementary motor cortex, and the amygdala during task performance. Thus, various regions may be playing a crucial role in recognizing the biologic value of visual stimuli such as fearful expressions. Several authors hypothesized that Caucasians respond to fearful faces in a more direct, emotional way, while the Japanese do not attach an emotional valence to the faces. Zhu and colleagues (2012) found differences in resting states in Caucasian and Chinese participants and related those findings to self-structure or self-representation. In a different study on the impact of individualistic and collectivistic selves on brain activation in Asians and Caucasians, its authors showed that during a self-estimation task of general and contextual judgment, Westerners activated the anterior rostral portion of
the mPFC more than Asian controls, which was associated with individualistic traits (Chiao et al., 2009). Another study of the same group (Chiao et al., 2010) demonstrated that biculturals primed with individualistic values had increased activation within the mPFC and posterior cingulate cortex (PCC) during general relative to contextual self-judgments. Biculturals primed with collectivistic values showed increased response within the mPFC and PCC during contextual relative to general self-judgments. Moreover, the degree of cultural priming was positively correlated with the degree of mPFC and PCC activity during culturally congruent self-judgments. Harada and colleagues (2010) showed in a functional magnetic resonance imaging (fMRI) study with bicultural individuals primed with individualism that the dorsal mPFC was activated less during implicit evaluation of father-relevant information, but not self-relevant information, as compared with a control condition. The authors concluded that cultural values shape neural representations during the evaluation of self-relevant information. Furthermore, an advantage of self-recognition over other-recognition has been ascribed to an enhanced self-focused attention of Western subjects (Sui et al., 2009). In an event-related potential (ERP) study, its authors showed that Chinese compared with British participants had larger N2 (component of the ERP that peaks milliseconds post-stimulus, reflecting executive cognitive control functions and emotion processing) amplitudes in response to a friend’s face as compared to their own.

As mentioned above, individualism and collectivism refer to cultural values that influence how people construe their selves and their relation to the world. An fMRI study with Korean and Caucasian-American participants investigated the neural basis of intergroup empathy using scenes of racial in-group and out-group members in emotional pain (Cheon et al., 2011). Koreans reported experiencing greater empathy and elicited stronger activity in the left temporoparietal junction for in-group compared to out-group members. Furthermore, preferential reactivity within this region to the pain of in-group relative to out-group members was associated with greater preference for social hierarchy and in-group biases in empathy (Cheon et al., 2011). An fMRI study of Adams and colleagues (2010) used the ‘reading the mind in the eyes task’ in a sample of Japanese participants who were asked to judge Caucasian stimuli faces regarding the emotional contents compared with Caucasian-American participants. Results showed greater bilateral posterior superior temporal sulci recruitment during same-culture versus other-culture mental state decoding in both cultural groups.

So far, however, very few studies have explicitly addressed the impact of different cultures on ToM-related brain activation. Kobayashi and colleagues (2006) have proposed differential effects of language education on ToM-related brain activation in an fMRI study comparing adult American monolinguals and Japanese bilinguals using a second-order false-belief task: while the ventromedial PFC and precuneus were recruited in both groups, the inferior frontal gyrus was recruited in a culture-dependent manner during ToM
task-performance in the Japanese only. In a study by Koelkebeck and colleagues (2011), ToM abilities were investigated in a sample of native Japanese and a group of Caucasian participants living in Japan. A ToM task depicting moving geometrical shapes acting in social patterns (Abell et al., 2000) was applied in fMRI. No difference in the use of ToM-related vocabulary or correctness of descriptions in both study groups on the behavioral level could be found, indicating a relative independency of cross-cultural performance. However, fMRI results showed a higher level of activation in Caucasian participants compared with Japanese controls in the mPFC as well as in temporal parts of the brain. While no association between levels of acculturation (e.g., language abilities, cultural knowledge) or empathy could be identified, a subscale of the Toronto Alexithymia Scale (Taylor et al., 1985) ‘difficulties in identifying feelings’ as well as the Autism Questionnaire (Baron-Cohen et al., 2001) correlated with the activation pattern in the mPFC in Japanese participants. It was hypothesized that Japanese participants need to activate the mPFC to a lesser extent, because they have been taught to be in tune with unspoken social signals all around and being able to react in a socially accepted way. However, when higher autistic or alexithymic traits are present, the ToM network is utilized similarly as by Caucasians. In contrast, Caucasians were hypothesized to be constantly monitoring their selves and their surrounding and thus overly activating the ToM network.

Taken together, recent cross-cultural imaging approaches in healthy subjects suggest culturally influenced activation patterns of several brain networks involved, which might also be of importance to activation differences found in patients with schizophrenia regarding self/other distinction and mentalizing (Brüne et al., 2011; Pedersen et al., 2012). Moreover, the concept of individualism/collectivism might also impact patients with schizophrenia, specifically with regard to self-concepts, which might be altered. A systematic review on emotional overinvolvement in schizophrenia has postulated that there might be a culture-specific impact of mutual interdependence across cultures (Singh et al., 2013). This might not only constitute a pathologic but also a protective factor that needs to be further assessed.

**THE ADAPTATION OF NOVEL PARADIGMS AND APPROACHES IN SOCIAL COGNITION RESEARCH IN SCHIZOPHRENIA: ONGOING RESEARCH AND FUTURE RESEARCH DIRECTIONS**

The development of early detection tools as well as specific intervention programs to overcome social cognitive deficits in patients with schizophrenia is crucial. So-called vulnerability (or disease) markers are cognitive abnormalities that are specific for one disease, present in symptom-free intervals, in first-degree relatives and early on in the development (Braff et al., 1981). They can help identify people at risk for the development of schizophrenia, for instance. ToM has already been identified as a potential disease marker in schizophrenia
For the development of more sophisticated markers that assess social cognitive abilities in schizophrenia, the cross-cultural context, for example, the investigation of emotions in faces of out-group members, might be helpful. There are two recent lines of research involving out-group-related stimuli that will be presented in the following.

**Facial Emotion Recognition Using Objects with Out-Group Features**

One set of abilities forming part of social cognition is the ability to recognize emotions in the face, which is known to be compromised in schizophrenia (Lewis and Garver, 1995; Suslow et al., 2003) as well as in depressed patients (Domschke et al., 2010; Koschack et al., 2003). However, there is only little evidence that patients with schizophrenia can be reliably distinguished from depressed patients on tasks employing recognition of explicit emotions (Walker et al., 1984; Weniger et al., 2004). Yet, a promising approach is the recognition of subtle emotions, which seems to be specifically compromised in patients with schizophrenia (Burch, 1995).

When it comes to the recognition of emotions, the task becomes more difficult when they are displayed on a face of a person from a different cultural background. Matsumoto (1992) showed that healthy Japanese participants performed worse in the identification of Caucasian facial emotions than healthy Caucasian-American participants in the identification of Japanese facial emotions. In addition to that, Russell (1991) hypothesized that basic emotions are easy to recognize throughout all cultures, while subtle and ambiguous emotions are easier identified in members of one’s own culture.

To develop a more sensitive measure to identify specific deficits of several disease entities, Minoshita and colleagues introduced a novel paradigm for the recognition of subtle emotional expressions in the face. During the task, nine photos of a painted wooden mask showing the features of a young woman in flipped angles are presented. Due to the manner of carving, they display a rich variety of emotions beyond the basic ones (e.g., ecstasy, deference, shyness). For each mask, participants are asked to decide whether the mask shows the emotional expression in question (e.g., ‘is she sad?’). In two previous studies, Minoshita et al. (1997; 1999) validated the task in healthy controls. Patients with schizophrenia identified emotions with less variety than healthy controls, had less sensitivity for negative emotions, and were less sensitive toward uncanny emotional expressions (Minoshita et al., 2005). This pattern was not observed in depressed patients, who, in contrast, responded faster to calm expressions (Minoshita et al.; personal communication). The emotional ambiguity expressed by the mask, as well as the fact that it displays Asian features, makes the task a valuable instrument for application in groups of Western patients with schizophrenia. It is known that patients with schizophrenia have difficulties with the perception and interpretation of ambiguous stimuli in
other domains as well (ambiguous verbal information; Ketteler et al., 2012). Moreover, compared with other facial emotion recognition tasks (e.g., those utilizing Ekman and Friesen faces (1976)), this task presents a nonhuman object. This might reduce bias due to a subjective view of the face models. This approach, specifically in the early detection of patients with psychotic disorders, can be combined with other neurobiologic methods such as fMRI. Due to disease-specific activation abnormalities of the amygdala (Phillips et al., 2003), this endophenotype might help to additionally categorize schizophrenia compared with patients with depression.

Facial Emotion Recognition Using In-Group Human Stimuli Including Features of Out-Group Members

Other race bias (Elfenbein and Ambady, 2003; Meissner and Brigham, 2001) suggests that own-race faces are remembered and discriminated better than other-race faces, which might contribute to an ethnic bias. Emotion, context, race, and gender influence perception unconsciously and trigger automatic affective responses (Amodio et al., 2004; Fazio et al., 1995; Kret and de Gelder, 2010). Studies investigating people of black skin color compared with white people showed that participants made different judgments about facial expressions when the target was a black versus a white male (Hugenberg and Bodenhausen, 2003). Additionally, emotion recognition is typically faster for positive than negative emotions, but the reverse is true when Caucasians judge black targets (Hugenberg, 2005).

A second novel approach is, therefore, to include features of out-group members to tasks that employ the recognition of facial emotions. A recently developed task by Kret and deGelder (2012) introduced faces of women that were covered by traditional Islamic veils (niqab, hijab) compared with a cap or scarf. Authors investigated whether headdress interferes with emotion recognition and whether this effect depends on the type of headdress. Fear was recognized fastest by the white European sample of healthy participants when the facial expression was partly hidden by a niqab suggesting that a niqab facilitates the fear response. The results also show that a cap and scarf were more often associated with happiness than in the niqab condition.

Theories propose that anxious individuals will form either more affect-congruent or more stereotypic impressions of out-group members. In a study by Curtis and Locke (2005), anxious white Australian participants read behavioral descriptions about an Australian Aboriginal target that were stereotypic, nonstereotypic, threatening, and nonthreatening. Anxious participants formed impressions that, while not more stereotypic than those formed by control participants, were more affect-congruent. Thus, psychiatric symptomatology might interfere with emotion recognition and is most probably influenced by the cultural background of the patient. Results of research with emotional stimuli of out-group members seem to form a promising approach for tasks
used in (early) detection of schizophrenia, with specific regard to the fact that emotion recognition dysfunction in schizophrenia might be enhanced by out-group features of stimuli.

Other Research Approaches

It seems that social interaction with out-group members is modulated by oxytocin, dampening the amygdala and thus promoting trust-building in participants (De Dreu et al., 2011). Oxytocin is also involved in trust-building in schizophrenia. Brüne (2012) reviewed studies on oxytocin variants in psychiatric disorders and could show different polymorphisms that might influence the susceptibility to schizophrenia. A dysbalance of oxytocin might thus enhance or attenuate the other-race bias. Mehta and colleagues (2011) suggested the use of social cognition tools specialized for cultural groups. They strongly recommend validating assessment measures across varied cultures and presented the Social Cognition Rating Tools in Indian Setting (SOCRATIS). This is a test battery to assess ToM, faux pas recognition, social perception, and attributional bias. Matsumoto and colleagues (2000) have developed a measure of perception of emotion specifically for the Japanese, and they delineate methodologic requirements for studies attempting to detect both cross-cultural similarities and differences in emotion perception. All these tools might be helpful for the assessment of schizophrenic symptomatology.

Thus, the investigation of the influence of out-group features on emotion recognition in patients with schizophrenia compared with healthy controls, as well as the investigation of oxytocin might be an interesting and promising approach to the employment of cross-cultural aspects of emotion perception. Moreover, culture-specific tools should be evaluated to gain dependable measures for social cognition abilities across cultures.

SUMMARY

Taken together, cross-cultural research aims to understand factors that influence the development, sustenance, and configuration of psychiatric disorders. With regard to patients with schizophrenia, this holds specifically true for symptom constellations and the development of the disease. While in children mentalizing abilities develop over several years, with culture having a strong impact on shaping social cognitive functions, in patients with schizophrenia culture seems to have an influence on symptomatology, onset, and course of the disease on the behavioral as well as the biologic level. While little is known about the impact of culture on social cognition in schizophrenia, recent research has determined neural patterns of reactions to social cues that depend on the sociocultural background of a person. Thus, it must be assumed that patients with schizophrenia or with a risk of developing schizophrenia will be influenced by their culture or the culture that surrounds them,
too. Culture-based social cognition might have an impact on future task developments that try to assess deficits in social cognition utilizing emotional face recognition tasks in schizophrenia. Presenting objects with features of outgroup subjects might render recognition of social cues more difficult and distinguish subgroups or disease entities. Imaging techniques might be helpful to distinguish biologic from cultural factors and determine developmental deficits as well as structures and abilities in schizophrenia that deteriorate over time. Moreover, evaluations of existing social cognitive tasks with regard to the specific background of an individual need to be performed. Therefore, cultural viewpoints in psychiatric research, specifically with a focus on schizophrenia, are essential in refining our understanding of biologic and sociocultural factors influencing the development and course of diseases and to determining optimized diagnostic and intervention methods.

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