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DISSERTATION

Empathy and alexithymia and their effect on subtle and blatant prejudices

Empathie und Alexithymie und ihre Wirkung auf subtile und offenkundige
Vorurteile

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Preface

The results of the present work were published in the Journal of Psychiatric Research (*“Empathy and the experience to identify one’s own emotions modify the expression of blatant and subtle prejudice in young male adults”* (Önal et al, 2021)).

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Index of abbreviations

BSPS:	Blatant and Subtle Prejudice Scale
TAS-20:	20-item Toronto Alexithymia Scale
IRI:	Interpersonal Reactivity Index
SPF:	Saarbrücker Persönlichkeitsfragebogen
SP:	subtle prejudice
BP:	blatant prejudice
EC:	empathic concern
PT:	perspective taking
FS:	fantasy
PD:	personal distress
DIF:	difficulty identifying feelings
DDF:	difficulty describing feelings
EOT:	externally oriented thinking
Fig.:	Figure

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Abstract (English)

Background: Recent global socio-political events have proven racism and, accordingly, direct and indirect discriminatory ways of behavior to be present in our everyday lives. Racism is an ideology formed by prejudices, which on the other hand, are based on negative stereotypes. In the past, studies have reported a reverse relationship between prejudices and trait empathy. Additionally, low levels of empathy are related to alexithymia – a complex personality trait outlining the inability to process and express the own emotional state. The current study examined correlations between both subtle and blatant prejudices and empathy as well as alexithymia. Moreover, we explored moderation effects of trait alexithymia on the relationship between trait empathy and subtle/blatant prejudices.

Methods: This retrospective study was based on data collected from a past study (LeAD study), which examined learning mechanisms and their neural relation to alcohol consumption. Part of those participants, namely 136 males with a mean age of 21.5 years, were then asked to complete the self-report questionnaires BSPS, IRI, and TAS-20. These questionnaires were utilized to assess levels of prejudices, empathy, and alexithymia among the mentioned sample via SPSS. Afterwards, correlation and moderation analyses were carried out to determine interactions between racist prejudices, trait empathy, and alexithymia.

Results: The analyses revealed a negative correlation between trait empathy and subtle/blatant prejudice levels. For subtle prejudices, this relationship was statistically significant only for participants with low and medium alexithymia levels. For blatant prejudices, the aforementioned negative correlation was statistically significant for low alexithymia levels. In both cases, increasing alexithymia levels lead to decreasing negative associations between empathy and subtle/blatant prejudices. Lastly, alexithymia showed a positive relation to empathy.

Discussion: The results suggest that self-awareness and empathy enable us – to some level - to modify our mindset and the expression of subtle and blatant prejudices towards stigmatized groups or are even required to do so. Future studies should focus on the relationship between alexithymia and different empathy components. Also, research should explore the levels to which alexithymia can influence prejudices and empathy. For this, more heterogeneous samples should be considered.

Abstract (German)

Hintergrund: Jüngste gesellschaftspolitische Ereignisse haben gezeigt, dass Rassismus und damit auch direkte und indirekte diskriminierende Verhaltensweisen in unserem Alltag präsent sind. Rassismus ist eine Form der Ideologie, die auf Vorurteilen basiert, die wiederum auf negativen Stereotypen beruhen. In der Vergangenheit berichteten bereits einige Studien von einer inversen Beziehung zwischen Vorurteilen und Empathie. Zudem korrelierte Empathie meist negativ mit Alexithymie, einem Persönlichkeitsmerkmal, das die Unfähigkeit beschreibt, die eigene Gefühle zu verarbeiten und auszudrücken. In der vorliegenden Arbeit werden mittels Korrelations- und Moderatoranalysen die Zusammenhänge zwischen subtilen und offensichtlichen Vorurteilen, Empathie sowie Alexithymie untersucht.

Methodik: Die durchgeführte retrospektive Studie basierte auf Daten einer früheren (LeAD-Studie), die Lernmechanismen und ihre neuronale Beziehung zum Alkoholkonsum untersuchte. Ein Teil dieser Teilnehmer, nämlich 136 Männer mit einem Durchschnittsalter von 21,5 Jahren, wurde dann gebeten, die Selbstbeurteilungsbögen BSPS, IRI und TAS-20 auszufüllen, um den Grad an rassistischen Vorurteilen, Empathie und Alexithymie zu bestimmen. Anschließend wurden mit der Software SPSS Korrelations- und Moderationsanalysen durchgeführt, um mögliche Zusammenhänge zwischen Empathie, Alexithymie und Vorurteilen in der bereits erwähnten Stichprobe zu ermitteln.

Ergebnisse: Empathie und subtile/offensichtliche Vorurteile zeigten eine negative Korrelation. Die negative Korrelation zwischen Empathie und subtilen Vorurteilen war für niedrige und mittlere Alexithymie-Grade signifikant. Die negative Korrelation zwischen Empathie und offensichtlichen Vorurteilen zeigte nur dann ein signifikantes Ergebnis, wenn Teilnehmer ein geringes Maß an Alexithymie aufwiesen. Zunehmende Alexithymie-Grade reduzieren hierbei die negative Korrelation zwischen Empathie und sowohl subtilen als auch offensichtlichen Vorurteilen. Empathie zeigte eine positive Korrelation zu Alexithymie.

Diskussion: Die Resultate legen nahe, dass ein gewisses Maß an Bewusstsein für die eigene Gefühlswelt und Empathie es uns bis zu einem gewissen Grad ermöglichen oder sogar Voraussetzung dafür sind, den Ausdruck subtiler und offensichtlicher Vorurteile zu vermeiden. Zukünftige Studien sollten sich auf die Beziehung zwischen Alexithymie und verschiedenen Komponenten von Empathie konzentrieren. Außerdem

sollte weiterhin untersucht werden, bis zu welchen Graden Alexithymie Vorurteile und Empathie beeinflussen kann. Hierzu bedarf es vor allem auch der Berücksichtigung heterogenerer Stichproben.

1 Introduction

1.1 Racism, prejudice, stereotypes

“Please, I can’t breathe.” Those are the last words of George Floyd, an Afro-American man who was one of many victims killed by police violence in the United States. In May 2020, a police officer knelt on Floyd’s neck, who was handcuffed and lying on the ground, unable to move. Despite numerous requests by Floyd himself and by pedestrians to let him breathe, the officer continued to kneel on Floyd’s neck, altogether for about eight minutes, approximately three minutes of which Floyd was even unconscious (Hill et al, 2020). Floyd’s death led to protests against police violence and racism throughout the United States and in other parts of the world, including Germany. In Europe, approximately one million refugees from the middle east arrived in Germany in 2015 (Bundesamt für Migration und Flüchtlinge, 2016). And after some Islamist and racist terror attacks during the last ten years, the political climate in Germany as well as in Europe continued to heat up, leading to a range of demonstrations against migrants and refugees. Several of these incidents revealed the presence of racism in our daily lives.

Racism is a form of ideology based on the belief that people can be categorically classified as belonging to genetically defined groups (Hund, 2007; UNESCO, 1978), which justifies ranking “others” or those who are perceived as “others” accordingly and labeling them with some diminished value (Hund, 2007; UNESCO, 1978). It can degrade outgroup members to non-human or not fully human beings (Hund 2007). Racism, therefore, is not only a product of (Hund, 2007) – alongside other man-made phenomena like gender inequality, discrimination based on socio-economic statuses, or, e.g., nationalism - but simultaneously *affects* societal structures (Douglass et al, 2016; Dovidio et al, 2010; Elias and Paradies, 2016; Li and Rose, 2017; Meleady, Seger and Vermue, 2017). This ideology creates a specific construct of perception and generates an “enemy”-like stereotype of outgroup members. Outgroup members are not considered to have the same rights as ingroup members. They are not seen as individuals but can be seen as targets, towards whom stereotypical attributes are matched (Allport, 1954). Most importantly, this form of racism leads to discriminatory behavior (e.g., Allport, 1954), which in turn can impact the mental health of those who experience racist discrimination (Elias and Paradies, 2016; Heinz et al, 2014). According to Waibel (2012, p.15), racism in Germany is based on the ideology that German people are

superior to people originally coming from the “East” or “South” and that people who are considered as the “enemy” have to be extinguished.

In our modern society, racism is often carried out in more indirect ways (Allport, 1954; Dovidio and Gaertner, 1986; Pettigrew and Meertens, 1995), and instead of “race” e.g., terms like “culture” or “ethnicity” are used, again, to categorically differentiate people on the basis of their genetic constitutions or reified cultures (Heinz et al, 2014). In this context, the term “aversive racism” was introduced by Dovidio and Gaertner (1986, p.62): “Nevertheless, aversive racists’ inability to acknowledge their negative racial feelings and their apparent rejection of negative racial stereotypes, together with their sympathetic feelings toward victims of injustice, convince them that their racial attitudes are largely positive, and certainly not prejudiced.”. This results not in any form of hatred towards the target group, but rather in “discomfort, uneasiness, disgust, and sometimes fear” (Dovidio and Gaertner, 1986, p.63).

Prejudices form the basis of racism. They are negative assumptions about people who are perceived as belonging to certain groups. In his landmark book “The Nature of Prejudice”, Allport (1954, p.9) defines prejudices as “an antipathy based upon a faulty and inflexible generalization. It may be felt or expressed. It may be directed toward a group as a whole, or an individual because he is a member of that group”. Prejudices can be based on people’s ethnicity or, e.g., socio-economic belonging and are often formed without adequate information and knowledge about the ones seen as “the out-group” (Allport, 1954; Amodio, 2014; Ehrlich, 1973; Zanna, 1994). Prejudices against minorities can promote discrimination (an active, chosen way of behavior to act out prejudices (Dovidio and Gaertner, 1986)), social isolation, and violence. This may lead to mental health issues (Gee et al, 2006; Paradies et al, 2015; Elias and Paradies, 2016) and jeopardize tolerance as well as equality within society (for a review, see Bailey et al., 2017; Mesic et al, 2018). For example, studies showed that stereotypes bias participants’ decision to shoot Black vs. White people in videogames when exposed to stereotypic information (Correll et al, 2002; Correll et al, 2007).

Stereotyping describes the assigning of members of a group to certain characteristics. In comparison to prejudices, stereotypes do not necessarily have to be associated with negative emotions or *be* negative in their fundamental structure, but instead can be quite “useful” in guiding decision making (Dovidio and Gaertner, 1986, p.129). Allport (1954, pp.17-18) even proposes that stereotypes are “natural” and not always developed by majority, but minority groups as well. Thus, they facilitate categorizing our

diverse environment in both socially and cognitively challenging situations (Allport, 1954, pp.20-23) and simplify making decisions when being stressed and uncertain (Daw et al, 2006; Daw et al, 2011), possibly leading to habitual behavior (Aarts, Verplanken and van Knippenberg, 1998). These stressful or uncertain situations can also be present when interacting with people of different cultural, ethnic, or social backgrounds, activating stereotyping, which, in turn, can lead to “othering”. “Othering” defines the exclusion of people perceived as not belonging to a social group and its oneself considers being a part of (Johnson et al, 2004). In terms of racism, those seen as part of the outgroup are socially alienated (Hund, 2007). This can, in turn, lead to violence and radicalization of the ones who experience this form of social exclusion (Bélanger et al, 2019; Pretus et al, 2018). Interestingly, according to Devine (1989, p.12), both people with low- and high-prejudice levels develop stereotypic or prejudiced answers when “their ability to consciously monitor stereotype activation is precluded”. However, people with lower prejudice levels are more hesitant to project these stereotypes onto an entire group, therefore controlling (the effects of) stereotype activation (Devine, 1989).

The present study focused on *racist* prejudice. Pettigrew and Meertens (1995) differentiate between blatant vs. subtle prejudices. Blatant prejudices (*BP*) are direct and openly displayed, whereas subtle prejudices (*SP*) are expressed more covertly and indirectly. With the development of more egalitarian societies over the last centuries, especially in today’s environment, extreme attitudes and their expression (e.g., violent discrimination) are usually considered socially prohibited. Therefore, a direct expression of blatant prejudices may not be as present today as it was in the past (and in comparison to subtle prejudices (Dovidio and Gaertner, 1986, p.66)), while the level or intensity of subtle prejudices can overall be unchanged in some subgroups (Herrero Olaizola, Rodriguez Diaz and Musitu Ochoa, 2014). Allport (1954), too, proposed that prejudices – while intellectually overcome – can still exist on an emotional level. This means that while the open expression of prejudices and even racism (in a verbally or physically violent form) is commonly prohibited in our democratic societies, racist discrimination continues to find its way into societal structures.

1.2 Empathy

Mainly, empathy can be seen as the ability to react to (Blair, 2005) and identify *with* our opposite’s (positive/negative) inner state (Singer and Klimecki, 2014; Singer and

Lamm, 2009) while still being aware of the fact that these emotions belong to another person and that we are not the ones who actually experience these feelings (Decety and Jackson, 2004; Singer and Klimecki, 2014). Therefore, empathy has a very relevant social function. It is even proposed that empathy can result in (at least some forms of) prosocial and helping behavior (Eisenberg and Miller, 1987; Hein et al, 2010). In this case, helping others not (only) aims to reduce the personal distress we feel when exposed to critical emotions but to increase the well-being of those we feel empathy towards (Batson, 1991; Kanske, Böckler and Singer, 2017).

Defining empathy in detail is – as the construct itself – quite complex. Generally, the concept of empathy supposedly contains different sub-concepts, which are supposed to interact (Singer and Lamm, 2009). For example, terms such as “cognitive empathy”, “motor empathy”, “emotional contagion”, “emotional empathy”, “sympathy”, and “compassion” have been introduced in the past (Blair, 2005; Singer and Lamm, 2009). These different phenomena will not be elaborated on in detail in this work. Essentially, empathy seems to be a product of cognitive and affective processes. While cognitive empathy enables us to comprehend the feelings, motives, or the like of someone else by seeing things from his/her perspective, its affective element gives us the ability to feel with a person. Taking the perspective of others (often referred to within the theoretical framework of “Theory of Mind” (for details see Kanske, Böckler and Singer, 2017; Preckel, Kanske and Singer, 2018), means being able to figure out what others’ motives, beliefs, emotions are (Frith and Frith, 2005). Although Kanske, Böckler and Singer (2017) noted that empathy and Theory of Mind are two different main concepts, it is generally supposed that affective and cognitive mechanisms together contribute to understanding others.

A tool often used to determine empathy and empathy component levels is the Interpersonal Reactivity Index (IRI (Davis, 1983)), a self-report questionnaire to measure four different components of empathy (empathic concern, personal distress, perspective taking, fantasy; see in *Methods*). The emotion-sharing part of the empathy construct (which can also be described as “affective empathy”) can best be measured by the IRI subscale *empathic concern (EC)*. This subscale measures other-related feelings (Davis, 1983). On the other hand, the cognitive part of empathy is best represented by the subscale *perspective taking (PT)*. These two theoretically distinguishable aspects, *EC* and *PT*, nevertheless correlate significantly, according to Paulus (2012) and Wang et al (2020). Thus, they might be important factors in social interactions with

people who are not seen as ingroup members. Furthermore, *PT* and *EC* seem to help promote altruistic feelings towards stigmatized groups (Batson, 2011), facilitating stereotype-reducing (Galinsky and Moskowitz, 2000). Accordingly, empathy and prejudice have been seen to be negatively associated (Alvarez-Castillo, Fernandez-Camirero and Gonzalez-Gonzalez, 2018; Boag and Carnelley, 2016; Miklikowska, 2018). Also, Boag and Wilson (2014), for instance, found that prejudice and *EC*, respectively *PT*, are negatively correlated but that there is a positive relationship between prejudice and *personal distress (PD)* – a further subscore of the IRI (Davis, 1983; see *Methods*). Furthermore, Onraet et al (2017) observed a negative correlation between *SP* (assessed via the Blatant and Subtle Prejudice Scale (BSPS) by Pettigrew and Meertens (1995)) and emotional intelligence, which is a similar concept to empathy. Additionally, mediation analyses showed that *PT* (IRI (Davis, 1983)) had a significant impact on the relationship between emotional intelligence and *SP* (Onraet et al, 2017). Thus, considering the theories mentioned above and past study findings, a sum score of *EC* and *PT* was computed to measure both main aspects of trait empathy (namely cognitive and affective empathy) in the present study (Wang et al, 2020).

1.3 Alexithymia

“Alexithymia” originates from the Ancient Greek words “α” (“not”), “ἡ λέξις” (“word”), and “ὁ θυμός” (“mind/soul”; which altogether can be translated as “no words for emotions”) and describes the inability to identify/process and therefore express the own emotional state (Nemiah, Freyberger and Sifneos, 1976). People with alexithymia are supposed to show an externally oriented way of thinking, which means they tend to avoid paying attention to their emotional states (Nemiah and Sifneos, 1970). The phenomenon of alexithymia had been described in patients – with typically psychosomatic symptoms and, e.g., little emotional awareness (Horney, 1952) - in the past (Marty and de M’Uzan, 1963; Nemiah, Freyberger and Sifneos, 1976; Sifneos, 1967; see also Taylor, Bagby and Parker, 1991 for a summary). In this context, some researchers proposed that “deficits in the cognitive processing of emotions” (Taylor, Bagby and Parker, 1991, p.157) can lead to an exacerbation of physical sensations (Martin and Pihl, 1985; Taylor et al, 1992). However, the exact term “alexithymia” was originally introduced by psychiatrists J.C. Nemiah and P.E. Sifneos in the 1970s (Nemiah, Freyberger and Sifneos, 1976; Nemiah and Sifneos, 1970; Sifneos, 1973) to describe

a personality trait that showed a lack of emotional self-awareness and difficulty to describe the own emotions as well as limited imaginative processes and an externally-oriented way of thinking.

Alexithymic traits can be assessed by the 20-item Toronto Alexithymia Scale (TAS-20 (Bagby, Parker and Taylor, 1994)). The TAS-20 depicts various alexithymic sub traits: *difficulty identifying feelings (DIF)*, *difficulty describing feelings (DDF)*, and *externally-oriented thinking (EOT)*. In the current study, only the *DIF* score was used, because a major research question was whether the repression of certain feelings in a psychodynamic approach (see *next chapter*) and the projection of these feelings on minority groups contribute to racism (Holzkamp, 1994). In the past, some studies found negative associations between empathic and alexithymic traits (Patil and Silani, 2014; Preti et al, 2011; Silani et al, 2008). Despite this, a number of studies also showed positive interactions between different empathic and alexithymic features. For example, Gleichgerrcht, Tomashitis and Sinay (2015) reported that IRI- and TAS total scores were negatively correlated in a group of patients with multiple sclerosis, while the sub-scores for *EC* and *DIF* were positively associated. Similarly, in a research work by Stivaletti Colombarolli et al (2019), *DIF* showed a positive relation to *affective empathy* (as measured by the Questionnaire of Cognitive and Affective Empathy (QCAE) by Reniers et al (2011)), while again, total TAS-20- and empathy-scores were negatively associated. Also, Nishimura et al (2009) found a positive correlation between *DIF* and *trait empathy* (as measured by *The Multi-Dimensional Empathy Scale for Adolescents* (Tobari, 2003)). In summary, while many researchers propose a negative relationship between alexithymic and empathic traits, some studies have found the contrary.

1.4 Prejudices, empathy, and alexithymia in a psychodynamic view

According to Freud (1919) and Holzkamp (1994), certain feelings and desires can be socially banned (especially in our childhood) and therefore repressed by an individual to align to social norms. Prejudices then might be strong among individuals who are forced to repress certain of their own emotions and, as a consequence, project their repressed feelings or unconscious conflicts onto members of minority groups, thus leading to prejudices (Holzkamp, 1994). Furthermore, repressing the inner state might contribute to shaping alexithymic traits, i.e., an inability to experience one's own emotions and identify them accordingly. Therefore, one could assume that empathy might

depend on a person's ability to access his/her inner states, which are influenced by the individual's social environment, traditions, and norms (Freud, 1919).

As past studies have already shown that empathic traits play a role in the development and shaping of prejudices (see ,e.g., Miklikowska, 2018), not being aware of your own emotions might make it harder to understand others'. Thus, alexithymic traits might promote prejudicial attitudes. For example, *perspective taking* (measured with the IRI (Davis, 1983)) was found to play a role as a mediator in the association between *alexithymia* and *subtle prejudice* (Onraet et al, 2017).

1.5 Hypotheses

Three hypotheses were tested:

- 1) Low levels of empathy (*EC* and *PT*) show negative correlations with subtle and blatant prejudice levels.
- 2) Alexithymia (*DIF*) levels are negatively correlated with empathy.
- 3) Alexithymia (*DIF*) moderates the assumed negative correlation between empathy and both forms of prejudices, with stronger *DIF* impairing these negative correlations.

2 Methods

2.1 Participants and Procedure

The analyzed sample constituted of n=136 male adults (mean age=21 years). The data acquisition was conducted for the bicentric Learning and Alcohol Dependence (LeAD) study (DFG FOR 1617; see www.lead-studie.de (Wittchen, n.d.)). Table 1 displays social demographics and clinical characteristics of the examined sample.

Participants were screened at time point 1 (T1) in 2015 at register offices in both Berlin and Dresden and then followed for three years. At T1, participants (n=209) were 18 years old. Interested subjects were screened via telephone. There were specific inclusion and exclusion criteria (e.g., left-handedness, substance abuse (except for nicotine abuse), major psychiatric disorders (M-CIDI (Jacobi et al, 2013; Wittchen and Pfister, 1997)), neurological diseases, contraindications for an MRI-screening).

After inclusion, subjects were invited for two appointments within T1. At the first appointment, participants completed neuropsychological testing, the M-CIDI (Jacobi et al, 2013; Wittchen and Pfister, 1997), several questionnaires, and a computerized paradigm (see Bernhardt et al, 2017). Probands were seen a second time, and an MRI scan was conducted (Garbusow et al, 2019; Nebe et al, 2018).

Three years later in 2018 (time point 2 (T2)), participants (n=136, mean age=21 years) were screened again. This time, additionally the IRI (Davis, 1983), the BSPS (Pettigrew and Meertens, 1995), and the TAS-20 (Bagby, Parker and Taylor, 1994) were completed by the participants.

For participation in all appointments, subjects received 220 Euro. Additionally, participants could receive up to 80 Euro related to their additional experimental tasks' performance (not reported here).

At T2, one subject was excluded as his data concerning the BSPS was missing. The final sample therefore consisted of n=135 (Berlin n=65; Dresden=70).

The analyzed sample only consisted of male subjects. Previous studies showed that there are gender differences regarding empathy as men tend to be less empathic than women (concerning EC in Guilera et al, 2019; Kataoka et al, 2009; Wen et al, 2013) and often show more prejudices and discriminating attitudes (Decker, 2006; Decker et al, 2016). Additionally, young men tend to show less empathy than older men (Khanjani et al, 2015; Sze et al, 2012 (concerning emotional empathy)) and to behave more violently (Heinz et al, 2011).

2.2 Ethical approval

All participants completed a consent form. Ethical approval was granted by the ethics committees (IRB) of Charité – Berlin University of Medicine (EA1/267/14) and Technical University of Dresden (EK 227062011). The study and all associated proceedings (clinical trials identifier: NCT01744834) were performed in accordance with the Declaration of Helsinki.

Table 1. Demographic and clinical characteristics.

Retrieved from and modified after Önal et al (2021), Table 1 in Önal et al (2021).

Variable	N	Mean/Median	SD
Sociodemographic characteristics			
Age, years	135	21.5	0.3
Education*, years	133	12.2	1.1
Smokers, %	135	46.0	0.5
ADS scale	135	0.8	0.4
Social status	119	-	-
Lower class, %		16.8	-
Middle class, %		63.0	-
Upper class, %		20.2	-
Household income (monthly)**	116	1.00	-
≤ 500 Euro	16	13.8	-
≤ 1000 Euro	49	42.2	-
≤ 1500 Euro	13	11.2	-
≤ 2000 Euro	8	6.9	-
≤ 2500 Euro	5	4.3	-
≤ 3000 Euro	3	2.6	-
≤ 3500 Euro	3	2.6	-
≤ 4000 Euro	5	4.3	-
≤ 4500 Euro	3	2.6	-
≤ 5000 Euro	5	4.3	-
> 5000 Euro	6	5.2	-
Clinical characteristics			
Prejudice (BSPS)	135		
Blatant		15.3	5.3
Subtle		30.7	7.6
Alexithymia (TAS-20)	135		
Difficulty identifying feelings		12.7	3.8
Empathy (SPF)***	135	26.1	4.4
<p>Note: BSPS: Blatant and Subtle Prejudice Scale (Pettigrew and Meertens, 1995) TAS-20: Toronto Alexithymia Scale (Bagby, Parker and Taylor, 1994) SPF: Saarbrücker Persönlichkeitsfragebogen (Paulus, 2009) ADS: Alcohol Dependence Scale (Skinner and Allen, 1982) Median is reported for categorical variables. * In Germany, eight years of school attendance are considered as lower education and 11-12 years as higher education. ** Out of 134 participants (one missing for the questions concerning income), 18 responded that they did not know the amount of their monthly income. We excluded these 18 participants, leaving 116 subjects for this variable. *** Operationalized as the scores of <i>empathic concern (EC)</i> and <i>perspective taking (PT)</i> taken together.</p>			

2.3 Materials

2.3.1 Blatant and Subtle Prejudice Scale (BSPS)

The levels of blatant and subtle prejudices were determined via the German adaptation of the BSPS (Ganter, 2001; Pettigrew and Meertens, 1995; Zick, 1997). Pettigrew and Meertens (1995) measured prejudices in different European countries, e.g., British citizens' prejudices towards, e.g., West Indian immigrants or French citizens' prejudices towards North Africans. The German adaptation of the questionnaire assesses blatant and subtle prejudices towards Turkish people, respectively, German citizens with a Turkish migration background (Pettigrew and Meertens, 1995). This is because they form the biggest minority group in Germany (Bundesinstitut für Bevölkerungsforschung, 2019). In the original work, Cronbach's α differed depending on each country (*BP* scale: $\alpha=.87-.90$; *SP* scale: $\alpha=.73-.82$).

The BSPS consists of two sum scales: the blatant and the subtle prejudice scales (each containing 10 items, 4-point Likert scale). In the BSPS, *subtle prejudice* represents a sum score of three and *blatant prejudice* a sum score of two different scales. Details are available in Table 3. Pettigrew and Meertens (1995) describe these subscales as follows:

- 1) *Traditional values*: ingroup members perceive outgroup members supposedly not acting according to the ingroup's values, possibly leading to "victim-blaming" (Pettigrew and Meertens, 1995).
- 2) *Cultural differences*: ingroup members exaggerate cultural differences between themselves and outgroup members.
- 3) *Positive emotions*: ingroup members deny positive emotions towards outgroup members.
- 4) *Threat rejection*: ingroup members perceive threat from outgroup members, leading to the rejection of outgroup members.
- 5) *Intimacy*: ingroup members reject affectionate contact (e.g., sexual intercourse, intermarriage, refusal to work for an outgroup member) with outgroup members.

The scales mentioned above were recoded conforming to Pettigrew and Meertens (1995): A value of 3 was set to 4 and 4 to 5 to achieve further between-group variance. Higher results on the BSPS scale indicate higher levels of prejudice. The questions used in the German version of the BSPS can be viewed in detail in Table 2.

Table 2. Blatant and Subtle Prejudice Scale (BSPS) items. Retrieved from Pettigrew and Meertens (1995). This scale was translated and adapted as a German version by U. Kluge (Berlin Institute of Migration Research), table not published in Önal et al (2021).

Blatant and Subtle Prejudice Scale (BSPS) items

Blatant prejudice

- Threat and rejection items:
 - (1) Turkish migrants have jobs that Germans should have.
 - (2) Most Turkish migrants living in Germany who receive support from welfare could get along without it if they tried.
 - (3) German people and Turkish migrants can never be really comfortable with each other, even if they are close friends.
 - (4) Most politicians in Germany care too much about Turkish migrants and not enough about the average German person.
 - (5) Turkish migrants come from less able races and this explains why they are not as well off as most German people.
 - (6) How different or similar do you think Turkish migrants living in Germany are to other German people like yourself – in how honest they are?

- Intimacy items:
 - (1) Suppose that a child of yours had children with a person of very different color and physical characteristics than your own. Do you think you would be very bothered, bothered, bothered a little, or not bothered at all, if your grandchildren did not physically resemble the people on your side of the family?
 - (2) I would be willing to have sexual relationships with a Turkish migrant.
 - (3) I would not mind if a suitable qualified Turkish migrant was appointed as my boss.
 - (4) I would not mind if a Turkish migrant who had a similar economical background as mine joined my close family by marriage.

Subtle prejudice

- Traditional values items:
 - (1) Turkish migrants living here should not push themselves where they are not wanted.
 - (2) Many other groups have come to Germany and overcome prejudice and worked their way up. Turkish migrants should do the same without special favor.
 - (3) It is a matter of some people not trying hard enough. If Turkish migrants would only try harder they could be as well off as German people.
 - (4) Turkish migrants living here teach their children values and skills different from those required to be successful in Germany.

- Cultural differences items:
How different or similar do you think Turkish migrants living here are to other German people like yourself:
 - (1) In the values that they teach their children?
 - (2) In their religious beliefs and practices?
 - (3) In their sexual values or sexual practices?
 - (4) In the language that they speak?

- Positive emotions items:
 - (1) How often have you felt sympathy for Turkish migrants living here?
 - (2) How often have you felt admiration for Turkish migrants living here?

Note:

BP scale score range: 10 to 50

SP scale score range: 10 to 50

2.3.2 Empathy questionnaires: Interpersonal Reactivity Index (IRI) / Saarbrücker Persönlichkeitsfragebogen (SPF)

To measure empathy, the German version (“Saarbrücker Persönlichkeitsfragebogen zur Messung von Empathie” (SPF (Paulus, 2009)) of the *Interpersonal Reactivity Index* (IRI (Davis, 1983)), a self-report questionnaire (16 items assessed on a 5-point Likert scale), was used. The IRI measures the following aspects of empathy:

- 1) *fantasy* (FS) as a tendency to empathize with the “feelings and actions of fictitious characters in books, movies, and plays” (Davis, 1983, p.114).
- 2) *empathic concern* (EC), which expresses the feeling of concern related to others,
- 3) *perspective taking* (PT), which assesses our ability to understand others’ point of view,
- 4) *personal distress* (PD) is the emotional state in stressed interpersonal situations (Davis, 1983).

In the original work (Paulus, 2009), Cronbach’s α for the IRI/SPF was as follows: total score $\alpha=.78$, FS $\alpha=.74$, EC $\alpha=.71$, PT $\alpha=.71$, PD $\alpha=.66$. In this current work, only the subscales EC and PT were used by computing a sum score. While EC - as an emotional response and thus affective part of the empathy concept - and PT – the ability to understand our opponent’s feelings and thus a more cognitive part of empathy - measure and represent key aspects of empathy, FS only assesses the capacity to identify with fictitious characters (Davis, 1983). On the other side, PD represents a more self-oriented feeling of concern “in tense interpersonal settings” (Davis, 1983). In 2020, Wang et al found out via confirmatory factor analyses that summing EC and PT of the IRI showed the best model fit. They proposed that this sum score should be used to assess empathy (Wang et al, 2020).

In addition, past studies showed negative associations between (racist) *prejudice* and specifically EC and PT: Boag and Wilson (2014) assessed *empathy* and *prejudice* levels of a sample towards offenders before and after meeting the offenders. They found out that global empathy levels, EC, and PT levels of a group of subjects were significantly and negatively correlated with prejudices at both time points. Likewise, Onraet et al (2017) found negative associations between *subtle prejudice* (as assessed with the BSPS by Pettigrew and Meertens (1995)) and EC respectively PT (as assessed with the IRI (Davis, 1983)).

The computed empathy sum score (*EC + PT*) ranged from 8 to 40. Higher scores indicate higher levels of empathy. The utilized questions are shown in Table 3.

Table 3. Empathy items in the IRI scale (Davis, 1980). For our study, the translated and adapted version of the scale by Paulus (2009) was used, table not published in Önal et al. (2021).

Empathy items
<p><u>Empathic concern</u></p> <p>(1) <i>I often have tender, concerned feelings for people less fortunate than me.</i></p> <p>(2) <i>When I see someone being taken advantage of, I feel kind of protective towards them.</i></p> <p>(3) <i>I am often quite touched by things that I see happen.</i></p> <p>(4) <i>I would describe myself as a pretty soft-hearted person.</i></p>
<p><u>Perspective taking</u></p> <p>(1) <i>I try to look at everybody's side of a disagreement before I make a decision.</i></p> <p>(2) <i>I believe that there are two sides to every question and try to look at them both.</i></p> <p>(3) <i>When I'm upset at someone, I usually try to "put myself in his shoes" for a while.</i></p> <p>(4) <i>Before criticizing somebody, I try to imagine how I would feel if I were in their place.</i></p>
<p>Note: Empathy sum score (<i>EC + PT</i>) range: 8 to 40</p>

2.3.3 20-item Toronto Alexithymia Scale (TAS-20)

In the original paper (Bagby, Parker and Taylor, 1994), the TAS-20 consists of three subscales:

- 1) *difficulty identifying feelings (DIF),*
- 2) *difficulty describing feelings (DDF),*
- 3) *externally-oriented thinking (EOT).*

In this current work, we only specialized on the first subscale, *DIF*, as outlined in the introduction. It measures the inability to identify the inner state (Bagby, Parker and Taylor, 1994). Details are presented in Table 4.

Table 4. Difficulty identifying feelings items (Bagby, Parker and Taylor, 1994). Translated by U. Kluge (Berlin Institute of Migration Research), table not published in Önal et al. (2021).

Difficulty identifying feelings items
<p>(1) <i>I am often confused about what emotion I am feeling.</i></p> <p>(2) <i>I have physical sensations that even doctors don't understand.</i></p>

- (3) *When I am upset, I don't know if I am sad, frightened, or angry.*
- (4) *I am often puzzled by sensations in my body.*
- (5) *I have feelings that I can't quite identify.*
- (6) *I don't know what's going on inside me.*
- (7) *I often don't know why I am angry.*

Note:

DIF sum score range: 7 to 35. Higher scores represent higher alexithymia levels.

2.3.4 Sociodemographic variables

Participants' educational status, income per household member, social status, and migration background were assessed using a questionnaire (Deutsche Hauptstelle für Suchtfragen e.V., 2010). Details can be found in the following paragraphs.

2.3.4.1 Education

Participants were asked about how long they attended school overall. Answers were assessed on a nominal scale. In total, eight school years were considered lower, whereas 11-13 years were considered higher school education in Germany.

2.3.4.2 Income

Monthly income was determined via two questions, which were then summed up: "*How much money is available to your household on average per month (incl. child benefit, welfare (German benefit system), cost of living)?*" and "*On how many persons is this money spent (incl. alimonies and financial support for adult children or other relatives)?*" Answers were assessed with 11 answer categories (see Table 1). In total, 18 out of 134 participants did not know their monthly income. Therefore, these subjects were excluded, leaving n=116 for this variable.

2.3.4.3 Social status

Participants were asked which social class they consider themselves belonging to. They could answer whether they considered themselves belonging to a "0 = lower class, 1 = lower middle class, 2 = middle class, 3 = upper middle class, 4 = upper class, 5 = none of those classes" (Önal et al, 2021, p.474). Afterwards, answers "0" and "1" were summed up to "lower class", answer "2" was ascribed to "middle class", and answers "3" and "4" were summed up to "upper class". All in all, three categories were built to determine the social status ("lower", "middle", and "upper" class).

2.3.4.4 *Migration background*

We were interested in our participants' migration background to avoid bias concerning possible answers regarding the BSPS, which assesses prejudices towards Turkish people, respectively, people of Turkish origin. Subjects were categorized as having a migration background when either grandparents, parents, or themselves were not born in Germany (see Table 5).

Table 5. Migration background of the analyzed sample. Assessed via a sociodemographic details questionnaire in German (*Deutsche Hauptstelle für Suchtfragen e.V., 2010*), table not published in Önal et al (2021).

Migration background items	N
(1) <i>What is your citizenship?</i>	-
(2)	
a. <i>Did you move to Germany after your birth?</i>	4 (135)*
b. <i>If applicable: Where did you live before?</i>	-
(3)	
a. <i>Did your parents move to Germany after their birth?</i>	19 (134; one missing)*
b. <i>If applicable: Where did your mother live before?</i>	-
c. <i>If applicable: Where did your father live before?</i>	-
(4) <i>Did your grandparents move to Germany after their birth?</i>	19 (118; 17 missing)*

Note:
The answers to questions 1, 2b, 3b, and 3c are not shown in this table as they were not used to determine the status of the analyzed group's migration background.
*The figures in the brackets show the sample size and missing values for each item.

2.4 Statistical analysis

This work intended to assess possible relationships between empathy and prejudices. Additionally, the influence of having difficulties in identifying the inner state on empathy and prejudices was analyzed.

Correlation and moderator analyses were performed with SPSS 26 (IBM Corp., 2017), including its PROCESS tool (version 3.4.1.; Hayes (2012)).

BP was not normally distributed ("Kolmogorov-Smirnov test = 0.16 (df = 135; $p < .001$), skewness = 1.69 (SD = 0.21), kurtosis = 4.36 (SD = 0.41)" (Önal et al., 2021, p.474)), therefore a Johnson transformation (Chou, Polansky and Mason, 1998; Johnson, 1949) was conducted before starting further analyses. Although the Johnson transfor-

mation did not normalize the data fully, it achieved “an acceptable skewness and kurtosis (Kolmogorov-Smirnov test = 0.12 (df = 135; $p < .001$), skewness = 0.32 (SD = 0.21), kurtosis = -0.40 (SD = 0.41))” (Önal et al, 2021, p.474). For all statistical analyses the Johnson-transformed *BP* variable was used.

Additionally, bootstrapping with a number of 10.000 samples (BCa 95%) was conducted in the correlation as well as moderator analyses.

2.4.1 Correlation analyses

Bivariate Pearson correlation analyses ($p_{\text{two-tailed}} < .05$) were conducted between the four variables of interest: *SP*, *BP*, *empathy*, *DIF*.

2.4.2 Moderator analyses

Predictor, moderator, and outcome variables are shown in Fig. 1. The significance level was 90% ($p < .10$), as the hypotheses were directed and tested one-sided.

For each model, bootstrapping was conducted.

N=4 possible outliers were detected “with the interquartile range based on a multiplier of 1.5 as implemented in SPSS” (Önal et al, 2021). To determine their influence on the

regression analyses, Cook’s distances were assessed. All values were < 1 , suggesting that these four subjects did not significantly affect the conducted analyses.

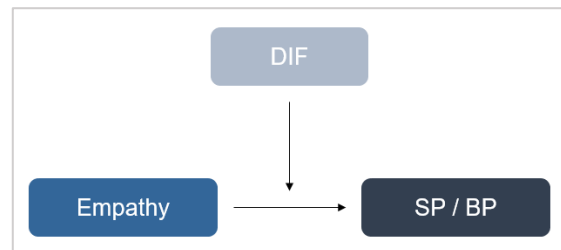


Fig. 1. Moderator analyses – overview.

Empathy: predictor, *DIF*: moderator, *SP* (for model 1) / *BP* (for model 2): outcome variable, figure not published in Önal et al (2021).

3 Results

3.1 Center effects

As our data sample consisted of participants from two different German cities (Berlin and Dresden), center effects regarding the analyzed variables were examined.

Neither “*subtle* (Berlin: $Mean=30.8$, $SD=7.3$; Dresden: $Mean=30.5$, $SD=7.9$; Levene’s F test: $F(133)=.16$, $p=.69$, Independent samples t -test: $t(133)=.26$, $p=.79$)” (Önal et al, 2021, p.474) nor “*blatant prejudice* (Berlin: $Mean=14.5$, $SD=4.5$; Dresden: $Mean=16.0$, $SD=5.8$; Mann-Whitney U test: $U=1930.5$, $z=-1.5$, $p=.13$)” (Önal et al, 2021, p.474) showed any center effects.

With respect to the *empathy* scale, there were no significant center effects “(Berlin: $Mean=26$, $SD=4$; Dresden: $Mean=26.2$, $SD=4.8$; Levene’s F test: $F(133)=1.79$, $p=.18$, Independent samples t -test: $t(133)=$, $p=.81$)” (Önal et al, 2021, p.474). Furthermore, no center effects regarding the *difficulty identifying feelings* scale could be detected “(Berlin: $Mean=12.7$, $SD=4$; Dresden: $Mean=12.6$, $SD=3.7$; Levene’s F test: $F(133)=.17$, $p=.68$, Independent samples t -test: $t(133)=$, $p=.23$)” (Önal et al, 2021, p.474).

3.2 Internal consistencies

Internal consistencies were measured with Cronbach’s α and calculated with SPSS.

The *SP*, the *IRI* total, the *EC*, and the *alexithymia* total scale showed an adequate internal consistency. All remaining scales, namely the *BP*, the *PT*, and the *DIF* scale had good internal consistencies (see Table 6).

Table 6. Internal consistencies of the examined scales. Table not published in Önal et al (2021).

Scales	Cronbach’s α
Blatant prejudice (BP)	.71
Subtle prejudice (SP)	.65
Alexithymia (total scale)	.65
Difficulty identifying feelings (DIF)	.79
IRI (total scale)	.68
Empathic concern (EC)	.68
Perspective taking (PT)	.74

3.3 Correlations

3.3.1 Intercorrelations between SP, BP, empathy, and DIF

Correlations between the variables *SP*, *BP*, *empathy*, and *DIF* were analyzed. The results can be viewed in Table 7.

SP and BP showed a significantly positive correlation ($r(135) = .65, p < .001$, bootstrap 95% confidence interval (CI) [.55, .74] (Önal et al, 2021, p.474)).

The first hypothesis was confirmed, as empathy showed a significantly negative relationship with SP ($r(135) = -.24, p = .005$; 95% CI [-.39, -.08] (Önal et al, 2021, p.474)) as well as BP ($r(135) = -.19, p = .027$; 95% CI [-.40, .03] (Önal et al, 2021, p.474)) prejudices. The second hypothesis was not confirmed, as DIF showed a significantly positive association with empathy ($r(135) = .29, p = .001$; 95% CI [.13, .44] (Önal et al, 2021, pp.474-475)).

Additional exploratory analyses were conducted to examine a possible relationship between DIF and both SP and BP. There was no statistically significant outcome regarding these analyses (DIF and SP: $r(135) = .007, p = .94$; 95% CI -.16 to .17 (Önal et al, 2021, p.475); DIF and BP: $r(135) = -.158, p = .07$; 95% CI -.32 to .01 (Önal et al, 2021, p.475)).

Table 7. Intercorrelations between prejudices, empathy, and alexithymia.
Retrieved from and modified after Önal et al (2021), Table 2 in Önal et al (2021).

Variables	Subtle prejudice	Blatant prejudice	Empathy	Alexithymia
Subtle prejudice	1.000			
Blatant prejudice	0.652**	1.000		
Empathy	-0.243**	-0.190*	1.000	
Alexithymia	0.007	-0.158	0.293**	1.000

Note:
* Correlation significant at the 0.05 level
** Correlation significant at the 0.01 level

3.3.2 Sociodemographic variables & SP, BP, empathy, and DIF

Among all sociodemographic variables, only *income* had a significantly negative relationship with SP ($r = -.24, p < .01$) as well as BP ($r = -.25, p < .01$).

Thus, partial correlations were performed “to control for possible effects of *income* on the relationship between *empathy*” (Önal et al, 2021, p.475) and SP ($r = -.24, p < .01$) and *empathy* and BP ($r = -.19, p < .05$). All relationships remained significant.

3.4 Moderator analyses

3.4.1 *SP, empathy, and DIF*

The first model examined the moderation effects of *DIF* on the association between *SP* and *empathy*. This means that ~9% of the variance is explained by this model ($F_{3,131}=4.17$, $p=.007$, $R^2=.09$). *Empathy* significantly affected *SP* ($b=-1.22$, $SE_b=.46$, $p=.008$ (Önal et al, 2021, p.475)). Moreover, the hypothesized interaction effect between *empathy* and *DIF* ($b=.07$, $SE_b=.04$, $p=.08$ (Önal et al, 2021, p.475)) was significant, as this hypothesis was tested one-sided.

An interaction plot (see Fig. 2) was created to represent the linear association of *empathy* and *SP* at three levels (-1SD (=8.83), mean (=12.66), +1SD (=16.49)). Additionally, individual data points were added.

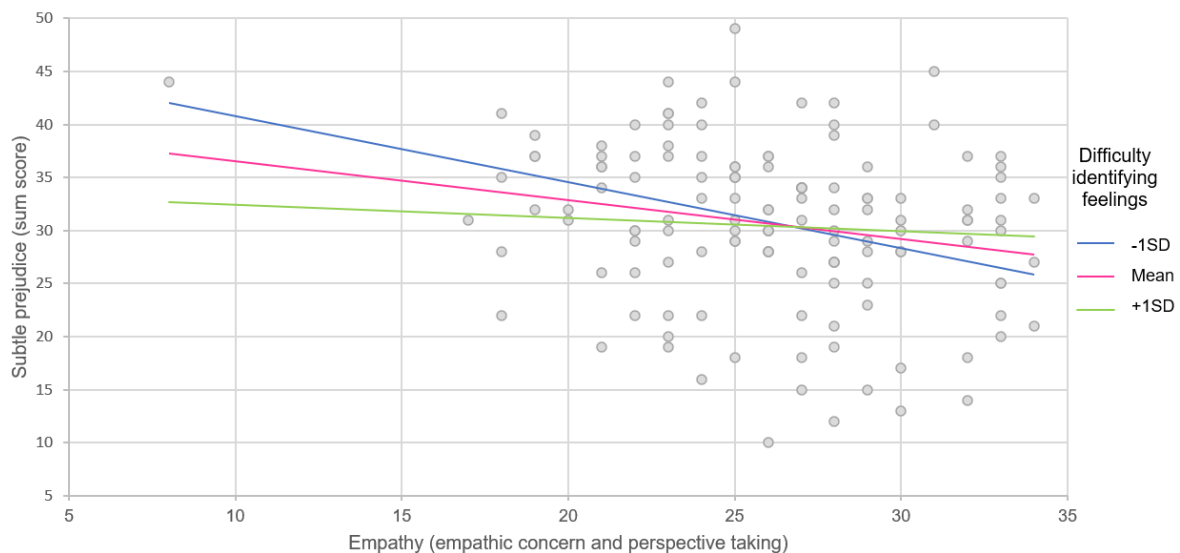


Fig. 2. Relationship between empathy and subtle prejudice.

For *DIF*, high values indicate higher levels. Individual data points are represented by grey dots.

Retrieved from and modified after Önal et al (2021), Figure 1a in Önal et al (2021).

3.4.1.1 Post-hoc analyses for model 1

Post-hoc analyses for model 1 were conducted. The negative relationship between *SP* and empathy was only valid for subjects with low and medium levels of *DIF* (-1SD=8.83; $b=-.63$, $t(131)=-3.53$, $p=.001$ (Önal et al, 2021, p.475) for low levels of *DIF* levels; mean=12.66; $b=-.38$, $t(131)=-2.38$, $p=.019$ (Önal et al, 2021, p.475) for medium *DIF* levels). No significant association was found for *SP* and *empathy* for subjects with a high level of *DIF* (+1SD=16.49; $b=-.12$, $t(131)=-.49$, $p=.63$ (Önal et al, 2021, p.475)).

Using the Johnson-Neyman technique, the aforementioned associations were seen to be significant until a level of >13 points of *DIF* ($b=-.33$, $t(131)=-1.98$, $p=.05$ (Önal et al, 2021, p.475)). The significant zone reached from $b=-.75$ for a score of 7 in *DIF* “($b=-.75$, $t(131)=-3.37$, $p=.001$) to $b=-.33$ for a score of 13.33 points ($b=-.33$, $t(131)=-1.98$, $p=.05$)” (Önal et al, 2021, p.475). This means that with higher difficulties in identifying the own feelings, the negative correlation between *SP* and *empathy* is lessening.

3.4.2 *BP*, *empathy*, and *DIF*

The second model analyzed the moderation effects of *DIF* on the relationship between *BP* and *empathy*. Again, the overall model was statistically significant and explained a 9% difference in prejudice ($F_{3,131}=4.14$, $p=.008$, $R^2=.09$ (Önal et al, 2021, p.475)). *Empathy* significantly predicted *BP* ($b=-.15$, $SE_b=.05$, $p=.005$ (Önal et al, 2021, p.475)) as well as *DIF* ($b=-.30$, $SE_b=.12$, $p=.012$ (Önal et al, 2021, p.475)) on *BP*. A significant interaction effect between *empathy* and *DIF* ($b=.01$, $SE_b=.004$, $p=.019$ (Önal et al, 2021, p.475)) was shown, too.

An interaction plot was created with linear representation of the association between empathy and BP, again, at three levels (-1SD, mean, +1SD) and individual data points (see Fig. 3).

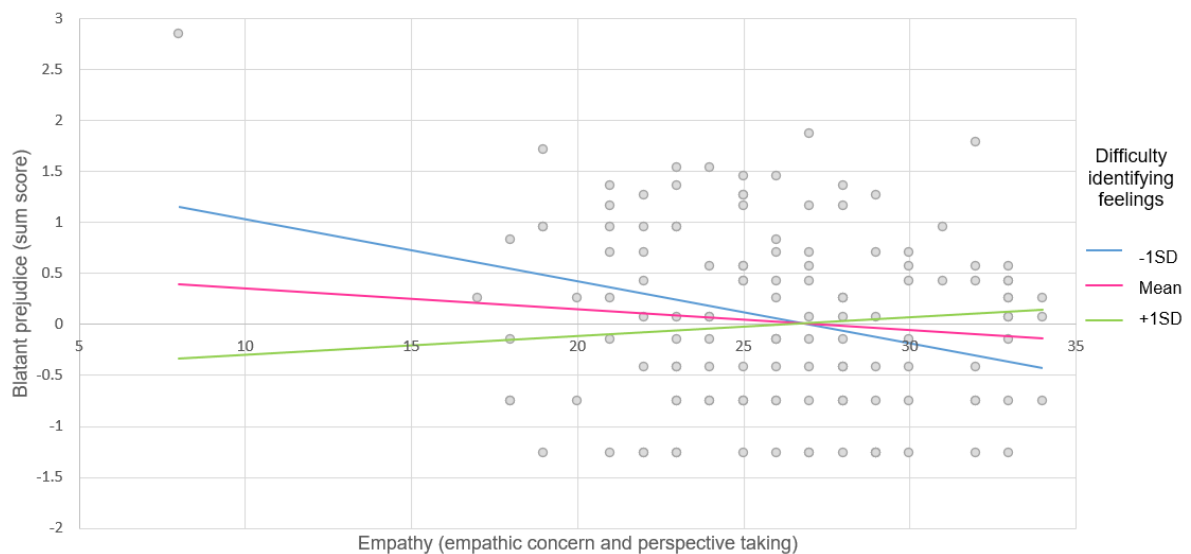


Fig. 3. Relationship between empathy and blatant prejudice.

For blatant prejudice, the Johnson transformed variable was applied. Therefore, values changed (minimum value = -1.26, mean value = 0.04, maximum value = 2.85). Individual data points are represented by grey dots.

Retrieved from and modified after Önal et al (2021), Figure 1b in Önal et al (2021).

3.4.2.1 Post-hoc analyses for model 2

Post-hoc analyses for model 2 revealed a conditional effect for the negative relationship between *BP* and *empathy*: significance was only shown for subjects reporting low *DIF* levels ($b = -.06$, $t(131) = -2.80$, $p = .006$ (Önal et al, 2021, p.475)).

Using the Johnson-Neyman technique, it was possible to see that with increasing *DIF*, the correlation between *empathy* and *BP* was still negative but numerically lower, “with the effect ranging from $b = -.08$ for a score of 7.00 ($b = -0.08$, $t(131) = -2.96$, $p = .004$) to $b = -0.03$ for a score of 11.08 points ($b = -0.03$, $t(131) = -1.98$, $p = .05$)” (Önal et al, 2021, p.475). Having a *DIF* score of at least 7.00 therefore means that empathy and blatant prejudices are significantly related.

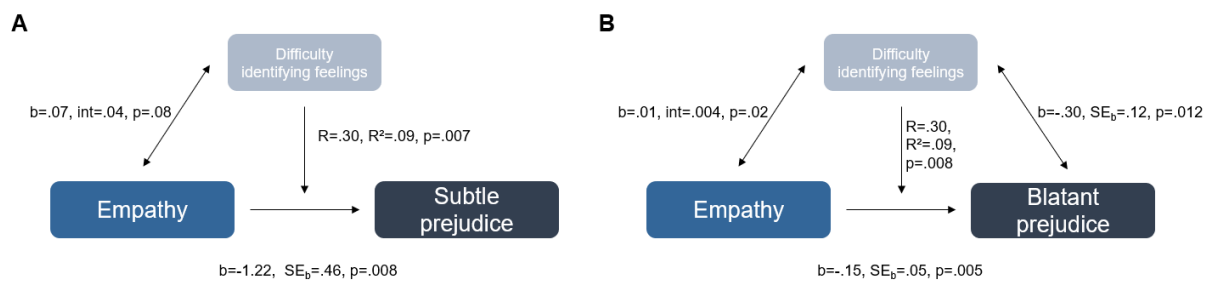


Fig. 4. Moderator analyses (A and B).

Predictor: empathy, outcome variables: subtle prejudice (A)/blatant prejudice (B), moderator: difficulty identifying feelings, int= interaction effect.

Retrieved from and modified after Önal et al (2021), Figure 2 in Önal et al (2021).

3.4.3 Post-hoc power analysis

The program G*Power (Version 3.1.9.7) was used to perform a statistical power analysis. The effect size f^2 (ES) measured $ES = .099$ ($\alpha = .10$; total sample size $n = 135$; number of predictors: 1) for both moderation analyses. With 0.98, the power ($1 - \beta$) was satisfactory for this work.

3.4.4 Post-hoc sensitivity analyses

Post-hoc exploratory sensitivity analyses, as requested by one reviewer, were conducted for both moderation analyses, this time using the *empathy* subcomponents *PT* and *EC* separately.

- SP, PT, and DIF

The first model examined moderation effects of *DIF* on the relationship between *SP* and *PT*. It revealed a trend towards significance ($F_{3,131} = 2.30$, $p = .08$, $R^2 = .05$ (Önal et al, 2021, p.475)). The effect of *PT* on *SP* was also significant ($b = -1.84$,

$SE_b=.78$, $p=.02$ (Önal et al, 2021, p.475)). In addition to that, there was an almost significant interaction effect between *PT* and *DIF* ($b=.12$, $SE_b=.06$, $p=.06$ (Önal et al, 2021, p.475)).

- SP, EC, and DIF

The second model was statistically significant and explained roughly 9% of the change in levels of *prejudice* ($F_{3,131}=4.32$, $p=.006$, $R^2=.09$ (Önal et al, 2021, p.475)). The association between *EC* and *SP* was significant ($b=-1.99$, $SE_b=.74$, $p=.008$ (Önal et al, 2021, p.475)). There was also a trend towards significance regarding the interaction between *EC* and *DIF* ($b=.10$, $SE_b=.06$, $p=.08$ (Önal et al, 2021, p.475)).

- BP, PT, and DIF

The third model was also statistically significant. It explained about 7% of the variance in the scores measuring blatant prejudice ($F_{3,131}=3.02$, $p=.03$, $R^2=.07$ (Önal et al, 2021, p.475)). *PT* significantly influenced *BP* ($b=-.20$, $SE_b=.09$, $p=.03$ (Önal et al, 2021, p.475)). The interaction effect between *PT* and *DIF* also showed a trend towards significance ($b=.014$, $SE_b=.007$, $p=.06$ (Önal et al, 2021, p.476)).

- BP, EC, and DIF

The last model examining the moderation effects of *DIF* on the relationship between *EC* and *BP* was statistically significant. The R^2 value was .08, which means that this model explained about 8% of the variance in prejudice levels ($F_{3,131}=3.61$, $p=.02$ (Önal et al, 2021, p.476)). *EC* was seen to predict *BP* ($b=-.22$, $SE_b=.09$, $p=.01$ (Önal et al, 2021, p.476)). Moreover, the interaction between *EC* and *DIF* was significant ($b=.014$, $SE_b=.007$, $p=.03$ (Önal et al, 2021, p.476)).

4 Discussion

4.1 Summary

The hypotheses of the conducted study were as follows:

- 1) *Empathy* shows a negative association with *SP* and *BP*.
- 2) *DIF* shows a negative association with *empathy*.
- 3) *DIF* moderates the relationship between *empathy* and *SP* and *empathy* and *BP*.

Correlation and moderator analyses were conducted to analyze these hypotheses. The first and third hypotheses were confirmed: The current study revealed that both subtle and blatant prejudices are negatively correlated with empathy. A lack of self-awareness has moderation effects on this relationship, with a higher inability to identify the own feelings impairing the effect of *empathy* on *prejudices*, at least on some levels. Therefore, the ability to identify with and share other people's emotions, or especially stigmatized groups, seems to modify our mindsets towards them, which has already been reported in past studies: Batson et al (1997), for example, showed that inducing empathy for an individual (in that case a woman having HIV/AIDS, a homeless person, and a person convicted of murder), helps to develop a positive mindset regarding and approach towards the stigmatized group each individual belongs to. Galinsky and Moskowitz (2000) reported that while perspective taking decreased "the expression of stereotypical content" (Galinsky and Moskowitz, 2000, p.712) in three experiments, it moreover "prevented the hyperaccessibility of the stereotype construct" (Galinsky and Moskowitz, 2000, p.720). The present results complement these findings.

As hypothesized, we also observed that the above-mentioned negative relationship of *empathy* and *SP* was stronger with lower *DIF* levels. Post-hoc analyses revealed no changes regarding the direction of the preceding results. This implies that both *EC* and *PT* play a substantial role in the relationship between the examined concepts. Moreover, among participants who reported having no difficulties identifying their feelings, *EC* and *PT* were negatively associated with *SP*. From this finding, one can conclude that at least some self-awareness is a requirement to control the expression of *SP*. In 2017, Onraet et al (2017) reported quite similar findings. They examined the relation between *emotional intelligence* (Trait Emotional Intelligence Questionnaire; Petrides, 2009), *alexithymia* (TAS-20; Bagby, Parker and Taylor, 1994)), and *SP* (BSPS; Pettigrew and Meertens, 1995)). The results showed that *SP* and *alexithymia* were negatively correlated, while *PT* was a mediator between both variables (Onraet et al,

2017). While Onraet et al (2017) only focused on *SP*, the present study additionally explored *BP* (Önal et al, 2021).

For participants having low *DIF* the relation between *empathy* and *BP* was negative, while participants with higher *DIF* even showed a positive association between *empathy* and *BP*. It appears that some amount of awareness of the own feelings and some self-reflection (measurable with the TAS-20 subscale *DIF* (Bagby, Parker and Taylor, 1994)) is required for empathy and blatant prejudices to show a negative correlation. This would also mean that participants who have difficulties reflecting their inner state might be resistant to the above-mentioned relationship between *empathy* and *BP*.

However, our second hypothesis was not confirmed: Unexpectedly, *DIF* had a positive relationship with trait empathy. Therefore, people who have difficulties identifying their own feelings might still be able to feel empathy towards others. Some past studies have shown a positive relationship between these two traits. For instance, Nishimura et al (2009) reported a positive relationship between empathy (as assessed by The Multi-Dimensional Empathy Scale for Adolescents (Tobari, 2003)) and *DIF* (as assessed by a Japanese version of the TAS-20 (Komaki et al, 2003)) in a group of female and male junior high school students. Nishimura et al (2009) proposed that the TAS-20 mainly assesses the “cognition of one’s feelings” and that this cognitive skill is not fully developed in young adults and, therefore, might not be assessable via self-report questionnaires. This might be the case in our sample as well, as participants were young adults at the time of the study conduction, and may thus explain the positive relationship between *DIF* and *empathy*. Also, in a work by Gleichgerrcht, Tomashitis and Sinay (2015), *DIF* and *EC* were positively associated in a small sample of patients with multiple sclerosis. Stivaleti Colombarolli et al (2019) reported a negative relation between *DIF* and *perspective taking* and *cognitive empathy*, but a positive relationship between *DIF* and *affective empathy*. These results suggest that there might be a complex interaction between the effects of *DIF* on different forms of empathy: As Stivaleti Colombarolli et al (2019) proposed, one might not necessarily have to cognitively understand others’ feelings to be emotionally invested with them. Future studies should investigate different aspects of empathy and their relationship with alexithymic traits. Considering that prejudices can be strongly related to more intense emotions, from intolerance through to hatred, and contemptuous behavior towards minorities, taking

the perspective of and showing concern towards others might also include the capability to understand and further *control* the own feelings. However, our study did not focus on this, therefore this could be assessed in further studies.

4.2 Limitations

The conducted study was not free from limitations, which should be addressed here.

4.2.1 Social desirability

The examined variables were exclusively detected via self-report questionnaires. Regarding this, the results can be biased by social desirability. In self-report questionnaires, people are more likely to answer in ways that seem to be generally considered “correct” to stick to the societal norm (Anderson, 2019; Janus, 2010; Morning, Brückner and Nelson, 2019; Weber et al, 2014). This aspect must be considered in every study design that assesses or aims to assess parameters via self-report questionnaires. However, considering that our results showed a negative correlation between trait empathy and *both* SP and BP, there might not be a relevant reporting bias in the current study. Additionally, Morning, Brückner and Nelson (2019) found that women tend to report on a more socially desirable level than men when asked about genetic differences between Black and White people. As our sample only consisted of only men, social desirability might not have been a determining factor regarding the present results.

4.2.2 Sample constitution

The examined sample does not represent a heterogeneous population, as only data of young males were assessed, which is a major limitation. Previous studies have already shown that empathy levels differ regarding gender (concerning EC in Guilera et al, 2019; Kataoka et al, 2009; Wen et al, 2013) and age (concerning emotional empathy in Khanjani et al, 2015; Sze et al, 2012). Men tend to be less empathic than women (Guilera et al, 2019; Kataoka et al, 2009; Wen et al, 2013). Khanjani et al (2015) reported that older adults show increased emotional but decreased cognitive empathy compared to younger age groups. Correspondingly, Sze et al (2012) presented results indicating that older people show higher levels of EC – namely emotional empathy – than younger adults. These findings must be taken into consideration when interpreting the present results.

One has to consider, too, that a group of young males might profit from prejudice-limiting interventions more than other male age groups or females, as young males tend to show more prejudices and racist discrimination (Decker, 2006; Decker et al, 2016) and are generally more prone to act violently (Heinz et al, 2011).

4.2.3 Psychodynamic approach

A psychodynamic view regarding prejudice influenced the theoretical approach for the current study. It was proposed that own repressed feelings could be projected upon minorities or stigmatized groups. Therefore, it was hypothesized that an insufficient understanding of the own feelings might result from such repression and could be negatively correlated with empathy, which was not the case according to the results. The hypothesis of Holzkamp (1994) was, however, partly confirmed by showing that empathy is negatively correlated with prejudice only when someone can somewhat identify his or her feelings. Also, not every feeling but only some repressed feelings or desires (e.g., sexual desires, selfishness, resentment, jealousy) might be projected onto others (Freud, 1919, Holzkamp, 1994). Therefore, the observed positive relationship between *DIF* and trait empathy does not contradict the hypothesis that the repression of certain feelings and desires could lead to a lack of sympathy or even aggression towards minorities or stigmatized groups.

4.3 Perspectives

Stereotypes can lead to prejudices, which both in turn form a fundament for discrimination and racism (Allport, 1954; Dovidio et al, 2010). As globalization increases and societies become more diverse, (racist) prejudices constitute a crucial social issue. Social exclusion and rejection as well as radicalization can be possible consequences (Bélanger et al, 2019; Pretus et al, 2018). In 2019, about one-fourth of the German population (~ 21 Million citizens) had a migration background (Destatis Statistisches Bundesamt, 2019). Among these, people with a Turkish migration background are the majority (Bundesinstitut für Bevölkerungsforschung, 2019). The current study was conducted between 2013 and 2017 – a period when Islamist terrorist attacks took place in Europe, followed by demonstrations against an alleged overall “Islamization”. This shows the significance of understanding the development and reduction of prejudices as they can have a substantial impact on society.

Some past studies have already examined interventions or factors that seem to reduce prejudices. For instance, Meleady, Seger and Vermue (2017) found that positive intergroup contact was associated with lower prejudice levels, while negative intergroup contact predicted the opposite. Similarly, Vedder, Wenink and van Geel (2017) reported that positive intergroup contact – both in a majority and minority group in their conducted study – was linked to lower levels of negative attitudes towards the outgroup. In addition, a number of studies have shown that contact to and empathic concern for others and considering the perspective of socially excluded or discriminated people are extremely important when trying to reduce one's own prejudices (Boag and Wilson, 2014; Miklikowska, 2018). In addition to that, e.g., perspective taking – as an intervention strategy – can result in reduced implicit racist bias (Devine et al, 2012).

In 1954, Allport introduced the “contact hypothesis”: Prejudices towards an outgroup as a whole can be reduced by positive contact with a person who is seen as an outgroup member. Indeed, in following studies, intergroup contact was shown to moderate prejudice levels. For example, direct and also indirect intergroup contact have been linked to lower prejudice levels (Alfieri and Marta, 2015). Similarly, Herrero Olaizola, Rodriguez Diaz and Musitu Ochoa (2014) observed a reduction of subtle and blatant prejudices in people who have contact with immigrants compared to people who have no contact with immigrants. The present study did not examine prejudice-reducing mechanisms explicitly. This could be investigated in further studies in the future. Still, according to the present results regarding male adults, promoting empathy to reduce prejudices might be more effective than promoting self-awareness. However, the results also revealed that some self-awareness of feelings is necessary for empathy to be negatively correlated and hence putatively reduce prejudice levels. On the other hand, some studies have proposed that deep-seated prejudices may not be affected by interventions, for example, aiming to increase perspective taking (Buraschi, Bustillos and Huici, 2018; Sherman, Cupo and Mithlo, 2020).

Furthermore, the present study only assessed prejudices towards ethnic minorities, while prejudices can also appear towards other stigmatized - e.g., regarding their sexual orientation, socio-economic status, or religion – groups (see, for example, Allport, 1954; Herek and McLemore, 2013). The examination of these different variables in more heterogeneous samples in the future will give a more detailed overview of the relationships between empathic traits, alexithymia, and different types of prejudices.

In conclusion, future studies should evaluate empathy-increasing and prejudice-decreasing interventions in more heterogeneous samples. The examination of prejudices represents a fundamental headstone to achieve more mutual solidarity in our daily lives.

5 References

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6 Statutory declaration

“I, Aleyna Önal, by personally signing this document in lieu of an oath, hereby affirm that I prepared the submitted dissertation “*Empathy and alexithymia and their effect on subtle and blatant prejudices*” („*Empathie und Alexithymie und ihre Wirkung auf subtile und offenkundige Vorurteile*“ (Önal et al, 2021)) independently and without the support of third parties and that I did not use any other sources and aids than those stated.

All parts which are based on the publications or presentations of other authors, either in letter or in spirit, are specified as such in accordance with the citing guidelines. The sections on methodology (in particular regarding statistical processing, figures and tables) and results (in particular regarding figures and tables) are exclusively my responsibility.

Furthermore, I declare that I have correctly marked all of the data, the analyses, and the conclusions generated from data obtained in collaboration with other persons, and that I have correctly marked my own contribution and the contributions of other persons (cf. declaration of contribution). I have correctly marked all texts or parts of texts that were generated in collaboration with other persons.

My contributions to the publications to this dissertation are corresponding to those stated in the “Declaration of own contributions” and were made with my supervisors. The publication was created within the scope of the dissertation comply with the guidelines of the ICMJE (International Committee of Medical Journal Editors; www.icmje.org) on authorship. Furthermore, I assure that I am aware of the regulations of Charité – Universitätsmedizin Berlin on ensuring good scientific practice.

I additionally declare that I have not submitted this dissertation, neither in an identical or similar form, to another faculty.

The significance of this statutory declaration and the consequences of a false statutory declaration under criminal law (sections 156, 161 of the German Criminal Law) are known to me.”

Berlin, March 10th, 2022

Aleyna Önal

7 Declaration of own contribution to the current publication

Aleyna Önal contributed to the following to the publication “*Empathy and the experience to identify one’s own emotions modify the expression of blatant and subtle prejudice in young male adults*” (Önal et al, 2021):

Prof. Dr. phil. Dr. med. Andreas Heinz, Prof. Dr. phil. Dr. med. Michael A. Rapp, PD Dr. med. Christiane Montag and Aleyna Önal were responsible for the conceptualization and design of the publication. Aleyna Önal wrote the first outline of the publication independently which was then revised by all co-authors under leading supervision of Prof. Dr. phil. Dr. med. Andreas Heinz and Prof. Dr. phil. Dr. med. Michael A. Rapp. Prof. Dr. phil. Dr. med. Michel A. Rapp mainly contributed to the statistical analyses in the published work, which were then conducted by Aleyna Önal. As a product of the statistical analyses, Tables 1-3 as well as Figures 1-2 were created by Aleyna Önal. Data acquisition was conducted by Miss Hao Chen. Prof. Dr. phil. Dr med. Michael A. Rapp was the corresponding author with the journal during the submission process. The comments of the peer reviewers were incorporated in the manuscript by Aleyna Önal which, again, were controlled by all co-authors. Aleyna Önal wrote the first outlines of the response letters, which were completed with Prof. Dr. phil. Dr. med. Andreas Heinz, Prof. Dr. phil. Dr. med. Michael A. Rapp, PD Dr. med. Christiane Montag, and Dr. phil. Maria Garbusow and controlled by all co-authors before submitting the manuscript.

Berlin, March 10th, 2022

Signature and stamp of the supervising university professor
(Prof. Dr. phil. Dr. med. Andreas Heinz)

Signature of doctoral candidate (Aleyna Önal)

8 Journal summary list

The “Journal of Psychiatric Research” is on rank 45 out of 216 journals (top 25% of journals) sorted by their impact factor in the field of psychiatry (*Journal Summary List 2019*). It is therefore considered a top journal according to the guidelines of Charité – Universitätsmedizin Berlin.

Journal Data Filtered By: **Selected JCR Year: 2019** Selected Editions: SCIE,SSCI
 Selected Categories: **“PSYCHIATRY”** Selected Category
 Scheme: WoS
Gesamtanzahl: 216 Journale

Rank	Full Journal Title	Total Cites	Journal Impact Factor	Eigenfactor Score
1.	World Psychiatry	6,486	40.595	0.017130
2.	JAMA Psychiatry	13,433	17.471	0.056110
3.	Lancet Psychiatry	6,405	16.209	0.028290
4.	PSYCHOTHERAPY AND PSYCHOSOMATICS	4,275	14.864	0.006480
5.	AMERICAN JOURNAL OF PSYCHIATRY	41,967	14.119	0.034380
6.	MOLECULAR PSYCHIATRY	22,227	12.384	0.054730
7.	BIOLOGICAL PSYCHIATRY	44,016	12.095	0.053910
8.	JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY	30,621	8.234	0.028510
9.	SCHIZOPHRENIA BULLETIN	17,703	7.958	0.027070
10.	BRITISH JOURNAL OF PSYCHIATRY	24,380	7.850	0.020520
11.	JOURNAL OF CHILD PSYCHOLOGY AND PSYCHIATRY	19,837	7.035	0.021080
12.	JOURNAL OF CHILD PSYCHOLOGY AND PSYCHIATRY	19,837	7.035	0.021080
13.	JOURNAL OF THE AMERICAN ACADEMY OF CHILD AND ADOLESCENT PSYCHIATRY	19,831	6.936	0.017840
14.	NEUROPSYCHOPHARMACOLOGY	26,281	6.751	0.040680
15.	BRAIN BEHAVIOR AND IMMUNITY	16,285	6.633	0.028560
16.	JOURNAL OF ABNORMAL PSYCHOLOGY	16,003	6.484	0.014170
17.	ADDICTION	19,861	6.343	0.030820
18.	Epidemiology and Psychiatric Sciences	1,584	5.876	0.004770
19.	PSYCHOLOGICAL MEDICINE	26,702	5.813	0.039350
20.	Clinical Psychological Science	2,599	5.415	0.011100

Rank	Full Journal Title	Total Cites	Journal Impact Factor	Eigenfactor Score
21.	BIPOLAR DISORDERS	4,838	5.410	0.006610
22.	ACTA PSYCHIATRICA SCANDINAVICA	13,539	5.362	0.011750
23.	Translational Psychiatry	9,160	5.280	0.029500
24.	Journal of Behavioral Addictions	2,184	5.143	0.005970
25.	CNS DRUGS	4,768	4.786	0.007670
26.	PSYCHONEUROENDOCRINOLOGY	19,287	4.732	0.027100
27.	DEPRESSION AND ANXIETY	9,355	4.702	0.013860
28.	AUSTRALIAN AND NEW ZEALAND JOURNAL OF PSYCHIATRY	7,192	4.657	0.008620
29.	Current Psychiatry Reports	4,785	4.539	0.010670
30.	EUROPEAN PSYCHIATRY	6,054	4.464	0.009470
31.	CURRENT OPINION IN PSYCHIATRY	4,182	4.392	0.006260
32.	JOURNAL OF PSYCHIATRY & NEUROSCIENCE	3,297	4.382	0.004290
33.	PROGRESS IN NEURO-PSYCHOPHARMACOLOGY & BIOLOGICAL PSYCHIATRY	11,179	4.361	0.013670
34.	PHARMACOPSYCHIATRY	1,787	4.340	0.001580
35.	INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY	6,749	4.333	0.011150
36.	npj Schizophrenia	502	4.304	0.002060
37.	JOURNAL OF CLINICAL PSYCHIATRY	18,652	4.204	0.018530
38.	WORLD JOURNAL OF BIOLOGICAL PSYCHIATRY	2,567	4.164	0.004200
39.	DRUG AND ALCOHOL DEPENDENCE	20,269	3.951	0.040630
40.	EUROPEAN CHILD & ADOLESCENT PSYCHIATRY	5,422	3.941	0.009450
41.	JOURNAL OF AFFECTIVE DISORDERS	32,869	3.892	0.055920
42.	SUICIDE AND LIFE-THREATENING BEHAVIOR	4,512	3.867	0.005980

Rank	Full Journal Title	Total Cites	Journal Impact Factor	Eigenfactor Score
43.	EUROPEAN NEUROPSYCHOPHARMACOLOGY	7,597	3.853	0.013120
44.	SCHIZOPHRENIA RESEARCH	22,003	3.759	0.030040
45.	JOURNAL OF PSYCHIATRIC RESEARCH	16,085	3.745	0.020560
46.	PSYCHOSOMATIC MEDICINE	12,560	3.702	0.009890
47.	PSYCHOSOMATIC MEDICINE	12,560	3.702	0.009890
48.	INTERNATIONAL JOURNAL OF EATING DISORDERS	9,613	3.668	0.010750
49.	Eating and Weight Disorders-Studies on Anorexia Bulimia and Obesity	1,977	3.634	0.002830
50.	Mindfulness	4,006	3.581	0.008500
51.	World Journal of Psychiatry	701	3.545	0.002190
52.	JMIR Mental Health	1,103	3.535	0.003440
53.	Internet Interventions-The Application of Information Technology in Mental and Behavioural Health	996	3.513	0.002720
54.	European Journal of Psychotraumatology	1,987	3.478	0.004940
55.	AMERICAN JOURNAL OF GERIATRIC PSYCHIATRY	7,144	3.393	0.009920
56.	AMERICAN JOURNAL OF MEDICAL GENETICS PART B- NEUROPSYCHIATRIC GENETICS	4,033	3.387	0.006040
57.	CNS SPECTRUMS	2,479	3.356	0.003480
58.	PSYCHIATRY AND CLINICAL NEUROSCIENCES	3,696	3.351	0.004260
59.	SOCIAL PSYCHIATRY AND PSYCHIATRIC EPIDEMIOLOGY	8,775	3.335	0.012760
60.	CANADIAN JOURNAL OF PSYCHIATRY-REVUE CANADIENNE DE PSYCHIATRIE	6,097	3.313	0.007620
61.	EUROPEAN ARCHIVES OF PSYCHIATRY AND CLINICAL NEUROSCIENCE	4,136	3.288	0.004760
62.	BEHAVIOR THERAPY	5,758	3.243	0.006320
63.	PSYCHOPHARMACOLOGY	22,417	3.130	0.019820
64.	JOURNAL OF PSYCHOPHARMACOLOGY	6,262	3.121	0.009340

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Excerpt of the Journal Summery List for Psychiatry in 2019.

https://intranet.charite.de/fileadmin/user_upload/microsites/sonstige/medbib/Impact_Faktoren_2019/ISI-WEB-Liste-Kategorie-Psychiatry.pdf [Accessed on February 20th, 2022]

9 Selected publication

Önal, A., Rapp, M. A., Sebold, M., Garbusow, M., Chen, H., Kuitunen-Paul, S., Montag, C., Kluge, U., Smolka, M. N. and Heinz, A. (2021) Empathy and the ability to experience one's own emotions modify the expression of blatant and subtle prejudice among young male adults. *Journal of Psychiatric Research* 137, 471-479.

<https://doi.org/10.1016/j.jpsychires.2021.03.011>

10 Curriculum vitae

Mein Lebenslauf wird aus datenschutzrechtlichen Gründen in der elektronischen Version meiner Arbeit nicht veröffentlicht.

11 Publication list

1. Önal, A., Rapp, M. A., Sebold, M., Garbusow, M., Chen, H., Kuitunen-Paul, S., Montag, C., Kluge, U., Smolka, M. N. and Heinz, A. (2021) Empathy and the Ability to Experience one´s own Emotions Modify the Expression of Blatant and Subtle Prejudice among Young Male Adults. *Journal of Psychiatric Research* 137, 471-479.
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