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Empathic Accuracy and Homelessness

Does homelessness influence the ability to correctly identify other people's emotions?

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Abstract

The relationship between social cognitions and severe relative poverty in an industrial country has rarely been the subject of research. In an experimental-control-group design 42 Viennese homeless people were compared to a control group paralleled in gender and age of the same size. Emotion Recognition, the ability to correctly name other people's emotion, was measured via a short version of the Geneva Emotion Recognition Test (GERT-S, Schlegel & Scherer, 2016). As control variables, analytical abilities (measured via items of the Standardized Progressive Matrices Test; Kratzmeier & Horn, 1988), self-reported Alexithymia (measured via the Toronto Alexithymia Scale; Kupfer et al., 2001), self-reported empathy (measured via the Saarbrücker Persönlichkeitsfragebogen zur Messung von Empathie; Paulus, 2009) were included. The experimental group proved to have a significantly lower ability to correctly name the people's emotions also after including analytical abilities, Alexithymia, empathy and demographical data into the model. With regard to homeless people, the results contradict the theory of contextualism and solipsism (Kraus, Piff & Keltner, 2011), that proposes increased social skills among people with low Socioeconomic Status due to a lack of other resources to rely upon.

Zusammenfassung

Der Zusammenhang zwischen sozialen Kognitionen und schwerer relativer Armut in einem Industrieland ist von der Forschung bisher kaum untersucht. In einem Experimental-Kontroll-Gruppen Design wurden 42 Wiener Wohnungslose Menschen mit einer nach Geschlecht und Alter parallelisierten Kontrollgruppe verglichen. Emotion Recognition, die Fähigkeit Gefühle bei anderen zu erkennen, wurde mittels einer Kurzversion des Geneva Emotion Recognition Test (GERT-S, Schlegel & Scherer, 2016) erhoben. Die Experimentalgruppe zeigte signifikante Ergebnisse. Auch nach Aufnahme von analytischem Denken (erhoben durch Items des Standardized Progressive Matrices Test; Kratzmeier & Horn, 1988), Alexithymia (erhoben mittels der Toronto Alexithymia Scale; Kupfer et al., 2001), Empathie (erhoben durch den Saarbrücker Persönlichkeitsfragebogen zur Messung von Empathie; Paulus, 2009) und demographischen Daten in das Modell blieb der Gruppeneffekt auf den GERT-S Score signifikant. Die Ergebnisse widersprechen der Theorie Kontextualismus und Solipsismus (engl. contextualism and solipsism; Kraus, Piff & Keltner, 2011), die in Ermangelung anderer Ressourcen erhöhte soziale Fertigkeiten bei Menschen mit niedrigem sozioökonomischen Status annimmt.

1. Theory

1.1 Introduction

Socioeconomic Status has been widely discussed as having a high influence on psychological and social variables. SES is considered the most robust variable in explaining variations among social groups in health status (Bateman, 2014). Due to its strong influences SES is emerging as a cultural variable of interest to social sciences (Kraus et al., 2010; Mahalingam, 2003).

A problem with psychological research in general is also true when assessing the influence of Socioeconomic Status, namely that students are overrepresented in psychological research and other social groups are often insufficiently assessed. Regarding social abilities their relationship with a widely ranging socioeconomic status has been underrepresented in research. The present paper assesses the relationship between a very basic social skill the recognition of emotions in other people and homelessness as a severe form of low Socioeconomic Status. Among the many variables influencing social abilities the present paper also considers Alexithymia, Empathy and cognitive abilities.

The paper starts out by theoretically defining key terms and to line out research results related to the present investigation before moving on to formulate the paper's research question of the paper at hand.

1.2 Theoretical description of key terms

1.2.1 Socioeconomic Status, Social Status and Poverty

Socioeconomic status arises from the social and monetary resources a person possesses. It is measured by indicators of material wealth including a person's educational attainment, income or occupational prestige (Snibbe & Markus, 2005; Oakes & Rossi, 2003). Social class and socioeconomic status (SES) are often used as synonyms (e.g. Kraus, Côté & Keltner, 2010; Piff et al., 2012). Rubin et al. (2014) criticize this method, however, stating that SES refers to one's current social and economic situation and can change over the course of one's life while social class refers to one's sociocultural background and is more stable even across generations.

Traditionally socioeconomic status is measured via education and income. Also, occupational prestige is considered to play a role (Bateman, 2014). In recent research, measures like neighbourhood SES have also been proposed. Some researchers also argued, that utilizing a life course perspective as critical for understanding SES (Bateman, 2014).

There are four different approaches for defining poverty. Poverty is defined by money, capability, social exclusion and participation. While the latter three approaches are also sometimes considered, a lack of monetary resources remains the most popular defining factor of poverty by far (Steward, 2003). A severe form of poverty is homelessness, which has more severe implications for people's psychological and physical well-being. Homeless people are more likely to suffer from substance abuse, show higher levels of psychological distress, of having been victims of recent domestic violence and of having been physically abused as children than poor people who are currently not homeless (Haber & Toro, 2004). Homeless and non-homeless poor people did not differ in the amount of social networks and social support they had, according to a study by Toro et al. (Toro et al., 1995).

1.2.2 Empathy, emotional intelligence and emotion recognition

A well-established definition of empathy comes from Cohen and Strayer (1996) who define empathy as the ability to understand and share in another's emotional state or context. Empathy is accordingly stated as having a cognitive and an affective aspect. Cognitive empathy is defined as the capacity to understand another's perspective or mental state, while affective empathy refers to responding with an appropriate emotion to another person's mental state (Cohen & Strayer, 1996).

Linked to cognitive empathy is the construct of emotional intelligence. Salovey and Mayer (2004) define emotional intelligence within an ability model including the four factors: Perceiving emotions describes the ability to detect and decipher emotions in faces, pictures, voices, and cultural artefacts. Using emotions refers to the ability to harness emotions, to facilitate various cognitive activities, such as thinking and problem solving. Understanding emotions names the ability to comprehend emotional language and to appreciate complicated relationships among emotions. Finally, managing emotions is defined as the ability to regulate emotions in both ourselves and in others (Salovey & Mayer, 2004).

An especially important part of emotional intelligence is the ability to recognize emotions

(*Emotion Recognition*, ERA) is considered the most basic branch underlying more complex skills like emotional understanding (Schlegel & Scherer, 2016).

1.2.3 Alexithymia

Alexithymia is a clinical concept of psychoanalysis and was originally developed in the context of transference and psychological repression in a psychoanalytical setting and later proved useful in an empirical setting (Kupfer, Brosig & Brähler, 2001). This is largely due to Taylor and his associates who developed a valid Alexithymia scale (Taylor, Ryan & Bagby, 1985). Alexithymia describes the inability of an individual to adequately perceive emotions at oneself, to express them linguistically and consequently process them psychologically. The concept is closely linked to a dysfunction in social attachment, and interpersonal relating (Kupfer et al., 2001). Alexithymia, on a physiological level, shows a close inverse relationship with empathy and is linked to dysfunctions of socio-emotional processing in the brain (Goehrlich et al., 2016).

1.3 Previous research results

1.3.1 SES and social skills: the theory of contextualism and solipsism

As previously discussed SES has a strong influence on social life and is deemed an important and robust variable when discussing social abilities. It is tied to the participation in social institutions (Oakes & Rossi, 2003), vulnerability of health and psychiatric problems (Adler et al., 1994; Holzer et al., 1986).

Kraus, Piff and Keltner (2011) argue that due to greater resources, freedom and independence from others upper class individuals develop self-focused social-cognitive tendencies, while lower class individuals are more dependent on forces in the external social context and consequently focus their attention more on the context and other people. Thus, the theory links higher social class (here used synonymously with SES) with solipsism, a stronger focus on the self, and low social class with contextualism, a stronger focus on the environment and especially other people (Kraus et al., 2011).

In line with the theory of solipsism and contextualism, Chen and Matthews (2001) found that lower-class children are more aware of and exhibit heightened cardiovascular reactions to potential social threats in their environment than upper-class children. More recently, Muscatell et al. (2012) found

that individuals lower in SES are more likely to engage in neural circuitry often involved in thinking about others' thoughts and feelings. Using functional magnetic resonance imaging (fMRI) it was shown that SES predicted adolescents' neural activity while they were processing threatening faces. Individuals with lower SES displayed greater activity in the dorsal medial prefrontal cortex (DMPFC) in areas that are associated with mentalizing and in the amygdala, which is associated with emotion and salience processing (Muscatell et al., 2012).

Varnum, Blais, Hampton and Brewer (2015) linked higher SES to less neural empathic responses. Using EEG and presenting participants faces, people with higher subjective social status showed less fronto-central P2 responses (Varnum et al., 2015).

Additionally, people with a low SES have a lower sense of control, due to which they tend to explain personal and social outcomes, in terms of external, contextual forces (Kraus, Piff & Keltner, 2009). Also in line with the argument that upper class individuals are more self-focused and less socially oriented, Piff et al. (2012) present seven experiments linking upper class membership to unethical behaviour. People with a high SES showed a greater tendency to break the law while driving, exhibit unethical decision making, take valued goods from others, lie in a negotiation, cheat to increase chances of winning a prize and endorse unethical behaviour at work.

In a widely-received paper Kraus et al. (2010) present the findings of three experiments linking socioeconomic status (SES) to empathic accuracy. The first experiment consisted of two groups both of whom were university employees. One group was made up by academics while the other group maximally had a high school degree and no college education. Participants received parts of the Mayer-Salovey-Caruso Emotional Intelligence Test (MESCEIT; Mayer, Salovey & Caruso, 2002) to assess the ability to identify emotions in photographs of human faces. People with low SES scored significantly higher than people with high SES (Kraus et al., 2010). Study 2 tested whether social class predicts accuracy in judging emotions during interactions. Students had to rate their own and their partner's emotions after having been interviewed. Subjective SES ratings were made accounting for the participant's – all of whom were students – perceptions of their family's social class. Students from a lower social background were more accurate in judging the spontaneous emotions of their interaction partner (Kraus et al., 2010). By manipulating people's subjective perception of their social-class rank, Study 3 hypothesized that inducing participants to momentarily experience a lower sense of social-class rank would increase their empathic accuracy.

Results showed that indeed students who untruly believed their social-class rank was lower were more accurately able to infer emotion from configurations of muscle movements around the eyes (Kraus et al., 2010).

1.3.2 Findings contradicting the theory of contextualism and solipsism

In a Meta-Analysis Hall, Schmidt Mast and Latu (2015) investigated how verticality (social power, dominance and social status) is related to accurate interpersonal perception. Across 21 studies social status was shown to have an overall significant positive effect on accurate interpersonal inference. Effects were significantly heterogeneous. There was one study with a significant negative effect of social status which was Study 1 in the previously discussed paper by Kraus et al. (2010) and four studies with a significant positive effect of social status (Pfaff 1954, as cited in Hall et al., 2015; Rosenthal et al., 1979, as cited in Hall et al., 2015; Stokes, 1983, as cited in Hall et al., 2015; Alvarez & Fuentes, 1994). However most of the studies did not explicitly search for differences in accurate interpersonal perception due to SES or social status. Additionally, some of the data included in the Meta-Analysis derived from unpublished data. All the studies producing a significant positive effect are older than 20 years. The most recent study, where social status had a significantly positive effect on interpersonal perception, used only male and right handed students and was not aimed at discovering socioeconomic differences in social skills (Alvares & Fuentes, 1994). Given the significant heterogeneity of the studies' results and the fact that the major part of the studies was done on students for whom social status was a familial rather than an individual attribute, Hall et al. (2015) express the need for more research to be done to better understand the effects of social status on accurate emotional recognition.

In a study investigating differences in the ability to identify emotions from faces, Izard (1971) found a positive correlation with high SES indicating more wealthy and better educated people have a better ability to identify emotions from faces. Elfenbein and Ambady (2002) argue that these results are due to emotion recognition tests not being culture fair. As they are usually designed by rather wealthy individuals with a very good education, they interpret these differences as an in-group advantage.

1.3.3 Alexithymia, social skills and SES

Lane and colleagues (1996) showed that Alexithymia leads to an impaired ability to verbally and

non-verbally recognize emotions. Levels of two independent scales for Alexithymia, the Emotional Awareness Scale (LEAS; Lane et al., 1990) and the Toronto Alexithymia Scale (TAS-20; Bagby, Taylor & Parker, 1994), were compared to results of the Perception of Affect Task (PAT; Rau, 1993; as cited in Lane et al., 1996), a 140-item measure of the ability to match emotion stimuli. The PAT's tasks include matching sentences and words (verbal-verbal), faces and words (nonverbal-verbal), sentences and faces (verbal-nonverbal), and faces and photographs of scenes (nonverbal-nonverbal). Higher TAS-20 and lower LEAS scores were correlated with lower accuracy rates on each of the subtasks of the PAT ($p < .001$). The TAS scores accounted for 10.5% of the variance, the LEAS scores for 18.4% of the variance (Lane et al., 1996).

A Finish study with a representative subject size of 1285 showed that Alexithymia, assessed by a 20 item version of the Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994), is more common in man than in women. Alexithymia was also shown to correlate with advanced age, low educational level and low income (Salminen et al., 1998). The correlation between education and Alexithymia contradicts the findings of a previous study conducted in Canada by Parker, Taylor and Bagby (1989), the creators of TAS-20, where no relationship was found the two variables. While the Canadian study consisted of a small group of volunteers recruited from passenger lounges at a railway station and an airport (Parker, Taylor & Bagby, 1989), the Finish study used a large sample which represents the population of Finland in gender, age and income (Salminen et al., 1998). By explaining the higher occurrence of Alexithymia among people with low SES, it was argued that they might have had less social success in their previous lives due to Alexithymia and as an alternating explanation that socioeconomic difficulties negatively influence an individual's ability to deal with emotions (Salminen et al., 1998).

1.3.4 Social systems of homeless people in Vienna

An evaluation of the Viennese support system for homeless people, Wiener Wohnungslosenhilfe (Wiener Magistratsabteilung 24, 2012), showed that every second homeless person in Vienna had previously experienced, or was currently experiencing, violence in a relationship. The same number of people had lost their apartment due to a relationship. 42% of Viennese homeless people were long-term unemployed and experienced a long period of social exclusion. Every third person had been raised in an instable family, had moved away from his or her family before the age of sixteen or had experienced violence in his or her family of origin. Among people under thirty the

number of people having experienced one of the three forms of family-related risk factors was much higher, equalling 63% (Wiener Magistratsabteilung 24, 2012).

1.3.5 Socioeconomic status and intelligence

Most studies show that income and education correlate significantly with people's scores in intelligence tests (e.g. Turkheimer et al., 2004; Marioni et al., 2014). These results are however seen as being derived mainly from learning processes given that children from better situated families receive more support and most intelligence test are not culture-fair regarding education with better educated people achieving significantly better results (Turkheimer et al., 2004). Raven's Progressive Matrices Test (Kratzmeier & Horn, 1988) is a screening for analytical abilities that does not rely on language and thus, is deemed to be rather culture-fair. Still there have been studies reporting better performance of men and people with better education (Matthews, 1988; Guo, Lai, Chen & Hsu, 1995).

2. Research Question and Hypothesis

The present study investigates whether the theory of contextualism and solipsism (Kraus et al., 2011), which proposes that people with low socioeconomic status are generally more drawn to other people and thus have higher social cognitive skills, especially empathic recognition, and empathy, is valid for people who suffer from homelessness, as a severe form of poverty.

Given the call for more research and the overrepresentation of students, the present study aims at achieving groups who differ strongly regarding their SES. In previous research on this topic, even if subjects who were not students had been recruited, the extent to which people varied in SES was limited. For example, Kraus et al. (2010) compared university and non-university educated subjects who were all fulltime employees.

The study assesses data from very poor people who are currently subject to the Viennese welfare program which is in charge of providing shelter for homeless people (“Wiener Wohnungslosenhilfe”, group 1) and compares them to a control group (group 2) matched to the experimental group in gender and age.

While the theory of contextualism and solipsism (Kraus et al., 2011) proposes that fewer resources lead to better social abilities, research testing their proposition offers controversial results. Additionally, poverty often coincides with long term joblessness, a high level of stress and has been linked to a higher level of Alexithymia, as well as additional potentially negative factors and has not yet been assessed as a predictor of emotional intelligence and empathy. Thus, a direction of the effect of homelessness cannot be hypothesized at the current state of research.

The present study assesses emotion recognition (ERA), Alexithymia via the “Toronto Alexithymia Scale” (TAS-26; Kupfer et al., 2001), demographic data regarding social economic status including income, employment, education, perceived wealth of neighborhood and living situation. It will also assess cognitive empathy via self-rating using the “Saarbrücker Persönlichkeitsfragebogen zur Messung von Empathie” (Paulus, 2009) and includes a screening for nonverbal intelligence via nine items of Raven’s (1998) “Standardized Progressive Matrices Test” (SPM).

Taking into account previous research the present study hypothesizes:

H1.0: Group 1 does not differ in the ability to recognize emotions from group 2.

H1.1: Group 1 differs in the ability to recognize emotion from group 2.

Given that social skills are tied to cognitive skills, the study analyzes whether a potential relationship between emotion recognition and homelessness remains robust after controlling for cognitive skills screened via the SPM score.

H2.0: The relationship between emotion recognition and homelessness disappears after including people's SPM score into the model.

H2.1: The relationship between emotion recognition and homelessness remains intact after including people's SPM score into the model.

Emotion recognition is operationalized via a test and measured as an ability. Social behavior has long been measured as a trait. Given that both sides of social behavior are connected, it is measured whether a potential relationship between emotion recognition and homelessness remains robust after controlling for the variables of the "Saarbrücker Persönlichkeitsfragebogen" (Paulus, 2009) *Perspective Taking, Fantasy, Empathic Concern* und *Personal Distress*.

H3.0: The relationship between emotion recognition and homelessness disappears after including the self-reports on empathy *Perspective Taking, Fantasy, Personal Distress* and *Empathic Concern* into a multivariate linear regression model with emotion recognition as dependent variable.

H3.1: The relationship between emotion recognition and homelessness remains intact after including the self-reports on empathy *Perspective Taking, Fantasy, Personal Distress* and *Empathic Concern* into a multivariate linear regression model with emotion recognition as dependent variable.

Alexithymia is linked to deficits in social skills. As it is linked to low SES, it is analyzed whether a potential relationship between ERA and homelessness remains robust after including the

variables of the Toronto Alexithymia Scale (TAS-20) *Difficulty Identifying Feelings*, *Difficulty Describing Feelings* and *Externally-Oriented Thinking* into the model.

H4.0: The relationship between emotion recognition and homelessness disappears after including *Difficulty Identifying Feelings*, *Difficulty Describing Feelings* and *Externally-Oriented Thinking*, into a multivariate linear regression model with emotion recognition as dependent variable.

H4.1: The relationship between emotion recognition and homelessness remains significant after including *Difficulty Identifying Feelings*, *Difficulty Describing Feelings* and *Externally-Oriented Thinking*, into a multivariate linear regression model with emotion recognition as dependent variable.

Additionally, the study aims to analyze whether there are effects of the demographical data within and between the groups regarding their performance at emotion recognition.

3. Method

In this chapter the sample, the used materials and procedure of data acquisition are presented. The following consists of a description of the target population and how the sample was put together. The material used for the study consisted of two tests, assessing emotion recognition and analytical thinking respectively, two scales, one for empathy and one for Alexithymia, and several demographic questions. The procedure took place in a one-on-one or one-on-two setting with some of the material being presented via computer and some via paper-pencil.

3.1 Sample

Participants from the experimental group were recruited from nine Viennese homeless shelters. There are currently 35 different homeless shelters in Vienna, seven of whom only provide a place to sleep at night (Wiener Magistratsabteilung 24, 2012). The clients of the latter institutions are in a state of crisis and often mentally unstable. These institutions also stated that testing would not be possible due to their lacking an unused room for conducting the data acquisition. Thus, about a third of the institutions, where data acquisition would have been feasible, were reached.

Five of the shelters, who cooperated in conducting the study, are run by Caritas der Erzdiozöse Wien, one by Samariterbund and three more by Fonds Soziales Wien. The shelters' direction was contacted via e-mail asking for permission to assess their clients. In some cases, the recruitment was done by the author during a visit, in other cases the institutions assisted by asking clients to participate during group meetings.

Six shelters are mixed in gender also providing a place to live for couples, one shelter receives women only, one women and their children and one men only. Two of the shelters offer a permanent form of living, the other seven only provide shelter for several months up to one and a half years and aid their clients in finding a more permanent living solution, which is sometimes an institution of Viennese welfare and in some cases an apartment.

The exclusion criteria for the study included a diagnosed mental disorder and current or former heroin abuse. Since the material requires a broad vocabulary and good language comprehension,

only participants with good German skills were admitted into the study. Additionally, participants had to be sober during data acquisition. Due to the exclusion criteria nine participants were sorted out after collecting their data (in the numbers below these participants were already excluded).

The control group participants were contacted via professional and social contacts through snowball method. People with a close relationship to the author were excluded. The control group was picked out to be paralleled with the experimental group in gender and age.

In Vienna 2600 people are currently provided a place to live by the Wiener Wohnungslosenhilfe (Wiener Magistratsabteilung 24, 2012). Given that some only stay in a shelter overnight and due to the exclusion criteria, the target population is smaller. While there are no official numbers accessible, five of the contributing shelters stated that a large number of their clients were currently undergoing a substitution program against their drug addiction. According to an Evaluation of the Wiener Wohnungslosenhilfe (Wiener Magistratsabteilung 24, 2012), the prevalence of drug or alcohol addiction within the Viennese homeless people is 28%, in shelters providing temporary accommodation it is at 46%.

After excluding several participants due for not meeting the study's criteria the final experimental group equaled 42 people. As the control group was aimed at having the same size, the total sample equaled 84 people.

The experimental group consisted of 16 women and 26 men. The higher number of men is in accordance with the gender distribution in the Viennese homeless welfare, where men are overrepresented. The participants of this group were at the age of 19 to 72 with a mean score of 46.55 (s.d.=14.12). The control group also consisted of 16 women and 26 men. Participants were aged between 20 and 74 with a mean score of 45.62 (s.d.=14.23). A comparison of the age mean scores showed they do not differ significantly in this variable ($t(82)=.299$, $p=.766$).

In the experimental group three people were married, 17 were divorced, one was widowed, four were in a relationship, sixteen were single and one person did not provide any information. The control group consisted of 21 married, two divorced and one widowed participants, twelve more were in a relationship and five were single at the time of testing.

Control and experimental group differed significantly in their education. In the experimental group 15 people had completed only minimum compulsory schooling, 22 had completed an

apprenticeship, two had completed an academic high school and two more had a university degree. The control group consisted of no people who had only completed mandatory compulsory schooling, four people had completed an apprenticeship, seven had completed an academic high school and thirty more had a university degree.

Among the experimental group, 32 people stated that they were born in Austria, three in Germany and each one in Croatia, Tunesia and Hungary. Four participants did not provide information about their place of birth. From the control group 39 people stated that they were born in Austria and each one in Great Britain, Germany and Belgium. While all participants in the experimental group had their primary residence in Vienna, two participants in the control group cited that they lived in Upper Austria and one cited to live in Germany.

In the experimental group 28 people stated that they were registered to be out of work at the time of data acquisition, eight stated that they received a pension, two that they were employed, three on maternity leave and no one self-employed. From the control group one person stated to be registered to be out of work, five to receive pension, 28 to be employed, two not to work because of education and six to be self-employed.

3.2 Material

3.2.1 Geneva Emotion Recognition Test Short Version (Schlegel, Grandjean & Scherer, 2014)

The main test of the procedure is a short version of the Geneva Emotion Recognition Test (GERT-S; Schlegel & Scherer, 2016). It measures individual differences in people's ability to recognize other people's emotions displayed by face, voice and body. This ability is considered a central component of emotional competence or intelligence. Der GERT-S consists of 42 items, where participants are presented with short video clips with audio in which ten actors express 14 different emotions. After having seen the video clips, participants are tasked to decide which of the 14 emotions the actor has expressed. The emotions expressed are anger, irritation, disgust, despair, sadness, fear, anxiety, surprise, interest, relief, pleasure, amusement, joy and pride. (In the German version used for the present study they were translated to: Wut, Gereiztheit, Ekel, Verzweiflung, Traurigkeit, panische Angst, Überraschung, Interesse, Erleichterung, Genießen, Belustigung, Freude und Stolz.)

A high Cronbach Alpha ($\alpha=.80$) shows that the test is internally consistent. Additionally, it is in line with the Rasch model. What makes this test unique is that it is entirely based on video clips containing facial, acoustic and bodily cues. Additionally, the variety of emotions that are tasked at being recognized is something earlier tests do not include (Schlegel & Scherer, 2016). This large variety of emotions can however also be seen as a weakness of the tool. Given that response possibilities are given verbally it might be that the test is not culture fair and people who are adequately able to react to emotions in their daily lives, may not be able to name the emotions as tasked due to their active or passive vocabulary being low.

3.2.2 Saarbrücker Persönlichkeitsfragebogen (Paulus, 2009)

The scale “Saarbrücker Persönlichkeitsfragebogen zur Messung von Empathie” (Paulus, 2009) is used to assess people’s self-rating of their cognitive empathy. The scale is a German adaption of the Interpersonal Reactivity Index (IRI; Davies, 1980). It consists of 16 items with each 4 items assessing each of the 4 subscales *Perspective Taking* (PT), *Fantasy* (FS), *Empathic Concern* (EC) und *Personal Distress* (PD).

While the latter three subscales aim at inquiring emotional empathy, perspective taking represents cognitive empathy. The IRI (Davies, 1980) is one of the most used empathy scales and one of the first to differentiate in cognitive and emotional empathy. *Perspective Taking* assesses the ability to psychologically imagine something out of the perspective of someone else. Having a tendency of using this ability is correlated with better social acceptance and higher self-value. *Fantasy* refers to the tendency to see things in the perspective of novel or film characters. It is also a measure for the intensity of emotionality (Paulus, 2009). *Empathic Concern* measures feelings oriented towards others such as compassion or concern for people in need. Finally, *Perspective Taking* is intended to measure feelings of unrest or disability in close interpersonal situations (Paulus, 2009).

3.2.3 Toronto Alexithymie Skala (Kupfner et al., 2001)

The Toronto Alexithymie Skala – 26 (TAS-26; Kupfer et al., 2001) includes 26 items assessing how one deals with emotions. It was originally developed in 1986 in an English version by Taylor. The 2001 German Version is an adaption of the English original. The Test is divided into three subscales *Difficulty Identifying Feelings*, *Difficulty Describing Feelings* and *Externally-Oriented*

Thinking. The latter refers to the tendency of individuals to focus their attention externally. The three subscales can be summed up to a combined Alexithymia scale (Kupfer et al., 2001).

3.2.4 Standardized Progressive Matrices (Kratzmeier & Horn, 1988)

The “Standardized Progressive Matrices Test” (Kratzmeier & Horn, 1988) is a method to screen cognitive abilities in a nonverbal format. In each item the participants are tasked with completing a pattern. The patterns are presented in a 2x2 matrix for the first three items and 3x3 matrix for the additional items. It measures analytical thinking and is considered a possibility of assessing intelligence that is culture fair. To keep the time until completion for participants rather short only a nine-item version without standard norms were used. Three very simple items were additionally given as trials to ensure that the participant had understood the task.

3.2.5 Demographical Data

The demographical data can be split into the areas individual data, living situation, data regarding parents. Individual data includes age, place of birth, gender, relationship status, city and district of residence, siblings, employment situation, current/former job title, current/former annual gross income and education. The living situation asks with whom one lives, whether one lives in an apartment or house and what one believes is the annual gross income of one’s immediate neighbours. The data regarding parents assesses one’s parents’ last city and district of residence, their education, current/former income, ultimate date of employment and current/former job title.

3.3 Procedure

The data acquisition took place between February 2nd and May 10th of 2017. The material was presented in a random order except for the demographical data which was always presented last. While trying to control position effects, it was also considered that the demographic data might lead to a negative effect for the experimental group and thus influence subsequent material. The procedure took 30 to 45 minutes per participant. For the data acquisition, all the institutions from Viennese welfare involved provided a quiet room, where one or two participants were presented with the material at the same time. The data acquisition of the control group also took part in a quiet room either at the participants’ homes or at their workplace. As in the experimental group, the number of people assessed at once was one or two. The material was presented as stated in the

manuals. As prescribed by the test developers, no further instructions were given for the GERT-S (Schlegel et al., 2014) and the SPM (Kratzmeier & Horn, 1988).

4. Results

Hypothesis 1

Given previous research and considering the theory of contextualism and solipsism a relationship between social status, in this case very low social status in the form of homelessness, and social skills, here emotion recognition as an especially important part of emotional intelligence, are proposed. The first hypothesis thus examines the relationship between homelessness and the ability to detect facial expressions and hypothesizes a significant effect of group membership (experimental vs control group) on emotion recognition.

As shown in Table 1, the first hypothesis showed a significant difference regarding the participants' performance. The control group performed significantly better at the GERT-S than the experimental group ($t(82)=-6.52$, $p<001$). Given these results, hypothesis 1.0 can be rejected. Homelessness could be shown within the study at hand to negatively influence the ability to recognize emotions.

GERT-S Score	M (SD)	$t(82)=-6.52$
Experimental Group	18.31 (6.81)	$p<.001$
Control Group	27.00 (5.31)	

Table 1: Results from a t-test between experimental and control group regarding their GERT-S (Schlegel et al., 2014) score.

Hypothesis 2

As cognitive skills influence social skills, it was considered that the relationship between group membership and emotion recognition might be moderated by the participants' score in the SPM (Raven, 1998). The second hypothesis refers to the question whether differences in the SPM score would account for the whole amount of group difference or whether the group effect on emotion recognition would still be significant after including the SPM score into a multiple linear regression model with group membership and the SPM score as independent variables and emotion recognition as dependent variable. A multiple linear regression model showed highly significant results. As shown in Table 2, the multiple linear regression model including the variables group

membership and SPM score showed a highly significant ($p<.001$) prediction of the GERT-S score. The model could explain 52% of the dependent variable's variance, which equals a large effect. Both independent variables showed a highly significant prediction by themselves with $p<.001$ for each of them. Which group participants belonged to, had a small effect explaining 14.4% of the GERT-S score's variance. The SPM score participants reached could explain 23% of the GERT-S score's variance, which is a small to medium sized effect. Thus, H2.0 can be rejected and it can be stated that the group effect is still significant after also taking into account the SPM score.

GERT-S Score	β	$p<.001 \beta=.52$
Group	.14	$p<.001, r=.38$
SPM Score	.23	$p<.001 r=.48$

Table 2: Results for a multiple regression with AV =GERT-S Score, UVs =Group (Control vs. Experimental) and SPM Score.

Hypothesis 3

Self-measurement of empathy was expected to influence people's empathic recognition. If the notion that emotional intelligence is a part of cognitive abilities that cannot merely be explained by traits like empathy is correct, significant differences between the GERT-S scores should not disappear after controlling for these empathy scores. The third hypothesis deals with the question whether the relationship between group membership and the GERT-S score remains intact after including the empathy scores *Perspective Taking*, *Fantasy*, *Personal Distress* and *Empathic Concern* into the model predicting emotion recognition. As shown in Table 3, the influence of group membership on the GERT-S score remained highly significant within a multiple linear regression model that also included *Fantasy*, *Perspective Taking*, *Personal Distress* and *Empathic Concern* as independent variables with $p<0.001$ and showed a small effect size with an explained variance of 18%. The whole model explained 45% of variance ($p<.001$). Apart from group membership this model only included one more significant factor in predicting the GERT-S score. *Fantasy* showed a small significant effect ($p<.01$) which explained 9% of the GERT-S score's

variance. Thus, the H3.0 hypothesis can be rejected and it can be stated that the influence of group membership remains intact after including self-measures of empathy into the model.

GERT-S Score	β	$p < .001$ $\beta = .45$
Group	.18	$p < .001$, $r = .45$
Fantasy	.09	$p < .01$, $r = .32$
Perspective Taking	-	$p = .371$
Personal Distress	-	$p = .912$
Empathic Concern	-	$p = .762$

*Table 3: Results for a multiple regression with $AV = \text{GERT-S Score}$, $UVs = \text{Group (Control vs. Experimental)}$, *Fantasy*, *Perspective Taking*, *Personal Distress* and *Empathic Concern*.*

Hypothesis 4

Alexithymia, a subclinical inability to deal with emotions, has a well-documented influence on social abilities. It was also linked to SES with poorer and less educated people showing higher levels in Alexithymia scales. Thus, it was considered that the influence between the group membership and the GERT-S scores might be influenced by people's scores in an Alexithymia self-report scale. The forth hypothesis deals with the question whether the influence of group membership remains intact after having included the three subscales of the "Toronto Alexithymia Scale" (TAS-20) *Difficulty Identifying Feelings*, *Difficulty Describing Feelings* and *Externally-Oriented Thinking* into the model predicting emotion recognition. As shown in *Table 4*, a multiple linear regression model with the GERT-S score as dependent variable and group membership, *Difficulty Identifying Feelings*, *Difficulty Describing Feelings* and *Externally-Oriented Thinking* as independent variables could explain 40% of the GERT-S score's variance. Group membership remained a highly significant predictor explaining 27% of the dependent variable's variance. Among the sub variables of Alexithymia only *Externally-Oriented Thinking* showed a significant prediction within the model having a significant negative influence on the GERT-S score

accounting for 6% of its variance. Thus, Hypothesis 4.0 can be rejected, as group membership still has a significant impact on emotion recognition after including self-reported sub variables of Alexithymia.

GERT-S Score	β	$p < .001 \beta = .40$
Group	.27	$p < .001, r = .52$
Difficulty Identifying Feelings -		$p = .487,$
Difficulty Describing Feelings -		$p = .686$
Externally-Oriented Thinking	.06	$P < .001, r = -.25$

Table 4: Results for a multiple regression with AV=GERT-S Score, UVs=Group (Control vs. Experimental), Difficulty Identifying Feelings, Difficulty Describing Feelings and Externally-Oriented.

Further Analysis

Given the overrepresentation of highly educated participants in the control group it was analysed whether the significant group effect would remain after including education as a predictor into a multivariate linear regression model with emotion recognition as dependent variable. As shown in *Table 5*, the multivariate linear regression model was highly significant ($p < 0.001$) with a medium sized effect explaining 38% of the GERT-S score's variance. Both independent variables contributed significantly to the model. Which group a participant was of, accounted for 13% of the dependent variable with $p < 0.05$. The effect size can thus be called small. With 8% explained variance of emotion recognition education also had a small but significant ($p < 0.05$) effect.

GERT-S Score	β	$p<.001 \beta=.38$
Group	.14	$p<.05, r=.37$
Education	.08	$p<.05, r=.28$

Table 5: Results for a multiple regression with AV =GERT-S Score, UVs =Group (Control vs. Experimental), Education.

Given the high number of unemployed people and people receiving a pension within the experimental group, both group membership and employment were analysed in a multivariate linear regression model regarding their effect on emotion recognition. As shown in *Table 6* Employment was not a significant predictor for the GERT-S score, while the group effect remained significant ($p<.01, \beta=.15$).

GERT-S Score	β	$p<.001 \beta=.38$
Group	.15	$p<.01, r=.39$
Employment	-	$p=.055$

Table 6: Results for a multiple regression with AV =GERT-S Score, UVs =Group (Control vs. Experimental), Employment.

All the factors previously analysed as contributors on the ability to recognize emotions, namely group (experimental vs. control), SPM score, *Perspective Taking*, *Fantasy*, *Personal Distress*, *Empathic*, *Difficulty Identifying Feelings*, *Difficulty Describing Feelings*, *Externally-Oriented* and education, were included into a multivariate linear regression model as independent variables with emotion recognition as dependent variable. As shown in *Table 7*, the resulting model was highly significant ($p<0.001$) explaining 63% of the GERT-S score's variance, which equals a large effect. Which group a participant was of remained significant with a small effect ($p<.05, \beta=.08$). Further significant factors were SPM score ($p<.001, \beta=.23$), *Fantasy* ($p<.01, \beta=.08$) and *Difficulty Identifying Feelings* ($p<.05, \beta=.03$).

GERT-S Score	β	$p < .001 \beta = .63$
Group	.08	$p < .05, r = .31$
SPM Score	.23	$P < .001, r = .48$
Fantasy	.08	$p < .01, r = .28$
Perspective Taking	-	$p = .23$
Personal Distress	-	$p = .08$
Empathic Concern	-	$p = .53$
Difficulty Identifying Feelings	.03	$p < .05, r = .17$
Difficulty Describing Feelings	-	$p = .734$
Externally-Oriented Thinking	-	$p < .113$
Education	-	$p < .52$

Table 7: Results for a multiple regression with AV=GERT-S Score, UVs=Group (Control vs. Experimental), SPM score, Perspective Taking, Fantasy, Personal Distress, Empathic, Difficulty Identifying Feelings, Difficulty Describing Feelings, Externally-Oriented and Education.

Within the experimental group bivariate correlations were conducted in order to detect significant contributors on the ability to recognize emotions among homeless people. As shown in Table 8, SPM score, the participants mothers' education, *Fantasy*, *Externally Oriented Thinking* and Alexithymia correlated significantly with the ability to recognize emotions. Several other variables which were previously linked to emotion recognition did not show significant correlations within the experimental group. These variables include age, gender, education and the other self-rating measures of empathy perspective taking, personal distress and empathic concern.

GERT-S Score	p<	Correlation Coefficient r
SPM Score	.001	.60
Mother's Education	.05	.40
Fantasy	.05	.38
Externally Oriented Thinking	.01	-.47
Alexithymia	.05	-.34

Table 8: Results for significant bivariate correlation within the experimental group between GERT-S Score all other assessed variables. Significant results were shown between GERT-S and SPM Score, Mother's Education, Fantasy, Externally Oriented Thinking and Alexithymia.

To compare significant correlations with the ability to recognize emotions within both groups with each other, bivariate correlations between the GERT-S score and the other assessed variables were also analysed for the control group. As shown in *Table 9*, SPM Score, Age, Relationship Status, Employment, Mother's Education Mothers Income and *Fantasy* correlated significantly with the GERT-S Score.

GERT-S Score	p<	Correlation Coefficient r
SPM Score	.01	.48
Age	.001	-.62
Relationship Status	.01	.43
Employment	.05	.35
Mother's Education	.01	.40
Mother's Income	.05	.35
Fantasy	.001	.50

Table 9: Results for significant bivariate correlation within the control group between GERT-S Score all other assessed variables. Significant results were shown between GERT-S and SPM Score, Age, Relationship Status, Employment, Mother's Education Mothers Income and Fantasy.

The comparison of significant correlations with emotion recognition within both groups shows that while increased age negatively influences the GERT-S results in the control group, it does not within the experimental group. Additionally, while mother's education is associated with emotion recognition in the control group it is not in the experimental group. This difference is especially interesting given that both groups did not significantly differ in their statement of their mother's education. This conclusion can be drawn from a t-test with group assignment as grouping variable and mother's education as experimental variable, which did not show a significant result ($t(74) = -1.33$, $p = .188$). Alexithymia on the other hand, is significantly correlated with emotion recognition in the experimental but not in the control group.

Measures of SES income, education and estimated close neighbourhood income did not show any correlation with the GERT-S score within any of the groups. While most participants in the experimental groups also had a very low income and education and estimated their close neighbourhood as having a very low income, numbers were wider spread in the control group, where effects might have been expected.

Finally, it was analysed, whether there was a group effect on the variables resulting from the used scales. A significant group difference appeared at *Difficulty Identifying Emotions*, a sub variable of Alexithymia. As shown by a t-test the experimental group stated to have significantly higher difficulties in identifying emotions at themselves and others than did the control group ($t(79)=4.47$, $p<.05$). The sum score of Alexithymia also showed a group difference. Alexithymia was significantly higher among the experimental group than in the control group ($t(79)=3.54$, $p<.001$).

Each one subscale of the TAS-20 and the Saarbrückner Persönlichkeitsfragebogen also showed a significant group effect. The members of experimental group described themselves as having significantly less *Fantasy* ($t(79)=7.14$, $p<.05$) and as having more difficulties in taking other people's perspective ($t(79)=10.99$, $p<.05$).

5. Discussion

In the following the results are interpreted and implemented within previous results and theories. Strengths and weaknesses of the study are discussed and theoretical as well as practical implications of the results are outlined.

5.1 Interpretation of results

The theory of contextualism and solipsism proposes that people with lower SES have better social skills. A study Kraus et al. (2010) showed support for this theory. However, overall previous results were controversial. A metaanalysis (Hall et al., 2015) investigating the relationship of social status and emotion recognition showed a positive effect. The authors claimed that the studies included suffered from methodological weaknesses regarding the question at hand as most of them had used students as participants and did not explicitly investigate the relationship between social status and emotion recognition. Thus, there remains a need to further investigate the relationship of SES and emotion recognition, especially among groups with very high or low SES who have not been investigated regarding this question.

With homeless people as participants and a control group of largely academic people a bigger difference in socioeconomic status was reached in the present study. The results contradict the theory of contextualism and solipsism (Kraus et al., 2010), as homeless participants showed a significantly lower ability to correctly name other people's emotions than the control group ($t(82)=-6.52, p<001$).

An influence by either gender or age influence can be ruled out given that both were equally distributed among the study. Differences in Alexithymia, Empathy and cognitive abilities do not account for the group effect, as the group effect remained significant after including these variables together with the group effect as independent variables in a multivariate linear regression model with the emotion recognition as dependent variable. The group effect also remained robust after testing the effects of the group variable and at first education and then employment.

These result point to the conclusion that people hit by homelessness have a reduced ability to recognize emotions from other people, which cannot be explained the variables listed above (Alexithymia, Empathy, further demographical variables).

5.2 Strengths and weaknesses of the present study

A strength of the present research lies in the material used. Both the scales used in the study, the Toronto Alexithymia Scale (TAS-26; Kupfer et al., 2001) and the Saarbrückner Persönlichkeitsfragebogen (Paulus, 2009) are very often used for research and offer decent reliability and criterion validity scores. Both scales can be considered standard tools for assessing self-ratings of empathy and Alexithymia respectively. The Geneva Emotion Recognition Test (GERT; Schlegel, Grandjean & Scherer, 2014) is a rather new test, but has already been used in several studies (e.g. Seymour et al., 2016; Lee, Han & Kim, 2016) and has been well received by the scientific community (Coppin & Sander, 2016). Even the short version offer very good quality criteria and is in line with the Rasch Model (Schlegel & Scherer, 2016).

With nine out of potentially 28 homeless shelters agreeing to support the study a wide range shelters were assessed by the present study. With participant being 19 to 74 years old, a large range of ages was achieved.

One weakness of the GERT (Schlegel et al., 2014), as well as its short version the GERT-S (Schlegel & Scherer, 2016), is relying on verbal description for emotions making it linked to verbal abilities as 14 emotions have to be verbally differentiated. Thus, the GERT is not culture fair, which might influence results. Elfenbein and Ambady (2002) argue that tests of emotion recognition are generally not culture fair and that differences between people of high versus low SES are due to an in-group advantage, as tests are developed by rather wealthy people with university education.

This is linked to another weakness of the study which lies in the high amount of well-educated people within the control group. While education is a part of the concept of social economic status, this makes a mono-causal interpretation of the group effect on empathic accuracy more difficult. Due to this weakness, a further analysis was conducted including education and the group variables as predictors in a multivariate linear regression and the GERT-S score as dependent variable. Within this analysis, both education and group membership proved to be significant predictors. So while the notion of an in group advantage cannot be denied, it can be stated that it did not account for the whole effect found in the present study.

5.3 Theoretical Implications

Potential reasons for homeless people's reduced performance at the GERT-S (Schlegel & Scherer, 2016) can be drawn from Salminen et al. (1998) in interpreting higher scores in Alexithymia scales among poor participants. Salminen et al. (1998) state that due to increased Alexithymia participants have less success in life and thus become poor. This implication, that reduced social skills may have had an influence on people in becoming homeless or very poor in general, cannot be assumed for with regard to the present research as there is no evidence for them. It cannot however be ruled out either and future studies providing a longitudinal design might seek to investigate this possibility. An alternate explanation given by Salminen et al. (1998) is that due to stress and a higher amount in negative emotions induced by low SES, people have a decreased ability to deal with emotions. Higher negative emotions and increased stress might also account for the decreased ability to recognize emotions among homeless people.

The increased appearance of a problematic relationship, an instable family of origin and long-term employment, which were found in a study about Viennese homeless people (Wiener Magistratsabteilung 24, 2012), may also contribute to the results at hand. These variables were not assessed as potential contributors in the present study and should be considered in future studies. An additional explanation for the data is that decreased social skills derive from long term social exclusion, which 42% of Viennese homeless people stated to suffer from (Wiener Magistratsabteilung 24, 2012). Decreased practice in social interaction may among other effects lead to a reduced ability to recognize emotions and should be considered in future studies.

Also given that emotion recognition and Alexithymia do not represent the vast number of social and emotional skills a person possesses and considering the previously described weaknesses of the present study, there is a call for more research to be done in the future regarding the research question at hand.

The assessment whether the effects shown in the present study remain robust with a control group paralleled to the experimental group in their education would give stronger indication of the stability of the effects shown in the present study. Additionally, more practical social skills of homeless people, like the solving of every day social situations, need to be researched.

5.4 Practical Implications

While the argument, that due to a lack of other resources homeless people develop better social skills, was contradicted for homeless people by the present study's results, the point made by Kraus et al. (2011) that poorer people have a great need for social skills remains valid. The results of the study can be regarded as showing the necessity for support of homeless people in achieving better social skills. The need for a training of social skills needs to be further assessed, investigating whether homeless people have additional deficits apart from Alexithymia and emotion recognition.

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