

Interpersonal Communication Competence and Ability of Emotional Recognition among Patients with Schizophrenia

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Abstract

Background: Interpersonal communication competence impairments are widespread among patients with schizophrenia, with the majority experiencing ongoing difficulty in life functioning. One possible contributor to these difficulties may be deficit in emotion recognition with schizophrenic patients which are essential components of interpersonal communications competence. Emotion recognition is receptive emotional skills include the ability to accurately perceive emotion. Consequently, patients who have emotion recognition deficit often experience difficulty in interpersonal communications competence. **Objective:** Assess the level of interpersonal communication competence and the ability of emotional recognition among patients with schizophrenia. **Settings:** The study was conducted at EL-Maamoura Hospital for Psychiatric Medicine, in Alexandria, Egypt. **Subjects:** the data was collected from 270 outpatients with schizophrenia. **Tools:** three tools were used to collect the date; socio-demographic and clinical structured interview schedule, Interpersonal communication competence Scale (ICCS) and Bell-Lysaker Emotion Recognition Task (BLERT). **Results:** Findings of the present study revealed that 99.3% of the studied patients have low level of interpersonal communication competence and most of the studied patients have emotional recognition deficit in all emotion except happy emotion. Moreover, statistically positive significant correlations were found between overall interpersonal communication competence and overall emotional recognition among the studied subjects. ($r=0.659$, $P<0.001$). **Conclusion:** The present study concluded that, the studied subjects demonstrated low level of interpersonal communication competence, emotional recognition deficit and there was positive correlation between interpersonal communication competence and emotional recognition. **Recommendations:** Hospital policies should incorporate the routine clinical assessment of interpersonal communication competence and emotional recognition among patients with schizophrenia to consider appropriate psychiatric nursing care and intervention.

Keywords: Interpersonal communication competence, Emotion recognition, Patients with Schizophrenia.

Introduction

Schizophrenia is a severe mental disorder affecting people worldwide (Javed & Charles, 2018). Patients with schizophrenia are characterized by positive symptoms as delusions, hallucinations and alterations in behavior and negative symptoms including flat, blunted, apathy affect, unable to initiate and maintain interpersonal relationships and interpersonal communication competence (American Psychiatric Association, 2013; Viher et al., 2016).

Interpersonal communication competence is a major contributing factor and an essential part of everyday life of patients with schizophrenia that has significant influence on patient's functional outcomes in the community (Vogel et al., 2018). The successful interpersonal communications and social interactions need a complex set of skills including general cognitive abilities, appropriate facial expressions and emotional recognition (van Kleef & Côté, 2021).

Emotion recognition has been defined as "Receptive emotional skills that include

the ability to accurately perceive facial displays of emotion and the ability to recognize and understand emotions portrayed in facial expressions and non-verbal cues including happiness, sadness, fear, anger, disgust, surprise and contempt" (Maat et al., 2016). Deficit in emotion recognition has been suggested as one of the key diagnostic criteria of schizophrenia (American Psychiatric Association, 2013; Schneider et al., 2020).

Decreased ability of emotional recognition has significant negative implications on patients with schizophrenia such as decrease patient's social and occupational functioning, ability to live independently, and increase severity of negative symptoms that lead to social withdrawal and isolation (Leszczynska, 2015; Pelletier et al., 2013). Some studies suggested the negative social interactions and impaired of interpersonal communication resulting from misinterpreted facial clues could reduce social contact and support, which may contribute to increased risk for relapse in schizophrenia (Kalin et al., 2015).

Therefore, there is an emerging need for psychiatric nurses to assess emotional recognition ability and interpersonal communication competence among patients with schizophrenia to explore the role and effect emotional recognition in the communication difficulties experienced by patients with schizophrenia.

Accordingly, first goal of this study was to explore the emotional recognition ability among patients with schizophrenia to understand patient's behaviors in a complete and coherent manner. Second goal was to evaluate the relationship between deficits in emotion recognition and interpersonal communication competence. Theories of interpersonal communication competence hypothesis that interpersonal communication skills such as the ability to recognize appropriate social cues, as facial expression. It is an important factor in mediating

interpersonal communication competence (Lado-Codesido et al., 2019). Consequently, we conducted assessments of patients' interpersonal communication level in order to evaluate their relationship to deficits in emotion recognition.

Aims of the Study

This study aims to:

- Assess the level of interpersonal communication competence among patients with schizophrenia.
- Assess the ability of emotional recognition among patients with schizophrenia.

Research Questions

- What is the level of interpersonal communication competence among patients with schizophrenia?
- Do patients with schizophrenia have the ability for emotional recognition?

Materials and Method

Materials

Design: A descriptive research design was used in this study.

Settings: The study was conducted in the outpatient clinic of El-Maamoura Hospital for Psychiatric Medicine in Alexandria. The hospital is affiliated to the Ministry of Health and Population and serves three governorates namely Alexandria, Matrouh, and ElBeheira.

Subjects: The Epi info 7 program was used to estimate the sample size using 5% acceptable error, 95% confidence coefficient, 50% expected frequency. The total population size was 820 patients with schizophrenia from the outpatient statistical records of El- Maamoura hospital. It revealed a minimal sample size of 262 subjects. In this study a convenient sample of 270 patients with schizophrenia were included.

Inclusion criteria:

- Patients diagnosed with schizophrenia with no co-morbidity.
- Age ranging from 20 to 50 years.
- Able to communicate coherently and relevantly.
- Willing to participate in the study.

Tools: three tools were used to collect data of the study:

Tool I: A Socio-Demographic and Clinical Data Structured Interview Schedule: This tool was developed by the researcher based on review of literature. It composed of two parts. The first part concerned with socio demographic data as sex, age, marital status, residence, occupation, education level and co-habitation. The second part concerned with clinical data as duration of illness, age at the beginning of illness, previous hospitalization, number of previous psychiatric hospitalization, beginning of treatment, psychiatric medication, treatment currently prescribed and compliance with medication.

Tool II: Interpersonal Communication Competence Scale (ICCS): This scale was developed by Rubin & Martin (1994) to measure interpersonal communication competence. It includes 30-statments rated on a five point likert type scale ranging from 1 (almost never) to 5 (almost always). The scale covers 10 interpersonal communication skills. The scale was valid and highly reliable.

Tool III: Bell-Lysaker Emotion Recognition Task (BLERT): The Bell-Lysaker Emotion Recognition Task (BLERT) was developed by Bell et al (1997) to measure emotion recognition. In this study, Emotion recognition implies identifying emotion displayed by others in various facial expression and tone of voice which makes the BLERT suitable for use. The BLERT consists of 21 videotaped vignettes, each 10 seconds long of the same actor speaking one of three standard

monologues. This test is one of the most reliable psychometric tools because it is a dynamic emotion recognition test that was used by displaying Egyptian facial expression in its vignettes (Ezz El-Deen, 2013).

Method

- An approval from Research Ethics Committee and Faculty of Nursing-Alexandria University was obtained.
- A written official approval to conduct the study was obtained from official authorities of El-Maamoura Hospital for psychiatric medicine.
- Tool I (the Socio-Demographic and Clinical Data Structured Interview Schedule) was developed by the researcher after review of literature.
- Tool II (Interpersonal communication competence scale) was translated into the Arabic language. Then this tool was tested for content validity by five experts in the field of psychiatric nursing.
- A pilot study was carried out on 27 outpatients with schizophrenia in order to assess the clarity, feasibility and applicability of the study tools.
- Reliabilities of tools II (ICCS) were tested using the Cronbach's alpha method on 27 outpatients with schizophrenia ($\alpha = 0.889$), indicating highly reliability with acceptable internal consistency.

Empirical phases:

- The researcher attended at outpatient clinic for three days per week.
- The charts at outpatient clinic were screened daily to identify who meet the inclusion criteria.
- Each patient was interviewed individually to establish rapport at least 15 minutes in private room to keep privacy and avoid distractibility.
- The socio-demographic and clinical data, structured interview schedule, interpersonal Communication scale

(ICCS) and Bell-Lysaker Emotion Recognition Task (BLERT) were used for data collection.

- Interview lasted between 30-50 minutes according to patient's attention, concentration and level of understanding.
- The data were collected from May 2021 until July 2021.
- All patients with schizophrenia who met the inclusion criteria were involved in the study till the number of the sample was achieved.

Ethical considerations:

- Informed written consent after explanation of research purpose was obtained.
- Assuring confidentiality of the subject's data was done.
- Right to voluntary participation in the studied and right to withdraw at any time was considered.
- Patient's privacy and anonymity were maintained.

Statistical Analysis

- Data were coded, computerized and then analyzed using the statistical package for social science (SPSS) version 20.0.
- Qualitative data were described using number and percent.
- Quantitative data were described using range (minimum and maximum), mean, standard deviation and median.
- The Kolmogorov-Smirnov test was used to verify the normality of distribution.
- Significance of the obtained results was judged at the 5% level.

Results

Table (1): shows the distribution of the studied patients with schizophrenia according to their socio-demographic characteristics. The table reveals that 50.7% of the studied patients were male. The age of the studied patients ranging from 20 to 50 years with mean age of 35.57 ± 8.09 years. It can be noticed that 47.8% were in the age group ranging from 30 to less than 40 years.

Also, the table shows that 46.3 % of the studied patients were single. While 37.4% were divorced/widowed and only 16.3% were married. According to the level of education, 38.9% of the studied patients were read & write and illiterate. Regarding their occupation, about two third (65.6%) of the studied patients were currently unemployed. More than half of the studied patients 54.1% were living in urban areas. Regarding co-habitation of the studied subjects, 56.3% of the studied patients were living with parents/ brothers and sisters. While (21.1% & 15.2 %) were living alone & with husband/ wife respectively.

Table (2): displays the distribution of the studied patients with schizophrenia according to their clinical characteristics. In relation to the duration of illness among the studied patients, it ranged from 1 to 34 years with a mean 15.07 ± 7.88 years. Half of the studied patients (50%) diagnosed with schizophrenia for more than 15 years. For the age of the studied patients at the beginning of illness, it ranged from 15 to 45 years with a mean age equal to 20.50 ± 4.04 years. About half of the studied patients (84.8%) were in the age group between 15 and less than 25 years at the beginning of illness. The table also shows that, all the studied patients were previously admitted to psychiatric hospital. Regarding the number of previous hospitalizations among the studied patients, about two third of the studied patients (64.1%) were hospitalized for more than 3 times.

Table (3) illustrates the distribution of the studied patients with schizophrenia according to interpersonal communication competence scale. It can be noticed that the total score of interpersonal communication competence ranged from 34 to 106 with a mean score 47.28 ± 6.91 . It is also noted that 99.3% of the studied patients have low level of interpersonal communication competence.

Table (4) shows the distribution of the studied patients with schizophrenia according to the frequency of correct recognitions of emotions of BLERT. About one quarter (24.1%) of the studied patients can't recognize anger emotion and only 3.7% of them can recognize anger emotion. It can

be noticed that 47.4% of the studied patients recognize one scene of sad emotions. The table presents that 39.3% of the studied patients can recognize second scenes of disgust emotions. It also appears 28.1% & 26.3% of the studied patients can recognize one and two scenes of surprise emotions. Speaking about recognition of happiness emotion, most of the studied patients (65.9%) can recognize three scenes of happiness emotion. On other hand, the majority of the studied patients (84.4%) can't recognize three scenes of fear emotion. More than half of the studied patients (61.9%) can't recognize three scenes of neutral emotion.

Table (5): shows the correlation between interpersonal communication competence and emotion recognition among the studied patients with schizophrenia. The table presents that there are positive significant correlations between overall interpersonal communication competence and overall emotion recognition ($r=0.659$, $P<0.001$).

Discussion

Interpersonal communication competence is necessary for everyday life functioning and has a significant contribution to mental health (Park & Han, 2018; Yasuyama et al., 2017). Interpersonal communication competence deficit has been associated with a diversity of psychiatric disorders, such as schizophrenia (Haverkamp, 2017; Muralidharan et al., 2018). Schizophrenia is commonly associated with emotional recognition disability (Martin et al., 2020; Van Rheenen et al., 2017). Also, these previous two factors are considered one of the most important factors that have negative effect on patient's recovery, increase severity illness symptoms, relapses rate, poor patient's functional outcome, decrease productivity and adaptation to the community environment (Souto et al., 2020).

The results of the current study revealed that most of the studied patients with schizophrenia had low level of interpersonal communication competence which means that, patients with schizophrenia can't able to initiate and

maintain interpersonal relationships, create, and end conversations, reveal information and achieved communication goals that influence contact in social situations. This result similar to the study of Porcelli et al. (2020).

In the present study finding, low level of interpersonal communication competence among the patients could be attributed to their socio-demographic and clinical characteristics data, as the most patients were single or divorced/widowed and two thirds of them were unemployed. Besides their clinical characteristics such as having early onset and high chronicity of illness with frequent hospitalization are considered impeding factors in interpersonal communication competence. This matched with the study that being single or divorced/widowed, unemployed may affected their interpersonal communication competence (Fernández-Modamio et al., 2017).

In relation to emotional recognition, the current study shows that the studied patients with schizophrenia have deficit in emotional recognition ability. These results may reflect that the difficulties in recognizing emotions particular fear emotion were related to the severity of negative symptoms of illness (Fernández Modamio et al., 2020).

This result can be explained by the fact that the amygdala plays an important role in emotional recognition especially for negative emotion as fear. Patients with schizophrenia characterized by **reduced amygdala activation during the recognition of emotional stimuli**. This difference between healthy individuals and patients with schizophrenia in amygdala activation following neutral and emotional stimuli is a significant finding because it shows that individuals with schizophrenia have a deficit emotional recognition ability (Dong et al., 2018). Besides, deficits in processing fear emotions may relate to dysfunction of mesial temporal regions which is prominent in schizophrenia (Sabharwal et al., 2021).

In relation to the relationship between the studied variables, the findings of the present study indicated that, there is a statistical significant correlation between emotional recognition and interpersonal communication competence among patients with schizophrenia. Impaired emotion recognition may be contributing factor to interpersonal communication impairment. In social situations, incorrect decoding of emotional expression is a source of stress and a barrier to interpersonal communication (Javed & Charles, 2018). This stress may aggravate symptoms and play a critical role in the onset of psychosis. Likewise, impaired interpersonal communication competence has been described as the hallmark of the schizophrenia and the recognition of emotions is considered as the main component of interpersonal communication competence (Glenthøj et al., 2017).

Conclusion

The followings can be concluded from the present study. First the majority of the studied patients with schizophrenia experienced low level of interpersonal communication competence denoting patients' inability to initiate and maintain interpersonal relationships or achieve the communication goals. Moreover, most of the studied patients have deficit in emotional recognition ability. It also found that there association between interpersonal communication competence and emotional recognition ability among the studied patients with schizophrenia.

Recommendations

In line with the findings of the study, the following recommendations are made:

- Hospital policies and community mental health service should incorporate the assessment of interpersonal communication competence and emotional recognition among patients with schizophrenia to develop and implement rehabilitation programs

by psychiatric nurses and other mental health professional.

- Integrating the relationship between interpersonal communication competence and emotional recognition in nursing curriculum of Psychiatric Nursing and Mental Health.
- Implementation of psycho-educational programs aiming to increase awareness of patients and their families about interpersonal communication competence and its effect on emotional recognition.

Table (1): The distribution of the studied patients with schizophrenia according to their socio-demographic characteristics (n = 270)

| Socio-demographic data | No. | % |
|---------------------------------------|------------------|----------|
| Sex | | |
| Male | 137 | 50.7 |
| Female | 133 | 49.3 |
| Age (years) | | |
| 20 - | 64 | 23.7 |
| 30- | 129 | 47.8 |
| >40 | 77 | 28.5 |
| Min. – Max. | 20.0 – 50.0 | |
| Mean \pm SD. | 35.57 \pm 8.09 | |
| Residence | | |
| Rural | 124 | 45.9 |
| Urban | 146 | 54.1 |
| Educational level | | |
| Illiterate/ Reads & write | 105 | 38.9 |
| Primary/preparatory school | 62 | 23.0 |
| Secondary school | 86 | 31.9 |
| University degree | 17 | 6.3 |
| Occupation | | |
| Unemployed | 177 | 65.6 |
| Student | 30 | 11.1 |
| Craft worker | 17 | 6.3 |
| Employee/ worker | 8 | 3.0 |
| Housewife/pensioner | 38 | 14.1 |
| Marital status | | |
| Single | 125 | 46.3 |
| Married | 44 | 16.3 |
| Widowed /Divorced | 101 | 37.4 |
| Co-habitation | | |
| Live alone | 57 | 21.1 |
| Live with husband / wife | 41 | 15.2 |
| Live with parents / brothers /sisters | 152 | 56.3 |
| Live with relatives | 20 | 7.4 |

Table (2): The distribution of the studied patients with schizophrenia according to their clinical characteristics (n = 270)

| Clinical data | No. | % |
|--|--------------|-------|
| Duration of illness (years) | | |
| >5 | 24 | 8.9 |
| 5- | 41 | 15.2 |
| 10- | 70 | 25.9 |
| >15 | 135 | 50.0 |
| Min. – Max. | 1.0 – 34.0 | |
| Mean ± SD. | 15.07 ± 7.88 | |
| Age at the beginning of illness (years) | | |
| <15 | 5 | 1.9 |
| 15– | 229 | 84.8 |
| 25– | 33 | 12.2 |
| >45 | 3 | 1.1 |
| Min. – Max. | 8.0 – 45.0 | |
| Mean ± SD. | 20.50 ± 4.04 | |
| Previous hospitalization | | |
| Yes | 270 | 100.0 |
| No | 0 | 0.0 |
| Number of hospitalizations | | |
| Once | 22 | 8.1 |
| Twice | 36 | 13.3 |
| Three times | 39 | 14.4 |
| More than three | 173 | 64.1 |
| Beginning of treatment (years) | | |
| Min. – Max. | 1.0 – 36.0 | |
| Mean ± SD. | 14.75 ± 7.79 | |

Table (3): Distribution of the studied patients with schizophrenia according to interpersonal communication competence scale (n = 270)

| Interpersonal communication competence scale | Low | | Moderate | | High | | Range | Mean ±SD |
|--|------------|-------------|----------|------------|----------|------------|---------------------|---------------------|
| | No. | % | No. | % | No. | % | | |
| Self-disclosure | 199 | 73.7 | 71 | 26.3 | 0 | 0.0 | 3.0 – 8.0 | 5.09 ± 1.50 |
| Empathy | 265 | 98.1 | 5 | 1.9 | 0 | 0.0 | 3.0 – 10.0 | 4.07 ± 0.95 |
| Social relaxation | 267 | 98.9 | 2 | 0.7 | 1 | 0.4 | 3.0 – 12.0 | 3.40 ± 1.11 |
| Assertiveness | 266 | 98.5 | 2 | 0.7 | 2 | 0.7 | 3.0 – 14.0 | 3.33 ± 1.13 |
| Altercentrism | 69 | 25.6 | 201 | 74.4 | 0 | 0.0 | 4.0 – 11.0 | 7.15 ± 1.09 |
| Interaction management | 194 | 71.9 | 76 | 28.1 | 0 | 0.0 | 3.0 – 11.0 | 5.43 ± 1.64 |
| Expressiveness | 265 | 98.1 | 3 | 1.1 | 2 | 0.7 | 3.0 – 12.0 | 4.38 ± 1.14 |
| Supportiveness | 172 | 63.7 | 98 | 36.3 | 0 | 0.0 | 3.0 – 10.0 | 5.87 ± 1.35 |
| Immediacy | 252 | 93.3 | 18 | 6.7 | 0 | 0.0 | 3.0 – 10.0 | 4.62 ± 1.18 |
| Environmental control | 268 | 99.3 | 1 | 0.4 | 1 | 0.4 | 3.0 – 12.0 | 3.94 ± 0.92 |
| Total score on interpersonal communication competence | 268 | 99.3 | 2 | 0.7 | 0 | 0.0 | 34.0 – 106.0 | 47.28 ± 6.91 |

SD: Standard deviation

Table (4): Distribution of the studied patients with schizophrenia according to the frequency of correct recognitions of emotions of BLERT (n = 270)

| Emotions | Frequency of correct recognitions | Patients (n = 270) | |
|------------------|-----------------------------------|--------------------|-------------|
| | | No. | % |
| Anger | 0 | 65 | 24.1 |
| | 1 | 102 | 37.8 |
| | 2 | 93 | 34.4 |
| | 3 | 10 | 3.7 |
| | Mean ± SD. | | 1.18 ± 0.84 |
| Sad | 0 | 53 | 19.6 |
| | 1 | 128 | 47.4 |
| | 2 | 66 | 24.4 |
| | 3 | 23 | 8.5 |
| | Mean ± SD. | | 1.22 ± 0.86 |
| Fear | 0 | 228 | 84.4 |
| | 1 | 38 | 14.1 |
| | 2 | 4 | 1.5 |
| | 3 | 0 | 0.0 |
| | Mean ± SD. | | 0.17 ± 0.41 |
| Disgust | 0 | 36 | 13.3 |
| | 1 | 62 | 23.0 |
| | 2 | 106 | 39.3 |
| | 3 | 66 | 24.4 |
| | Mean ± SD. | | 1.75 ± 0.97 |
| Neutral | 0 | 167 | 61.9 |
| | 1 | 82 | 30.4 |
| | 2 | 19 | 7.0 |
| | 3 | 2 | 0.7 |
| | Mean ± SD. | | 0.47 ± 0.66 |
| Surprise | 0 | 63 | 23.3 |
| | 1 | 76 | 28.1 |
| | 2 | 71 | 26.3 |
| | 3 | 60 | 22.2 |
| | Mean ± SD. | | 1.47 ± 1.08 |
| Happiness | 0 | 1 | 0.4 |
| | 1 | 3 | 1.1 |
| | 2 | 88 | 32.6 |
| | 3 | 178 | 65.9 |
| | Mean ± SD. | | 2.64 ± 0.53 |

SD: Standard deviation

Table (5): The correlation between interpersonal communication competence and emotional recognition of the studied subjects (n=270)

| Interpersonal communication competence subscales | | Emotional recognition (7 emotions) | | | | | | | Overall BLERT |
|--|---|------------------------------------|--------|--------|---------|---------|----------|-----------|---------------|
| | | Anger | Sad | Fear | Disgust | Neutral | Surprise | Happiness | |
| Self-disclosure | R | 0.306* | 0.106 | 0.178* | 0.319* | 0.264* | 0.221* | 0.038 | 0.488* |
| | P | <0.001* | 0.083 | 0.003* | <0.001* | <0.001* | <0.001* | 0.537 | <0.001* |
| Empathy | R | 0.161* | 0.035 | 0.100 | 0.193* | 0.081 | 0.227* | 0.165* | 0.326* |
| | P | 0.008* | 0.569 | 0.101 | 0.001* | 0.184 | <0.001* | 0.006* | <0.001* |
| Social relaxation | R | 0.072 | 0.144* | 0.022 | 0.090 | 0.214* | 0.241* | 0.112 | 0.310* |
| | P | 0.238 | 0.018* | 0.713 | 0.142 | <0.001* | <0.001* | 0.067 | <0.001* |
| Assertiveness | R | 0.078 | 0.024 | 0.116 | 0.053 | 0.065 | 0.147* | 0.027 | 0.168* |
| | P | 0.201 | 0.692 | 0.057 | 0.388 | 0.291 | 0.016* | 0.658 | 0.006* |
| Altercentrism | R | 0.093 | 0.048 | -0.025 | 0.019 | 0.108 | -0.062 | -0.002 | 0.055 |
| | P | 0.129 | 0.432 | 0.686 | 0.759 | 0.076 | 0.312 | 0.977 | 0.369 |
| Interaction management | R | 0.266* | 0.073 | 0.111 | 0.322* | 0.240* | 0.315* | 0.189* | 0.521* |
| | P | <0.001* | 0.231 | 0.069 | <0.001* | <0.001* | <0.001* | 0.002* | <0.001* |
| Expressiveness | R | 0.120* | 0.094 | -0.003 | 0.241* | 0.195* | 0.296* | 0.116 | 0.387* |
| | P | 0.048* | 0.123 | 0.961 | <0.001* | 0.001* | <0.001* | 0.057 | <0.001* |
| Supportiveness | R | 0.337* | 0.148* | 0.148* | 0.346* | 0.229* | 0.254* | 0.153* | 0.550* |
| | P | <0.001* | 0.015* | 0.015* | <0.001* | <0.001* | <0.001* | 0.012* | <0.001* |
| Immediacy | R | 0.057 | 0.199* | -0.043 | 0.276* | 0.270* | 0.371* | 0.242* | 0.492* |
| | P | 0.353 | 0.001* | 0.485 | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* |
| Environmental control | R | 0.220* | 0.097 | -0.001 | 0.106 | 0.219* | 0.231* | 0.037 | 0.329* |
| | P | <0.001* | 0.112 | 0.987 | 0.081 | <0.001* | <0.001* | 0.540 | <0.001* |
| Total | R | 0.315* | 0.171* | 0.118 | 0.367* | 0.340* | 0.399* | 0.193* | 0.659* |
| | P | <0.001* | 0.005* | 0.052 | <0.001* | <0.001* | <0.001* | 0.001* | <0.001* |

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