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### Emotion understanding, interpersonal competencies and loneliness among students

**Abstract:** The study examines the associations of emotion understanding, interpersonal competencies, loneliness and correlated variables (perceived social support, quality of social networks). Two conceptual models of relations were tested. In the first model it was hypothesized that interpersonal competencies mediate relations between emotion understanding and loneliness, perceived social support and quality of social networks. In the second model emotion understanding was tested as a moderator of relationships between interpersonal competencies and loneliness, perceived social support and quality of social networks. Study 1 ( $n = 221$ ) provided only a weak confirmation of the mediatory model, restricted to men. Study 2 ( $n = 206$ ), employing different measures of emotion understanding and loneliness, confirmed weakly both the mediatory and moderatory models. In both studies a direct negative correlation between emotion understanding and loneliness was not confirmed.

**Key words:** emotion understanding, emotional abilities, interpersonal competencies, loneliness

#### Introduction

Loneliness is a pervasive psychosocial problem in modern society<sup>1</sup> (Davis & Smith, 1998; Heinrich & Gullone, 2006; McPherson, Smith-Lovin & Brashears, 2006), related to severe consequences for the social adjustment and physical health of an individual (Cacioppo, Hawkley, Berntson, Ernst, Gibbs, Stickgold et al., 2002; Hawkley & Cacioppo, 2010; Hawkley, Masi, Berry & Cacioppo, 2006; Paul, Ayis, Ebrahim, 2006; Wilson et al., 2007). Loneliness is prevalent among the elderly and marginalized youth (Dykstra, 2009; McPherson, Smith-Lovin & Brashears, 2006), but also among adolescents and younger adults (Pinquart & Sorensen, 2003). The risk of loneliness increases during major life transitions, e.g. when moving from high school to university, which is connected with a serious reorganization of one's social network (Ames et al., 2011; Green, Richardson, Lago & Schatten-Jones, 2001; Ozben, 2013). Considering the prevalence and negative consequences of loneliness (i.e. reduced life satisfaction, decreased academic performance or psychological distress; DiTommaso & Spinner, 1997; Goodwin, Cook & Young,

2001; Nicpon et al., 2006), the exploration of determinants of loneliness appears to be an important issue. One of the most influential models of loneliness is the "Social skills deficit model" (Cacioppo & Hawkley, 2009; Pinquart & Sorensen, 2003; Riggio & Kwong, 2009), in which higher level of loneliness is related to low or inappropriately functioning social perception abilities (Jones, Hobbs & Hockenbury, 1982).

Recently, the concept of emotional intelligence, which refers to a set of basic emotion-related abilities (perception, utilization of emotion, understanding of emotion and managing of emotion; Mayer & Salovey, 1997) has attracted considerable interest (Mayer, Roberts & Bersade, 2008). Although it has been demonstrated in many studies that emotional intelligence is related to various social skills (e.g. Lopes, Salovey & Strauss, 2003), only a few studies examined the relation between emotional abilities and loneliness (Chapman & Hayslip, 2005; Saklofsky, Austin & Minsky, 2003; Warwick, Nettleback & Ward, 2010; Zysber, 2012). Yip & Côté (2013) emphasize that while there is a large number of studies confirming the crucial role of emotion perception and emotion management abilities in

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<sup>1</sup> In Polish society about 20 percent of general population consider themselves as lonely (Czapiński & Panek, 2011).

social adjustment, there is a paucity of research examining the benefits of the ability to understand emotions. The aim of the present studies was to clarify the relationship between emotional understanding, a core dimension of emotional intelligence (Mayer & Salovey, 1997), and loneliness. The association between emotion understanding and loneliness was proposed to be mediated or moderated by interpersonal competencies.

### Emotion understanding

Emotions serve communicative and social functions, conveying information about people's thoughts and intentions as well as coordinating social encounters (Keltner & Haidt, 2001). Considering the social function of emotion, so-called *emotional abilities* seem to be an important factor in directing social interaction (Lopes et al., 2004) and may play a basic role in other interpersonal competencies (Mayer & Salovey, 1997). Previous studies have shown that abilities of decoding, understanding and regulating emotions are associated with social and emotional adaptation (Eisenberg, Fabes, Guthrie & Reiser, 2000; Greenberg, Kusché, Cook & Quamma, 1995; Halberstadt, Denham & Dunsmore, 2001). One of the most important emotional abilities is emotion understanding, which is the core dimension in Mayer and Salovey's (1997) ability model of emotional intelligence and partly overlaps with emotional knowledge (Izard et al., 2001; see Matczak & Piekarska, 2011).

Emotion understanding refers to the ability to accurately reason about affect-laden information and rightly use one's emotional knowledge (Salovey, 1999), label and categorize emotion (Clare, Ortony & Foss, 1987; Innes-Ker & Niedenthal, 2002; Mayer, Roberts & Bersade, 2008) and analyze cause-and-effect relations between event and emotion (prediction of emotion and identification of causes of the current emotional state of an individual; MacCann & Roberts, 2008; Mayer & Salovey, 1997). Emotion understanding is also related to a well-developed emotional dictionary and large knowledge about transitions of emotions in social situations (Brackett, Rivers & Salovey, 2011; Matczak & Piekarska, 2011). The ability to understand emotion could be treated as a component of socio-cognitive comprehension, underlying an insight into the perspective of others and enabling to decode the emotions, goals, desires and intentions of others (de Rosnay & Hughes, 2006).

A large number of studies demonstrated positive links between higher emotional understanding and good social adjustment (Denham et al., 2003; Izard et al., 2001; Saarni, 1999). Emotion understanding correlates positively with adaptive strategies of coping with negative and positive situations (Greenberg, Kusche & Riggs, 2004; Śmieja, Orzechowski & Asanowicz, 2012), and negatively with different behavioral and learning problems (Izard et al., 2001). The ability to understand emotion is also seen as a mediator between emotional perception abilities and emotion regulation mechanisms (Joseph & Newman, 2010; Salovey, Bedell, Detweiler & Mayer, 1999). In their influential meta-analysis, Trentacosta &

Fine (2010) showed weak to moderate positive correlations of emotion understanding and general social competence, and similar in magnitude — although negative — relations with internalized and externalized problems in children and youth. Considering emotion understanding as a part of emotional intelligence, other important correlates of higher levels of emotion understanding are greater social competence, better life quality, social sensitivity, better perceived social support from parents and friends, and lower tendency towards antagonistic and aggressive relations with friends and people in general (Brackett, Warner & Bosco, 2005; Brackett et al., 2006; Lopes, Salovey, Cote & Bears, 2005; Lopes et al., 2003, 2004; Rubin, 1999).

Several studies confirmed negative relations of emotion understanding, as a branch of emotional intelligence, and loneliness (Chapman & Hayslip, 2005; Saklofske, Austin & Minsky, 2003; Warwick, Nettleback & Ward, 2010; Zysberg, 2012). Using both self-report and maximum performance tests, it has been confirmed that emotion understanding and other facets of emotional intelligence have incremental validity in the prediction of loneliness (after controlling for the Big Five and academic intelligence). An important drawback of this research is the lack of a model of relations between emotional abilities and loneliness, therefore the results showed only simple correlations between these two constructs.

### Emotion understanding and interpersonal competencies

Mayer & Salovey (1997) posited that emotional abilities (emotion understanding, inter alia) represents the basic aptitude of reasoning with emotion. The emotional competence is a set of affect-oriented behavioral, cognitive and regulatory skills that emerge over time as a person develops in a social context (Saarni, 1999). It is assumed that aptitude in emotion processing (emotion ability) work as a basis for, or contribute to, more complex emotional competencies connected with social interactions, e.g. conflict resolution, seeking or providing social support (Cherniss, 2010; MacCann, Fogarty, Zeidner & Roberts, 2011; Mayer & Salovey, 1997). Mikolajczak, Petrides, Coumans & Luminet (2009) proposed to distinguish three levels of emotional intelligence, positioning emotional knowledge on the first level, specific emotional abilities on the second, and traits connected with emotional competence on the third level. In the area of job performance, Abraham (2004) also proposed that emotional intelligence works through emotional competencies. Salovey, Bedell, Detweiler & Mayer (2000) suggested that people with high EI are thought to be better equipped to deal with stressful events, because their ability to accurately perceive, understand and manage their own and other people's emotions thus resulting in better coping skills.

According to this line of theorizing, it has been found that emotion understanding correlates with several social competencies: problem solving strategies in conflict within close relationships and friendships (Lopes et al., 2004; Song et al., 2010; Stolarski, Postek & Śmieja, 2011), coping strategies in school environment (MacCann, Fogarty,

Zeidner & Roberts, 2011), empathy (Ciarrochi, Chan & Caputi, 2001), providing social support (Lopes, Brackett, Nezlek, Schütz, Sellin & Salovey, 2004; Song et al., 2010), impression management (Lopes et al., 2004), perspective taking (Schröder-Abé & Schütz, 2011), social intelligence (namely social awareness, social information processing and social skills; Grieve & Mahar, 2013), shyness, cooperation, self-confidence and leadership (Gil-Olarte, Palomera & Brackett, 2006). Much of this research has also shown that the above-mentioned social competencies (empathy, coping strategies, conflict resolution strategies, social support) mediate the relations between emotional abilities (e.g. emotion understanding) as well as intra- and interpersonal outcomes (e.g. satisfaction in close relationship, educational outcomes; Zeidner & Kloda, 2013; MacCann et al., 2011).

Buhrmester, Furman, Wittenberg & Reis (1988) distinguished five task domains of interpersonal competence in peer relationships, namely (a) initiation of interactions and relationships, (b) assertion of personal rights and displeasure with others, (c) self-disclosure of personal information, (d) emotional support of others, and (e) management of interpersonal conflicts that arise in close relationships. The correlates of emotion understanding discussed above largely overlap with these interpersonal competencies (Lopes et al., 2003; 2004), therefore positive correlations between emotion understanding and interpersonal competencies (Buhrmester et al., 1988) are expected in current studies.

Recently in literature there is a growing body of research that suggests the moderatory role of emotional intelligence in the relation between some emotional and social competencies and social outcomes. Wróbel (2013) indicated that emotional intelligence moderates the relation between emotional labor and burnout in teachers (for similar results see Karim & Weisz, 2011). Görgens-Ekermans & Brandt (2012) demonstrated that emotional intelligence moderates stress-burnout relationship in nurses, so that nurses in chronic stress experience less burnout while having higher emotional intelligence. Emotional intelligence moderates the relation between job insecurity and coping among employees (Jordan, Ashkanasy & Hartel, 2002). This suggests that emotional abilities may also condition the effective usage of emotional and social skills (e.g. adaptive coping strategies).

### Sex differences

Previous research revealed sex differences in the mean level of emotional abilities and structure of correlations between emotional abilities and social outcomes (Brackett, Mayer & Warner, 2004; Brackett et al., 2011). Visser, Bay, Cook & Myburgh (2010) demonstrated that emotional intelligence has a stronger regulatory role for men. There are several attempts to explain the differential regulatory role of emotional abilities (threshold effect, sex differences in measurement of emotional abilities, moderating role of social norms, gendered conceptualization of social competence; see Brackett et al., 2011). These results suggest the moderatory role of sex in the structure or power of relations between emotion understanding, interpersonal competencies and loneliness.

### Loneliness

The construct of loneliness, according to the commonly adopted definition, refers to a negative emotional response to a discrepancy between the desired and achieved quality of one's social network (Perlman & Peplau, 1982). Loneliness is an unpleasant, aversive, subjective, distressing and painful experience which occurs when a person's network of social relationships is significantly deficient in either quality or quantity (Perlman & Peplau, 1982). De Jong Gierveld (1998) stated that „loneliness is a situation experienced by the individual as one where there is an unpleasant or inadmissible lack of (quality of) certain relationships” (p. 73).

In current literature there is some discussion concerning the dimensionality of loneliness, whereas some models treat loneliness as a unidimensional construct (Perlman & Peplau, 1982; Russel, 1996), and other as a multidimensional construct (de Jong Gierveld, 1998; DiTommaso & Spinner, 1993; Weiss, 1973). Russell (1996) regards loneliness as a unitary state that is a result of deficit in relationships and varies only in intensity. Weiss (1973) distinguished the social isolation and the emotional isolation components of loneliness. Social isolation refers to a lack of social integration, whereas emotional isolation refers to absence of a reliable attachment figure (Cacioppo & Hawkley, 2009). De Jong Gierveld (1998) proposed three dimensions of loneliness: feelings associated with the absence of an intimate attachment (‘deprivation’ component), time perspective of loneliness (changeable or permanent), and emotional states accompanying loneliness (sadness, shame, guilt, etc.). DiTommaso & Spinner (1993) confirmed the structure of loneliness which was proposed by Weiss (1973), but distinguish between family and close relationship factors of emotional loneliness.

According to Cacioppo & Hawkley (2009), there are several important frameworks in examining loneliness: a social needs perspective, a cognitive discrepancy model and an evolutionary model. Empirical work grounded in the social needs perspective has typically examined deficits in different types of relationships, relationship provisions or social skills (e.g. Asher & McDonald, 2009; Dirks, Treat & Weersing, 2007; Parker & Asher, 1993; Riggio, Watring & Throckmorton, 1993; Williams & Solano, 1983). In a cognitive model, loneliness is defined as the distress that occurs when one's social relationships are perceived as being less satisfying than what is desired (Peplau & Perlman, 1982). In this perspective loneliness is not synonymous with being alone, nor does being with others guarantee protection from feelings of loneliness (Peplau & Perlman, 1982). Discrepancies between ideal and perceived interpersonal relationships produce and maintain feelings of loneliness. The evolutionary approach defines loneliness as an aversive condition that promotes inclusive fitness by signaling ruptures in social connections that motivate the repair or replacement of these connections (Cacioppo & Hawkley, 2009).

Each of these approaches treats loneliness as a set of negative feelings connected with an inadequate perception or real deficits in the quality of social networks

and interactions. In both the social needs perspective and cognitive model, deficits in social skills or abilities could play a crucial role by hindering initiation and maintaining of important social relationships or by producing an inappropriate image of the social world (in terms of expectancies and perceptions).

Sagrin, Nevarez, Arroyo & Harwood (2012) pointed out several risk factors of loneliness: (a) factors inherent in the family of origin (cold and maladaptive environment, dysfunctional modeling of social behavior; Rokeach, 1989; 2003), (b) aversive social experiences in which people had negative or hurtful interactions with friends and peers (e.g. bullying; Rokach, 1989; Woods, Done & Kalsi, 2009), and (c) deficits in social skills (Riggio & Kwang, 2009). Cacioppo & Hawkley (2009) pointed out other predictors of loneliness, i.e. socio-demographic variables (adolescence, young adulthood and old age; lower education, lower income; see Piquart & Sorensen, 2003), social roles (higher degree of loneliness in unmarried, divorced people, lower degree of loneliness in those with religion membership, volunteering), social contact quality and quantity (size and quality of social networks), health (e.g. serious impairments), personality (neuroticism, lower conscientiousness, lower agreeableness, lower self-esteem, anxiety, pessimism, insecure attachment; DiTommaso et al., 2003; Cacioppo, Hawkley et al., 2006; Ernst & Cacioppo, 1998; Marangoni & Ickes, 1989; Shaver & Brennan, 1991), and biased social cognition (Masi, Chen, Hawkley & Cacioppo, 2011). De Jong Gierveld (1998) stressed the important role of perceptions of social network quality for the experience of loneliness. Smaller social networks and less frequent interactions with friends and family promote loneliness (Dykstra, van Tilburg & de Jong Gierveld, 2005; Piquart & Sorensen, 2003). A relation between greater education attainments as well as greater income and lower degree of loneliness is mediated by larger social networks among better educated individuals (Dykstra & de Jong Gierveld, 1999; Lauder, Mummery & Sharkey, 2006). Although Sagrin (1998) stated that loneliness, social support and depression tend to be intercorrelated, VanderWeele, Hawkley, Thisted & Cacioppo (2011) clearly distinguished loneliness (feeling of social isolation) from social support (perceived availability of help that is received). Therefore, social support should be treated rather as a promoting factor of feelings of loneliness than as a facet of loneliness (Cacioppo & Hawkley, 2009; Dykstra, van Tilburg & de Jong Gierveld, 2005).

### Interpersonal competencies and loneliness

The “skills deficit” model of loneliness (Jones, Freemon & Goswick, 1981; Jones, 1982) posits that people with poor social skills would find it difficult to achieve their interpersonal goals and to connect with others in effective and meaningful ways. The lack of social skills may interfere with creating or maintaining satisfying social relationships and thereby set the stage for loneliness (Perlman & Peplau, 1982). There is vast empirical evidence in literature supportive of the skills deficit model (Beadle, Brown,

Keady, Tranel & Paradiso, 2012; DiTommaso, Brannen & Best, 2004; Segrin, 1993, 1999; Segrin & Flora, 2000; Stephan, Fäth & Lamm, 1988). Lonely individuals are less accurate at decoding facial and postural expressions of emotion (Pickett & Gardner, 2005; Pitterman & Nowicki, 2004). Loneliness is associated with more self-focus, poorer partner attention skills, a lack of self-disclosure to friends, especially among females, and smaller degree of participation in organized groups, especially among males (see Marangoni & Ickes, 1989). Studies show that lonely individuals are less accepting of potential new friends than those that are not lonely (Rotenberg & Kmill, 1992). Lonely individuals find it more difficult to adapt, are afraid of being dismissed and are unable to develop and maintain satisfactory relationships and social contact (Lamm & Stephan, 1987; Ozben, 2013). Riggio, Waring & Trockmorton (1993) demonstrated that social skills combined with perceived social support predicted reduced perceptions of loneliness. Socially inadequate and unskilled people attract less social support and are hence more lonely, whereas people who had higher social skills tended to receive greater social support than people who had lower social skills (Sarason et al., 1985). Social skills are also linked to better integration with social networks and lower social isolation (Wölfer, Bull & Scheithauer, 2012). Socially skilled people could not only have better social support system but also develop more accessible social networks around themselves.

Together, these studies suggest that deficits in interpersonal competencies are correlated with loneliness both directly (Pickett & Gardner, 2005; Stephan, Fäth & Lamm, 1988) and indirectly, by receiving social support (Sarason et al., 1985) and building better social networks.

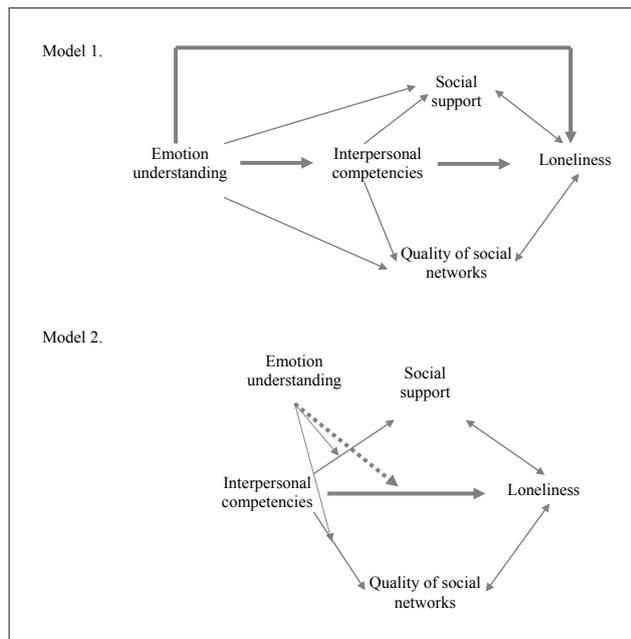
### A conceptual model linking emotion understanding, interpersonal competencies and loneliness

Taken together, the results discussed above suggest that there should be a direct negative link between emotion understanding and loneliness. Taking into account the suggestions of Mikalczak et al (2009) and Abraham (2004), there is a possibility that the relation between emotion understanding and loneliness is partially mediated by interpersonal competencies. However, according to Wróbel (2013), Görgens-Ekermans & Brandt (2012) and Jordan, Ashkanasy & Hartel (2002), emotion understanding could also moderate the relation between social competencies and loneliness.

Two possible models are proposed (Figure 1). The first model treats the ability to understand emotion as an independent variable working as an “emotion processor” underlying more particular interpersonal competencies. These competencies are proposed to be proximal predictors of social support, perception of social networks and loneliness (DiTommaso & Spinner, 1993). Perceived social support and perceived quality of social networks are often treated as predictors of loneliness (Mahon, Yarcheski, Yarcheski, Cannella & Hanks, 2006), but in following analyses these variables would be treated as strong correlates of loneliness, without defining the causality. The second model shows

the ability to understand emotion as a moderator of the relation between interpersonal competencies and social support, perception of social network and loneliness (see Wróbel, 2013). In the second model there is a proposition that interpersonal competencies would be correlated with social support, perception of social networks and loneliness more strongly in a group with a higher level of ability to understand emotion than with a lower level of this ability.

**Figure 1. Conceptual models of relations between emotion understanding, interpersonal competencies and loneliness (paths analysed in Study 1 are bolded).**



## Present studies

The models of relations between emotion understanding and loneliness proposed above were examined in two studies. In the first study, bolded paths of model 1 and 2 were tested using a unidimensional approach to loneliness. In the second study, model 1 and model 2 were tested for emotional and social loneliness. Measures of loneliness and emotion understanding differed across studies aimed to escape the problem of “method effect”. Similarly to MacCann, Fogarty & Zeidner (2011), an assumption has been adopted that comparable results in both studies give strong support in favor of the mediation or moderation model. Each of the studies described below was conducted in a measurement-of-mediation design in the examining of psychological process (Spencer, Zanna & Fong, 2005).

## Study 1

### Method

#### Participants

221 undergraduate students of different university courses participated in Study 1. The mean age of participants was 21.62 ( $SD = 2.55$ ) and 114 of them were female (51.6%).

#### Materials

##### *Independent variables measurement*

*The Emotion Understanding Test, TRE* (Matczak & Piekarska, 2011) was designed to assess the emotion understanding ability – a part of the ability model of emotional intelligence (Mayer, Salovey & Caruso, 1999). The TRE consists of five tasks, with six examples in every task. The first task assesses knowledge about emotion gradation in terms of direction and power. The second task is intended to assess knowledge about the relation between emotions. In the third task knowledge about mixed emotional states is measured. In the fourth task the participant is given the cause of an emotion and is instructed to indicate the emotion which will appear after this cause. In the fifth task the participant is instructed to indicate the emotion which causes a reaction. Matczak and Piekarska (2011) reported satisfying reliability of the TRE and demonstrated substantial evidence of its validity. In the present research the TRE had a satisfactory reliability ( $\alpha = .70$ ).

*The Interpersonal Competence Questionnaire, ICQ* (Buhrmester, Furnam, Wittenberg & Reis, 1988) was used to assess abilities connected with communication in peer relationships. The ICQ is a 40-item self-report inventory measuring competence in five areas: initiation of relationships (8 items; e.g. carrying on conversations with someone new, presenting good first impression), self-disclosure (8 items; e.g. revealing something intimate about oneself, letting a new companion to get to know the “real you”), assertion of self-interests (8 items; e.g. turning down a request, telling a companion that he or she has done something to hurt your feelings), provision of emotional support (8 items; e.g. helping a close companion to cope with problem, patiently and sensitively listening to companion), and ability to manage conflict (8 items; e.g. being able to take the companion’s perspective, being able to admit to a mistake). Respondents were instructed to use Levenson and Gottman’s (1978) 5-point rating scale to indicate their level of competence and comfort in handling each type of situation (1 = “I’m poor at this; I’d feel so uncomfortable and unable to handle this situation, I’d avoid it if possible”; 2 = “I’m only fair at this; I’d feel uncomfortable and would have lots of difficulty handling this situation”; 3 = “I’m OK at this; I’d feel somewhat uncomfortable and have some difficulty handling this situation”; 4 = “I’m good at this; I’d feel quite comfortable and able to handle this situation”; 5 = “I’m extremely good at this; I’d feel very comfortable and could handle this situation very well”). The result for each scale is a sum of points for the items. In the present

research we used the Polish translation of the ICQ (Janda, 2001). The ICQ has displayed satisfactory validity and high internal consistency (Buhrmester et al., 1988; Buhrmester, 1990). In the present studies the subscales of the ICQ reach satisfying reliabilities ( $\alpha$  between .74 and .85).

#### Dependent variable measurement

The UCLA Loneliness Scale (Russell, Peplau & Cutrona, 1980), in Polish translation by Rembowski (1992), was used to assess the participants' self-reported level of loneliness. The UCLA is a 20-item inventory which gives a global indicator of loneliness and is widely used, demonstrating good reliability and acceptable validity (McWhirter, 1990). In the present research UCLA's reliability was also high ( $\alpha = .91$ ).

### Results

#### Emotion understanding, interpersonal competencies and loneliness

Means, standard deviations and bivariate correlations between emotion understanding, interpersonal competencies and loneliness are presented in Table 1.

Emotion understanding did not correlate with loneliness and interpersonal competencies. Interpersonal competencies showed moderate negative correlations with loneliness,  $rs^2 = \{.09; .26\}$ .

#### Sex differences in the structure of correlations between emotion understanding, interpersonal competencies and loneliness

Significant sex differences appeared in emotion understanding,  $t(218) = -2.44$ ;  $p < .02$ ;  $d = -.33$ . Women have a higher level of emotion understanding ( $M = 17.63$ ;  $SD = 3.70$ ) than men ( $M = 16.45$ ;  $SD = 3.48$ ). Women have better interpersonal competencies than men: self-disclosure,  $t(218) = -2.02$ ;  $p < .04$ ;  $d = -.27$ ; assertion of self-interest,  $t(218) = -2.88$ ;  $p < .004$ ;  $d = -.38$ , and provision of emotional support,  $t(218) = -3.11$ ;  $p < .002$ ;  $d = -.41$ , but men have a higher level of ability to manage conflicts,  $t(218) = 2.58$ ;  $p < .01$ ;  $d = .34$ . Men tend to feel more lonely than women,  $t(218) = 2.00$ ;  $p < .05$ ;  $d = .27$ . After Bonferroni correction ( $.05 / 7 = .006$ ), sex differences in assertion of self-interest and provision of emotional support remain significant.

Bivariate correlations between emotion understanding, interpersonal competencies and loneliness are presented in Table 2.

One significant difference was identified for the correlation between emotion understanding and initiation of relation in men. This correlation was significantly higher in men than in women, one-tailed  $z = -1.70$ ;  $p < .045$ .

**Table 1. Means, standard deviations, distribution and correlations between variables (Study 1)**

	<i>M</i> ( <i>SD</i> )	1	2	3	4	5	6	
(1) Emotion understanding	17,06 (3,64)	.70						
(2) Initiation of relationship	25,95 (5,86)	-0,08	.83					
(3) Self-disclosure	26,25 (5,50)	-0,03	0,57***	.74				
(4) Assertion of self interests	29,15 (5,48)	0,07	0,43***	0,48***	.81			
(5) Provision of emotional support	32,47 (4,94)	0,05	0,18**	0,35***	0,11	.74		
(6) Ability to manage conflict	27,27 (4,96)	0,09	0,27***	0,47***	0,33***	0,46***	.84	
(7) Loneliness	35,15 (9,42)	-0,03	-0,44***	-0,51***	-0,33***	-0,30***	-0,36***	.91

Note: Reliabilities are on diagonal; \*\*\*  $p < 0,001$ ; \*\*  $p < 0,01$ ; \*  $p < 0,05$

**Table 2. Correlation between emotion understanding, interpersonal competencies and loneliness in men and women (Study 1)**

	1	2	3	4	5	6	7
(1) Emotion understanding		-0,19*	-0,11	-0,04	0,02	-0,03	0,10
(2) Initiation of relationship	0,04		0,55***	0,40***	0,24*	0,22*	-0,41***
(3) Self-disclosure	0,01	0,62***		0,43***	0,53***	0,48***	-0,48***
(4) Assertion of self interests	0,11	0,50***	0,52***		0,14	0,26**	-0,23*
(5) Provision of emotional support	0,13	0,13	0,22*	0,17		0,63***	-0,33***
(6) Ability to manage conflict	0,15	0,36***	0,42**	0,36***	0,38***		-0,36***
(7) Loneliness	-0,12	-0,48***	-0,53***	-0,42***	-0,33***	-0,33***	

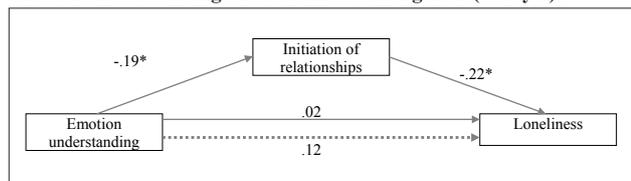
Note: Results below the diagonal are for women, above for men; \*\*\*  $p < 0,001$ ; \*\*  $p < 0,01$ ; \*  $p < 0,05$

### Interpersonal competencies as a mediator in the relation between emotion understanding and loneliness (Model 1)

Indirect effects were tested with the use of a bootstrapping technique (Hayes, 2013). Bootstrapping is a non-parametric resampling procedure that involves repeated extractions with replacement of samples from the data set and the estimation of the indirect effect in each resample data set. Mediation analysis was conducted using the PROCESS macro (Hayes, 2013), with 5000 bootstraps and bias correction, separately for women and men. This technique produces point estimates and bias-corrected confidence intervals for the indirect effect. A confidence interval that does not include zero indicates a statistically significant mediation.

One significant indirect effect appeared in men. Initiation of relationship was a significant mediator for the relation between emotion understanding and loneliness. Effect size was small,  $b = .12$ ;  $p < .05$ ; 95%  $CI = <.007; .41>$ ;  $\beta = .042$ . Directions of mediation are depicted in Figure 2.

**Figure 2. Initiation of relationship as a mediator of relation between emotion understanding and loneliness among men (Study 1).**



Note: All interpersonal competencies were controlled in this models. Model was significant:  $F(6,99) = 6.64$ ;  $p < .001$ ; adj.  $R^2 = .24$ ; dotted line indicates total effect (not controlling for the third variable); \*  $p < .05$ .

### Emotion understanding as a moderator of the relation between interpersonal competencies and loneliness (Model 2)

Stepwise regression analysis has been used to test the moderation model. In the first step, sex and age were entered. In the second step, interpersonal competencies were entered. In the third step, emotion understanding was entered. In the fourth step, all interaction terms were entered into the model. Before producing interaction terms, variables were centered. Significant change of  $R^2$  in the fourth step and significant  $b$  coefficient for interaction term refers to a significant interaction effect. Results of stepwise regression analysis are shown in Table 3.

Change of  $R^2$  in the fourth step did not reach a level of significance. None of the interaction terms was significant.

### Additional analysis

To clearly establish the domains of the five-component model of interpersonal competencies, factor analysis with Varimax rotation with Kaiser's normalization was used. The initiation of relationships ( $\lambda = .836$ ), self-disclosure ( $\lambda = .788$ ) and assertion of self-interests ( $\lambda = .776$ ) had high factor loadings on the first factor, which we called "openness competencies" (eigenvalue = 1.97; % of variance = 39.48). The ability to handle conflicts ( $\lambda = .847$ ) and provision of emotional support ( $\lambda = .755$ ) had high loadings on the second factor, which we called "relationship maintaining competencies" (eigenvalue = 1.40; % of variance = 27.99). Both indicators were computed as a sum of scores in scales which had high loadings at a given factor and have good reliabilities ( $\alpha = .88$  and  $\alpha = .82$  respectively).

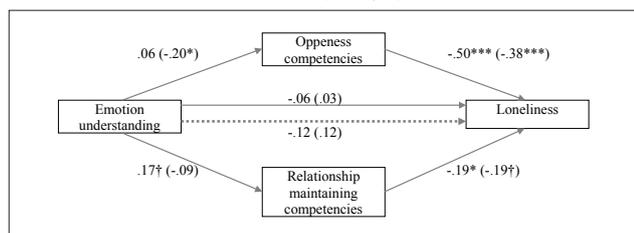
**Table 3. Results of moderation analysis (Study 1)**

	Step 1			Step 2			Step 3			Step 4		
	$\Delta R^2$	$\beta$	$sr^2$									
	.02			.31***			.001			.02		
Sex		-.14*	.02		-.09	.006		-.09	.006		-.09	.006
Age		.05	.003		.01	<.001		.02	<.001		.02	<.001
IR					-.22**	.03		-.22**	.03		-.22**	.03
SD					-.26**	.04		-.27***	.04		-.28***	.04
ASI					-.05	.002		-.05	.002		-.02	<.001
PES					-.08	.004		-.08	.004		-.08	.004
CM					-.14*	.01		-.14*	.01		-.15*	.02
EU								-.03	.001		-.02	<.001
IRxEU											-.09	.004
SDxEU											-.07	.002
ASIxEU											.11	.007
PESxEU											-.11	.008
CMxEU											.10	.008

Note: IR – initiation of relationship; SD – self-disclosure; ASI – assertion of self interest; PES – provision of emotional support; CM – conflict management; ER – emotion understanding; IRxEU – interaction term of initiation of relationship and emotion understanding; SDxEU – interaction term of self-disclosure and emotion understanding; ASIxEU – interaction term of assertion of self-interest and emotion understanding; PESxEU – interaction term of provision of emotional support and emotion understanding; CMxEU – interaction term of conflict management and emotion understanding; \*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$

Next, a mediation analysis with two mediators — “openness competencies” and “relationship maintaining competencies” — was conducted, whereas emotion understanding was an independent variable and loneliness was a dependent variable. To estimate the indirect effect, we programmed a bootstrapping procedure of mediation estimation with 5000 runs and a bias correction with acceleration, using the PROCESS macro (Hayes, 2013) separately for men and women. Results are presented in Figure 3.

**Figure 3. Openness competencies and relationship maintaining competencies as a mediators of relation between emotion understanding and loneliness in men and women (Study 1).**



Note: Coefficients in parenthesis are for men, before it for women; Both models were significant: in women:  $F(3,110) = 21.27; p < .001; \text{adj } R^2 = .35$ ; in men:  $F(3,103) = 12.10; p < .001; \text{adj } R^2 = .24$ ; dotted line indicates total effect (not controlling for the mediators); \*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ ; †  $p < .10$ ;

Regression model for women was significant,  $F(3,110) = 21.27; p < .001; \text{adj. } R^2 = .35$ . Direct effect of emotion understanding on loneliness was insignificant,  $b = -.13; 95\% \text{ CI} = <-.49; .23>; p < .48; \beta = -.06$ . Indirect effect of openness competencies was also insignificant,  $b = -.08; 95\% \text{ CI} = <-.31; .14>; \beta = -.03$ ; but indirect effect of relationship maintaining competencies was significant,  $b = -.08; 95\% \text{ CI} = <-.23; -.003>; \beta = -.032$ . Regression model for men was significant,  $F(3,103) = 12.10; p < .001; \text{adj. } R^2 = .24$ . Direct effect of emotion understanding on loneliness was insignificant,  $b = -.08; 95\% \text{ CI} = <-.41; .57>; p < .75; \beta = .03$ . Indirect effect of relationship maintaining competencies was also insignificant,  $b = .05; 95\% \text{ CI} = <-.05; .27>; \beta = -.017$ , but indirect effect of openness competencies was significant,  $b = .21; 95\% \text{ CI} = <.03; .56>; \beta = -.076$ .

A moderational analysis with openness competencies and maintaining competencies was also conducted, revealing no significant interaction effect, in third step:  $\Delta R^2 < .01; F < 1.0$ .

### Short discussion

Contrary to Zysberg (2012), in the present research the emotion understanding ability did not correlate directly with loneliness. Interpersonal competencies were correlated negatively with loneliness, which confirms previous results (Riggio, Waring & Trockmorton, 1993) and the skills deficit model of loneliness (Jones, 1982). Only a limited confirmation of the mediatory model has been obtained. Initiation of relationship significantly mediates the relation

between emotion understanding and loneliness, but only in men. The obtained result is also interesting because of the negative correlation between emotion understanding and the ability to initiate relationship, which is contrary to expectations made based on previous research about emotional abilities (Lopes, Salovey & Straus, 2003). Ickes and Simpson (2001) stated that empathic accuracy (accurate perception of a partner’s affective state) under certain conditions could be linked to poorer functioning in relationships. In interpersonal situations that are nonconflictual and nonthreatening to relationships, empathic accuracy tends to have a positive function. Yet in situations threatening to the relationship, accurate decoding of affective states of the partner tends to be negatively correlated with the perception of relationship quality. According to the sex-roles approach, initiation of relationship is correlated more strongly with masculinity (Buhrmester, Furnam, Wittenberg & Reis, 1988) and could be more challenging for men than for women (Mandal, 2008). Among men with a higher level of emotion understanding, initiation of relationships could be even more challenging because of a higher sensitivity to signs of rejective emotion of a partner. This sensitivity may involve low self-report of comfort and ability to initiate relationship among men with higher emotional abilities.

Interpersonal competencies appeared to be chiefly uncorrelated with emotion understanding, which is contrary to the results of previous research (Lopes, Brackett, Nezlek, Schütz, Sellin & Salovey, 2004; Lopes, Salovey & Straus, 2003; Song et al., 2010). A potential explanation of this result could be based on a difference in measurement of emotional abilities (performance test) and interpersonal competencies (self-report) and also the relatively low reliability of the emotion understanding score. Using only aggregated scores for interpersonal competencies, it has been shown that in men the so-called openness competencies (initiation of relationship, self-disclosure and assertion of self-interests) mediate the relation between emotion understanding and loneliness, whereas in women it is the relationship maintaining competencies (ability to manage conflict and provision of emotional support) that mediate this relation. The obtained results provide only a weak confirmation of Mayer & Salovey’s (1997) proposition that emotional abilities work as core abilities in social competence. It has been shown that emotion understanding does not moderate the relation between interpersonal competencies and loneliness. Study 1 provides only a weak confirmation of mediatory model (Model 1) and does not confirm the moderatory model (Model 2). Contrary to previous studies, emotion understanding was not directly related to loneliness.

## Study 2

### Method

#### Participants

206 undergraduate students of different university courses participated in Study 2. The mean age of participants was 21.29 ( $SD=1.72$ ) and 114 of them were female (55.3%). The number of cases in particular analysis varies from the overall sample size due to missing data.

#### Materials

##### *Independent variables measurement*

*The Test for Emotional Intelligence, TIE* (Śmieja, Orzechowski & Asanowicz, 2012), based on Mayer, Caruso & Salovey's (2000) ability approach, measures four branches of emotional intelligence. In the present research, the scale of emotion understanding was used. In previous research TIE was found to be a valid measure of emotional intelligence (Śmieja, Orzechowski & Beauvale, 2007; Śmieja, Mrozowicz & Kobylńska, 2011). The emotion understanding scale consists of six tasks with evaluation of three particular emotions' intensiveness in each question. According to the manual, the emotion understanding scale of TIE demonstrates good reliability (Cronbach alpha = .69).

*The Interpersonal Competence Questionnaire, ICQ* (Buhrmester, Furnam, Wittenberg & Reis, 1988) was used to assess abilities related to communication in peer relationships (cf. Starr & Davila, 2009). In the present study the subscales of the ICQ reach satisfying reliabilities ( $\alpha$  between .64 and .91).

##### *Dependent variables measurement*

*The Lubben Social Network Scale, LSNS* (Lubben & Girona, 2003; Lubben et al., 2006) was used to measure the quality of a given social network. LSNS contains two domains of social network — close relatives and friends — and each includes three statements (“How many relatives do you see or hear from at least once a month”, “How many relatives do you feel at ease with that you can talk about private matters” and “How many relatives do you feel close to such that you could call on them for help”). Items were rated on a 6-point Likert-type scale ranged from 0 (none) to 5 (nine or more). Score is a sum of items. LSNS had satisfactory reliability ( $\alpha = .75$ ).

*The Multidimensional Scale of Perceived Social Support, MSPSS* (Zimet, Dahlem, Zimet & Farley, 1988; Adamczyk, 2013) measures three types of perceived social support according to the source of support: Significant Other support (e.g. There is a special person who is around when I am in need; 4 items), Family support (e.g. My family really tries to help me; 4 items), and Friends' support (e.g. My friends really try to help me; 4 items). In the present research a global score was used ( $\alpha = .91$ ).

*Social and Emotional Loneliness Scale for Adults – Short version, SELSA-S* (DiTommaso, Brannen Best, 2004; Adamczyk & DiTommaso, 2013). According to Weiss

(1973), SELSA measures emotional (romantic and family) and social loneliness. The scale assesses three spheres of loneliness: romantic loneliness (e.g. I wish I had a more satisfying romantic relationship; 5 items;  $\alpha = .82$ ), family loneliness (e.g. I feel close to my family; 5 items;  $\alpha = .87$ ), and social loneliness (e.g. I feel a part of a group of friends; 5 items;  $\alpha = .83$ ). Loneliness assessment concerns the last year period. Items were rated on a 7-point Likert-type scale ranged from 1 (strongly disagree) to 7 (strongly agree).

### Results

#### Emotion understanding, interpersonal competencies, perceived social support, social network and loneliness

Means, standard deviations and bivariate correlations between emotion understanding, interpersonal competencies, perceived social support, quality of social network and loneliness are presented in Table 4. (See page - 232)

Emotion understanding did not correlate with any loneliness domain. One significant correlation between emotion understanding and interpersonal competency was found for provision of emotional support,  $r^2 < .06$ . Interpersonal competencies showed low negative correlations with family loneliness and social loneliness,  $rs^2 < .07$ .

#### Sex differences in the structure of correlations between emotion understanding, interpersonal competencies and loneliness

Significant sex differences appeared in emotion understanding,  $t(203) = -3.41$ ;  $p < .001$ ;  $d = -.47$ , and women are shown to have a higher level of emotion understanding ( $M = 7.77$ ;  $SD = 1.35$ ) than men ( $M = 7.09$ ;  $SD = 1.49$ ). Sex differences were also obtained in interpersonal competencies, *Wilk's lambda* = .75;  $F(5,195) = 13.22$ ;  $p < .001$ ;  $\eta_p^2 = .25$ . Follow up univariate ANOVA revealed significant differences in the provision of emotional support,  $F(1,199) = 32.24$ ;  $p < .001$ ;  $d = -.75$ . Women have higher ability of emotional support provision ( $M = 34.77$ ;  $SD = 3.90$ ) than men ( $M = 31.20$ ;  $SD = 5.04$ ). Perceived social support also differs in men and women,  $t(202) = 4.13$ ;  $p < .001$ ;  $d = -.57$ , and women have a higher perceived level of social support ( $M = 5.78$ ;  $SD = .98$ ) than men ( $M = 5.20$ ;  $SD = 1.02$ ). Men differ significantly from women in loneliness, *Wilk's lambda* = .95;  $F(3,199) = 3.66$ ;  $p < 0.013$ ;  $\eta_p^2 = 0.05$ . In a follow-up univariate analysis significant differences appeared in romantic loneliness,  $t(201) = 2.91$ ;  $p < .004$ ;  $d = 0.40$ . Men had a higher level of romantic loneliness ( $M = 3.97$ ;  $SD = 1.90$ ) than women ( $M = 3.21$ ;  $SD = 1.82$ ). All differences remain significant after Bonferroni correction ( $.05 / 11 = .005$ ).

The correlation between emotion understanding, perceived social support, quality of social network and loneliness separately for men and women is shown in Table 5. (See page - 232)

**Table 4. Means, standard deviations and correlations between variables (Study 2)**

	<i>M</i> ( <i>SD</i> )	1	2	3	4	5	6	7	8	9	10
(1) Emotion understanding	7,44 (1,46)										
(2) Initiation of relationship ( $\alpha = 0,82$ )	26,62 (5,89)	0,01									
(3) Self-disclosure ( $\alpha = 0,74$ )	26,50 (5,55)	0,07	0,48***								
(4) Assertion of self interests ( $\alpha = 0,80$ )	28,57 (5,55)	0,13	0,52***	0,30***							
(5) Provision of emotional support ( $\alpha = 0,84$ )	33,22 (4,76)	0,24**	0,30***	0,40***	0,32***						
(6) Ability to manage conflict ( $\alpha = 0,64$ )	27,21 (4,55)	0,10	0,09	0,21**	0,18**	0,41***					
(7) Perceived social support	5,53 (1,03)	0,12	0,24**	0,24**	0,18**	0,38***	0,04				
(8) Social network	18,58 (4,60)	0,03	0,27***	0,01	0,21**	0,19**	0,02	0,49***			
(9) Romantic loneliness	3,51 (1,89)	-0,11	-0,07	-0,13	-0,24**	-0,10	-0,01	-0,26***	-0,10		
(10) Family loneliness	2,74 (1,41)	-0,09	-0,14*	-0,04	-0,15*	-0,15**	-0,08	-0,59***	-0,51***	0,14*	
(11) Social loneliness	2,41 (1,24)	-0,10	-0,26***	-0,10	-0,20**	-0,24**	-0,14†	-0,58***	-0,52***	0,09	0,41***

Note: \*\*\*  $p < 0,001$ ; \*\*  $p < 0,01$ ; \*  $p < 0,05$ ; †  $p < 0,051$

**Table 5. Correlation between emotion understanding, interpersonal competencies and loneliness in men and women (Study 2)**

	1	2	3	4	5	6	7	8	9	10	11
(1) Emotion understanding		-0,03	0,05	0,17	0,35**	0,26**	0,00	-0,03	-0,05	-0,03	-0,04
(2) Initiation of relationship	0,06		0,55***	0,54***	0,43***	0,30**	0,30**	0,39***	-0,09	-0,35**	-0,39***
(3) Self-disclosure	0,01	0,44***		0,31**	0,40***	0,32**	0,13	0,08	-0,04	0,03	-0,10
(4) Assertion of self interests	0,06	0,51***	0,28**		0,47***	0,34**	0,15	0,35**	-0,23*	-0,25*	-0,27*
(5) Provision of emotional support	-0,04	0,22*	0,35***	0,14		0,62***	0,34**	0,24*	-0,09	-0,32**	-0,34**
(6) Ability to manage conflict	0,02	-0,11	0,14	0,04	0,36***		0,03	0,15	-0,19†	-0,09	-0,17
(7) Perceived social support	0,09	0,22*	0,28**	0,19*	0,30**	0,10		0,52***	-0,25**	-0,70***	-0,67***
(8) Social network	0,08	0,17†	-0,06	0,09	0,17†	-0,09	0,50***		-0,19†	-0,64***	-0,64***
(9) Romantic loneliness	-0,07	-0,07	-0,17†	-0,23*	0,05	0,10	-0,19*	-0,02		0,13	0,13
(10) Family loneliness	-0,13	0,01	-0,09	-0,07	-0,03	-0,07	-0,55***	-0,43***	0,16		0,64***
(11) Social loneliness	-0,11	-0,16	-0,08	-0,13	-0,11	-0,13	-0,50***	-0,43***	0,04	0,27**	

Note: results below the diagonal are for women, above for men; \*\*\*  $p < 0,001$ ; \*\*  $p < 0,01$ ; \*  $p < 0,05$ ; †  $p < 0,08$

There were several sex differences in correlational coefficients. Emotion understanding correlated with provision of emotional support stronger in men than in women, one-tailed  $z = 2,83$ ;  $p < .002$ , and with the ability to manage conflict, one-tailed  $z = 1,72$ ;  $p < .04$ . Interpersonal competencies were also correlated with loneliness more strongly among men than women, especially in the family and social domain of loneliness. Perceived social support and quality of social network were strongly correlated with the domains of loneliness both in men and women.

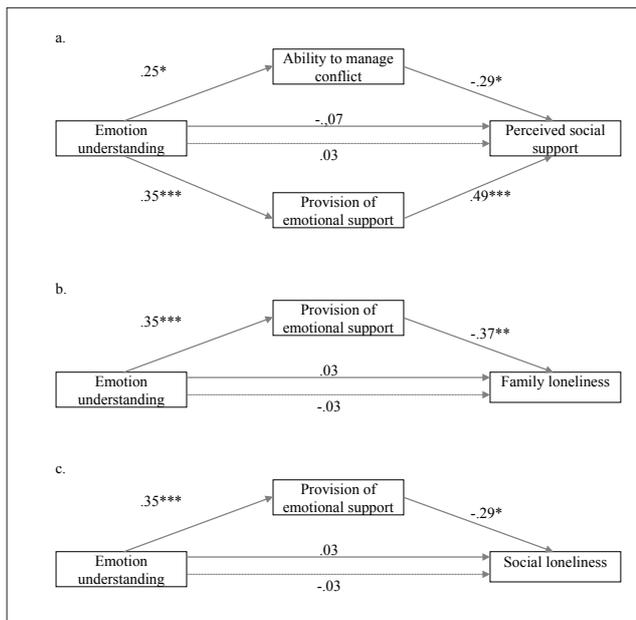
### Interpersonal competencies as a mediator of the relation between emotion understanding, perceived social support, social network and loneliness (Model 1)

Mediation models for perceived social support, quality of social network and loneliness as outcome variables were tested in the PROCESS macro (Hayes, 2013), using 5000 bootstraps with bias-correction.

Only a few significant mediated relations were found, all in men. Ability to manage conflict mediates the relation between emotion understanding and perceived social support,  $b = -.05$ ;  $p < .05$ ; 95%  $CI = <-.15; -.002>$ ;  $\beta = .073$ . Ability to provide emotional support mediates the relation between emotion understanding and perceived social support,  $b = .12$ ;  $p < .05$ ; 95%  $CI = <.03; .24>$ ;  $\beta = -.17$ , family loneliness,  $b = -.11$ ;  $p < .05$ ; 95%  $CI = <-.23; -.04>$ ;  $\beta = -.13$ , and social loneliness,  $b = -.08$ ;  $p < .05$ ; 95%  $CI = <-.20; -.007>$ ;  $\beta = -.11$ . Direction of relations between variables included in models are depicted in Figure 4 a – c.

### Emotion understanding as a moderator of the relation between interpersonal competencies and loneliness (Model 2)

Figure 4. Significant mediations in men (Study 2).



Note: All interpersonal competencies were controlled. Models were significant: Model a:  $F [6,79] = 3.54$ ; adj.  $R^2 = .21$ ;  $p < .004$ ; Model b:  $F [6,79] = 4.80$ ; adj.  $R^2 = .27$ ;  $p < .003$ ; Model c:  $F [6,79] = 3.89$ ; adj.  $R^2 = .23$ ;  $p < .002$ ; dotted line indicates total effect (not controlling for the mediator(s)); \*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ .

Stepwise regression analysis has been used to test the moderation model. In the first step, sex and age were entered. In the second step, two higher order factors of interpersonal competencies were entered. In the third step, emotion understanding was entered. In the fourth step, all interaction terms were entered into the model. Before producing interaction terms, variables were centered. Analyses for perceived social support, quality of social networks and social, family and romantic loneliness were conducted separately. Similarly to results from Study 1, emotion understanding showed no incremental validity over interpersonal competencies, while gender and interaction terms entered in the fourth step did not cause a significant increase in  $R^2$ .

### Additional analysis

Similarly to Study 1, aggregated results for interpersonal competencies were computed and used in the analysis. The initiation of relationships ( $\lambda = .885$ ), self-disclosure ( $\lambda = .760$ ) and assertion of self-interests ( $\lambda = .670$ ) had high factor loadings on the first factor, which we called “openness competencies” (eigenvalue = 1.94; % of variance = 38.73). The ability to handle conflicts ( $\lambda = .891$ ) and provision of emotional support ( $\lambda = .738$ ) had high loadings on the second factor, which we called “relationship maintaining competencies” (eigenvalue = 1.46; % of variance = 29.26). Both indicators were computed as a sum of scores in scales which had high loadings at a given factor and have good reliabilities ( $\alpha = .87$  and  $\alpha = .76$  respectively).

Mediation analysis was conducted with two potential mediators: “openness competencies” and “relationship maintaining competencies”, whereas emotion understanding was an independent variable and perceived social support, quality of social networks and loneliness were dependent variables. To estimate the indirect effect, we programmed a bootstrapping procedure of mediation estimation with 5000 runs and a bias correction with acceleration, using the PROCESS macro (Hayes, 2013) separately for men and women. Analyses did not reveal any significant mediation.

A moderation analysis was also carried out. Only one significant interaction appeared for romantic loneliness. In the fourth step a significant  $R^2$  change was obtained,  $\Delta R^2 = .04$ ;  $F$  for change (2,190) = 3,90;  $p < .02$  and the full model was also significant, adj.  $R^2 = .08$ ;  $F$  (7,190) = 3.40;  $p < .002$ . The interaction term of emotion understanding and openness competencies was significant,  $b = -.02$ ;  $p < .009$ . This interaction was examined with the PROCESS macro (Hayes, 2013), with 10000 bootstraps, and gender and age as covariates. Obtained results showed that at a low level of emotion understanding ( $M - 1 SD$ ) there was no significant correlation between openness competencies and romantic loneliness,  $b = .005$ ; s.e. = .01; 95%  $CI = <-.02; .03>$ ;  $p < .72$ ;  $\beta = .03$ , but at a moderate (M) and high level of emotion understanding ( $M + 1 SD$ ) there were significant negative correlations,  $b = -.02$ ; s.e. = .01; 95%  $CI = <-.04; -.004>$ ;  $p < .02$ ;  $\beta = -.18$  and  $b = -.05$ ; s.e. = .01; 95%  $CI = <-.08; -.02>$ ;  $p < .001$ ;  $\beta = -.38$ , respectively.

### Short discussion

In Study 2 the emotion understanding ability did not correlate significantly with loneliness, perceived social support and quality of social network. This result is contrary to Lopes et al. (2004), where emotion understanding was correlated positively with positive interactions with social networks (see also Lopes, Salovey & Straus, 2003). Again, a confirmation of negative correlation between emotion understanding and loneliness was not provided.

A limited confirmation of mediation model obtained, but only for men. The ability to provide emotional support and ability to manage conflict appeared to mediate the relation between emotion understanding and loneliness (family and social) and perceived social support. Limited confirmation of the moderatory model was also obtained. Openness competencies were negatively correlated with romantic loneliness among people with moderate and high emotion understanding, whereas for those with a low level of emotion understanding openness competencies did not link to reduced romantic loneliness. This result is consistent with Wróbel's (2013) results showing the protective role of higher emotional intelligence. In the present study, emotion understanding appears to facilitate the effect of interpersonal competencies on social adjustment, which confirms the propositions of the moderatory model described above.

### General discussion

Previous research included optimistic conclusions about the importance of high emotional abilities, inter alia emotion understanding, for social interaction outcomes (Brackett, Mayer & Warner, 2004; Lopes et al., 2004). Concerning the serious consequences of loneliness (Heinrich & Gullone, 2006), a negative correlation between emotional abilities and loneliness (Chapman & Hayslip, 2005; Zysberg, 2012) seemed to be a very promising result. However, a more precise review of literature leads to the conclusion of a rather complex pattern of associations between the branches of emotional intelligence and social adjustment. Zysberg (2012) actually demonstrated that emotion perception does correlate with loneliness, which can indicate that basic emotional abilities are connected with loneliness. Lopes, Salovey & Straus (2003) confirmed that emotion management correlates weakly but significantly with social support (from parental figure) and negatively with antagonism with a close friend, which are treated as predictors of loneliness (Mahon, Yarcheski, Yarcheski, Cannella & Hanks, 2006). Brackett, Mayer & Warner (2004) showed that experiential emotional intelligence (perception and facilitation) were correlated with some positive interpersonal relations, but only among men. The present research was conducted to establish the importance of emotion understanding in the prediction of loneliness, perceived social support and quality of relations. Jones (1982) proposed and confirmed that social skills are important antecedents of loneliness.

Emotion understanding was expected to play an important role in interpersonal interactions. Conceptually, the ability to understand the causes and results of another person's affective state should be connected with a more accurate response towards others. According to Mayer and Salovey's (1997) proposal that emotional abilities could be treated as core elements of emotional competence (see Helberstadt, Denham & Dunsmore, 2000), we assumed that emotion understanding is linked to interpersonal competences which are proximal predictors of loneliness and other measures of social adjustment.

In both presented studies a negative, direct correlation between emotion understanding and loneliness, perceived social support and quality of social interactions was not obtained. A possible explanation of these results is that the ability to understand another person's emotions is less important in predicting social outcomes than other abilities, namely the perception of emotion and management of emotion. The second explanation refers to the motivational context of emotion processing. As Helberstadt, Denham & Dunsmore (2000) pointed out, in the ability model of emotional intelligence there is still a significant lack of individual moderators of emotional abilities used to navigate the social world. Emotion understanding, due to its strong correlations with academic intelligence (Lam & Kirby, 2002), may require additional or elevated levels of interpersonal motivation to be used effectively and produce favorable social outcomes. In future research, variables encompassing such interpersonal motivation should be taken into account as moderators of the relation of emotion understanding to social outcomes. Thirdly, there is a possibility that there could be some threshold effect in the functioning of emotional abilities. Above a certain level, any improvement in emotional ability is irrelevant for social adjustment (Brackett, Mayer & Warner, 2004). In both conducted studies the means for emotion understanding abilities remained within average score levels (from 3 to 7 in standard ten; Matczak & Piekarska, 2011; Śmieja, Orzechowski & Asanowicz, 2012). It can be assumed that potential correlation could appear only among people with significant deficits in emotional abilities. Although this assumption requires exhaustive research, it is partly supported by the work of Qualter, Quinon, Wagner & Brown (2009), which showed that alexithymia is positively correlated with loneliness. Lack of significant correlations between emotion understanding and loneliness could also be caused by confounding variables which are responsible for the different functioning of emotion understanding. In the present results it could be seen that, in women, loneliness is negatively but not significantly connected with emotion understanding (in Study 1, after examining the nonparametric correlation,  $r$  for women is  $-.19$ ;  $p < .04$ , and for men  $r = .19$ ;  $p < .04$ ). Not only sex, but also other variables (e.g. rejection sensitivity; Downey & Feldman, 1996) could moderate the relation between emotion understanding and loneliness. In those who have a high rejection sensitivity, high emotion understanding could be expected to be a positive predictor of loneliness (this ability leads to easy detection of rejecting

emotion in others), whereas among those with a low rejection sensitivity it could be a positive correlate. In future research, the personality and transactional context of the functioning of emotion understanding (and other emotional abilities) should be taken into account.

According to Jones' (1982) deficit skill model of loneliness, interpersonal competencies do correlate with loneliness, perceived social support and quality of social networks. However, contrary to Lopes et al. (2004), emotion understanding appears not to be a facilitator of interpersonal competencies, except for some limited and unstable correlations between this ability and initiation of relationship (Study 1) as well as provision of emotional support (Study 2). Sex differences in the facilitatory role of emotion understanding for interpersonal competencies were also found. More results showing correlations between this emotion understanding and social competencies appeared among men. Brackett et al (2006) obtained similar results, showing lack of relation between emotional abilities and perceived social competence, with only limited positive associations among men. According to this result, a positive correlation between emotion understanding and provision of emotional support, obtained in the present research, was expected, but a negative correlation between this ability and initiation of relationships is against the established role of emotional abilities. This association demonstrates that emotion understanding may, in some cases, hinder interpersonal encounters. Lack of replication of this result in Study 2 indicates that the correlation between emotion understanding and the ability to initiate relationships may be moderated by some third variable. Brackett, Mayer & Warner (2004) showed a significant correlation between emotional abilities and negative aspects of interpersonal interactions, but no relations between emotional abilities and positive aspects of interactions. According to this result, it could be proposed that the "valence" of competence moderates the relation between emotional abilities and social competence, whereas this relation appears for "negative" areas of competence, e.g. conflict escalation, but does not appear for "positive" areas, e.g. self-disclosure. In general, lack of confirmation of correlations between emotion understanding and interpersonal competencies could be seen as a result of differences in the importance of particular emotional abilities, with a special role of managing emotions and emotion perception (Lopes et al., 2005). It is also a possibility that examining emotional abilities in isolation with respect to broader constructs encompassing social perception (e.g. theory of mind, social reasoning; see McKown, Gumbiner, Russo & Lipton, 2009) may result in unstable findings due to the omission of important factors determining the usage of emotional abilities. It could be proposed that even having a high level of emotional understanding does not guarantee its contribution to controlling behavior among those with e.g. low nonverbal awareness.

The proposed models of relations between emotion understanding and loneliness, perceived social support and perceived quality of social networks received only limited support. Emotion understanding, through the strengthening

of particular interpersonal competencies (provision of emotional support and ability to manage conflict), reduced family and social loneliness, and amplified perceived social support, but through the negative correlation with the ability to initiate relationships, it also amplified a general feeling of loneliness. This mediation appeared only among men and was unstable. Emotion understanding appeared to moderate the relation of interpersonal competencies and loneliness only for romantic loneliness. Relationship openness competencies were correlated negatively with romantic loneliness only among those with an average or high level of emotion understanding. Notwithstanding, these results require broad replication studies to confirm their validity.

The presented results are subject to some limitations. The most important issue is the repeatability of obtained results. In these studies we applied two different measurements of emotion understanding and loneliness, aiming to make the obtained results more stable and reliable. Instead of confirming the stability of the results, we obtained a more complicated pattern of correlations. In future research there is a need to implement other measures of emotion understanding and loneliness in order to decide which of the revealed associations are stable and in what contexts. Another limitation is connected with the research groups. In this study we included groups of students during their first years of academic education. Future studies should include groups of younger adolescents and older adults, especially elderly people (Dykstra, 2009; McPherson, Smith-Lovin & Brashears, 2006). An important limitation is also related to the validity of emotion understanding tests. According to the manuals (Matczak & Piekarska, 2011; Śmieja, Orzechowski & Asanowicz, 2012), both methods are valid, but in the present studies the lack of correlations between emotion understanding and interpersonal competencies had called their theoretical validity into question. In future research more valid methods should be applied, but on the other hand, TRE and TIE are the best developed Polish performance tests of emotion understanding.

Based on results obtained in the conducted studies, the ability to understand one's own and another person's emotions is not correlated with loneliness, with the appearance of unstable correlations which do not present any clear images of such relations. Particular interpersonal competencies, especially provision of emotional support, conflict management and initiation of relationships, mediate the relation between emotion understanding and loneliness (in particular family and social loneliness), but only among men. To some extent, emotion understanding moderates the relation between the competence of initiation as well as deepening of relationships and romantic loneliness. Additional studies are needed to validate the proposed conceptual models of the relation between emotion understanding and loneliness.

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