

**Joanna Lewczuk**

Chrześcijańska Akademia Teologiczna w Warszawie

## **Evaluating the characteristics of partner interaction based on his facial emotional expression and depending on the social value orientation of the observer<sup>1 2</sup>**

### **Introduction**

Since the development of the first concept of social value orientations<sup>3</sup> which are currently defined by a significant proportion of researchers as fixed patterns of the inter-situational variability of preferences as to how to allocate resources between the self and another person<sup>4 5</sup>, numerous researches have been carried out in this field. It has been proven, *inter alia*,

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<sup>1</sup> This article is a fragment of the following article: Lewczuk J. (2014). The link between social value orientations and the interaction partner's emotional facial expression as regards the perception of other individuals' traits and a change in the observer's social value orientation. *E-methodology. The international scientific journal* 1, 45-72.

<sup>2</sup> This article is based on selected data presented in my unpublished doctoral dissertation "The relationship between social value orientation, perception of facial expression and evaluation features of the people", written under the guidance of prof. dr. J. Grzelak at the Department of Psychology at the University of Warsaw. Therefore, special thanks for the promoter for help by my PhD thesis project, insightful comments, what had finally a fundamental influence on the shape of this study also.

<sup>3</sup> D. Messick & C. McClintock, *Motivational basis of choice in experimental games*, in: „Journal of Experimental Social Psychology” 1968 nr 4, p. 1-25.

<sup>4</sup> J. Grzelak, *Preferences and cognitive processes in interdependence situations: a theoretical analysis of cooperation*, in: V. Derlega & J. Grzelak (ed.), *Cooperation and helping behavior. Theory and research*, New York Academic Press, 1982, p. 97-127.

<sup>5</sup> J. Grzelak, *Współzależność społeczna. [Social interdependence]*, in: J. Strelau (ed.), *Psychologia. Podręcznik akademicki [Psychology. University textbook]*, GWP, Gdańsk 2003, vol. 3, p. 125-145.

that the orientations are a very important factor modifying the perception and evaluation of a situation and a partner<sup>6 7 8</sup>.

Among the empirical reports, researches have occurred which linked social value orientations with facial expression, and concerned the coding and decoding of orientations at the level of facial nonverbal behaviour, as well as the decoding of orientations on the basis of static images of facial emotional expressions<sup>9</sup>. The results as obtained so far indicate that emotions being displayed on the face of a stranger allow accurate determination of that person's social value orientation, particularly when he/she is adopting an expression of happiness or anger, while the observation of an emotionally neutral face does not provide such an opportunity<sup>10</sup>. In addition to the nonverbal indications of social value orientations, factors affecting the attractiveness of an interaction with a person being observed, such as *inter alia* the traits of a potential interaction partner, have also been analysed<sup>11</sup>; moreover, an opportunity to infer the characteristics of a stranger from his/her nonverbal, facial emotional expressions.

The aim of this paper is to present the results of an experimental research focused on research question about the link between social value orientations and inference from facial emotional expressions. Detailed inquiries concern the specificity of perceiving the traits of individuals (including trust being put in them) who display contradictory expressions (happiness, anger) on the face. Focusing on the facial expression arises from the fact that it is considered, on the basis of numerous researchers (conducted by,

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<sup>6</sup> H. Kelley & A. Stahelski, *Social interaction basis of cooperator's and competitor's beliefs about others*, in: „Journal of Personality and Social Psychology” 1970 nr 16, p. 66-91.

<sup>7</sup> W. Liebrand, R. Jansen, V. Rijken, & C. Suhre, *Might over morality: Social values and the perception of other players in experimental games*, in: „Journal of Experimental Social Psychology” 1986 nr 22, p. 203-215.

<sup>8</sup> D. Sattler & N. Kerr, *Might versus morality explained: Motivational and cognitive interpersonal orientation*, in: „American Journal of Sociology” 1991 nr 71, p. 179-186.

<sup>9</sup> G. Shelley, M. Page, P. Rives, E. Yeagley & D. Kuhlman, *Nonverbal communication and detection of individual differences in social value orientation*, in: R. Kramer, M. Bazerman & A. Tenbrunsel (ed.), *Social decision making: Social dilemmas, social values, and ethical judgments*, Psychology Press, New York 2009, p. 147-169.

<sup>10</sup> Ibidem.

<sup>11</sup> J. Grzelak, D. Kuhlman, E. Yeagley, & J. Joireman, *Attraction to prospective dyadic relationships: Effects of fate control, reflexive control, and partner's trustworthiness*, in: R. Kramer, M. Bazerman i A. Tenbrunsel (ed.), *Social decision making: Social dilemmas, social values, and ethical judgments*, Psychology Press, New York 2009, p. 205-237.

*inter alia*,<sup>12 13 14)</sup>, to be the most important channel of nonverbal communication, which operates most autonomously and, most often, is sufficient by itself for the information being provided to be accurately interpreted. The use of expressions of happiness and anger in own research for the experimental manipulation arises from the fact that those modalities of emotion have received, in the cross-cultural studies<sup>15 16 17</sup>, the highest indicators of recognition accuracy, and is also due to the great accuracy in determining the social value orientation of a person who is displaying those particular modalities of emotion on his/her face<sup>18</sup>.

### Definition of social value orientations

The authors of the earliest classifications of social value orientations<sup>19</sup> initially introduced four basic motifs (orientations) for which a definition was developed, namely the fixed preferences about how to allocate outcomes (resources) between the self and a partner. Those preferences may take a form of efforts to maximise: own gains (individualism), the partner's gains (altruism), own advantage over the partner (competition), and the combined own and partner's gains (cooperation). The Charles Graham McClintock's

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<sup>12</sup> D. Doliński, *Ekspresja emocji. Emocje podstawowe i pochodne* [ *Expression of emotions. Basic and secondary emotions*], in: J. Strelau (ed.), *Psychologia. Podręcznik akademicki* [ *Psychology. University textbook* ], Gdańskie Wydawnictwo Psychologiczne, Gdańsk 2003, vol. 2, pp. 351–367.

<sup>13</sup> C. Biele, *Spostrzeganie twarzy u ludzi i zwierząt* [ *Perception of the face in humans and animals*], in: „*Studia Psychologiczne*” 2002 nr 40, p. 5–25.

<sup>14</sup> R. Ohme, *Podprogowe informacje mimiczne. Ujęcie psychologii eksperymentalnej* [ *Subliminal facial information. From the perspective of experimental psychology* ], Wydawnictwo Instytutu Psychologii PAN, Warszawa 2003.

<sup>15</sup> P. Ekman, E. Sorenson, & W. Friesen, *Pan-cultural elements in the facial displays of emotions*, in: „*Science*” 1969 nr 164, p. 86–88.

<sup>16</sup> P. Ekman & W. Friesen, *Constants across cultures in the face and emotion*, in: „*Journal of Personality and Social Psychology*” 1971 nr 17(2), p. 124–129.

<sup>17</sup> H. Friedman, *The interactive effects of facial expressions of emotion and verbal messages on perceptions of affective meaning*, in: „*Journal of Experimental Social Psychology*” 1979 nr 15, p. 453–469.

<sup>18</sup> G. Shelley, M. Page, P. Rives, E. Yeagley & D. Kuhlman, *Nonverbal communication and detection of individual differences in social value orientation*, in: R. Kramer, M. Bazerman & A. Tenbrunsel (ed.), *Social decision making: Social dilemmas, social values, and ethical judgments*, Psychology Press, New York 2009, p. 147–169.

<sup>19</sup> D. Messick & C. McClintock, *Motivational basis of choice in experimental games*, in: „*Journal of Experimental Social Psychology*” 1968 nr 4, p. 1–25.

model as extended <sup>20</sup> to include a total of eight social value orientations still emphasised the fixed nature of the preferences. The subsequent years of interest in the issue of orientations have resulted in a major theoretical postulate being proposed, which dealt with the interactive nature of the resource allocation preferences. The existence of a number of situational factors affecting the orientations was indicated <sup>21</sup>, while emphasizing at the same time that the individual orientation pattern in different situations was stable and typical of a given individual. For example, where person A exhibits less competitive behaviour while being in a confrontation with a partner enjoying considerable prestige than while being in a situation where he/she is facing up to a partner of a similar status, the difference will occur in each situation where person A is in an interaction with partners having different levels of social prestige. Hence, the individual's preferences are determined by both the orientations (configuration of orientations) and the situational factors <sup>22</sup>.

Therefore, a proportion of researchers are currently inclined to define the social value orientations as fixed patterns of the inter-situational variability of preferences as to how to allocate resources between the self and other persons <sup>23</sup>. In the light of this definition, the assessment of social value orientations is, therefore, not universal: individuals being cooperative in certain spheres (e.g. in social relationships) may be competitive in other spheres (e.g. in their professional life). Social value orientations are thus dependent on the situation <sup>24</sup>, and the main factors resulting in the same person being able to change his/her outcome allocation preferences include, *inter alia*: the number of persons, the mode of representing results, the effect of instructions, the effect of information on the other person's strategy, and the opportunity for communication <sup>25</sup>. In the light

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<sup>20</sup> D. Griesinger & J. Livingstone, *Toward a model of interpersonal motivation in experimental games*, in: „Behavioral Science” 1973 nr 18, p. 73–78.

<sup>21</sup> J. Grzelak, *Preferences and cognitive processes in interdependence situations: a theoretical analysis of cooperation*, in: V. Derlega & J. Grzelak (ed.), *Cooperation and helping behavior. Theory and research*, New York Academic Press, 1982, p. 97-127.

<sup>22</sup> J. Grzelak, *Współzależność społeczna. [Social interdependence]*, in: J. Strelau (ed.), *Psychologia. Podręcznik akademicki [Psychology. University textbook]*, GWP, Gdańsk 2003, vol. 3, p. 125-145.

<sup>23</sup> Ibidem.

<sup>24</sup> Ibidem.

<sup>25</sup> M. Mazur, *Orientacje społeczne [Social value orientations]*, in: M. Lewicka & J. Grzelak (ed.), *Jednostka i społeczeństwo [An individual and the society]*, GWP, Gdańsk 2002, p. 117-130.

of the above data, it is difficult to divide people into “pure” individualists, altruists, cooperators etc.; actually, it is assumed that each person’s orientation is characterized by the adopted indicators determining the intensity of particular orientations. Therefore, each person exhibits a certain, most pronounced orientation being supplemented by a set of several others. Depending on the situation, the person starts exhibiting either behaviour associated with the dominant orientation or behaviour typical of the other ones. Therefore, in certain extreme situations an individualist (an individual with the prosocial orientation being dominant) may exhibit altruist behaviour, while in other situations e.g. competitive ones. However, in most situations this individual will behave in accordance with his/her dominant prosocial orientation.

Models of social value orientations differ in the number and type of orientations. Quite often, one may find in the literature on the subject an empirically and theoretically justified division of orientations into *prosocial* (referred to by van Lange as *cooperative*) which include cooperative, altruistic and maximin orientations (the latter being a preference for maximizing the lowest outcome regardless of whose the outcome is (Schulz, 1968, quoted from <sup>26</sup>), and *proself* (referred to by van Lange as *egoistic*) being represented by individualistic and competitive orientations <sup>27</sup> cf. also <sup>28</sup>. The nature of the division of social value orientations into *prosocial* and *proself* has already been emphasized by Kelley and Thibaut who argued that individuals transform the representation of a specific situation of social interdependence in accordance with their own social motives <sup>29</sup> by either adopting the *egoistic motivation* i.e. pursuing maximum own outcomes while ignoring the partner’s outcomes, or being guided by the *prosocial motivation* i.e. searching for good outcomes for both oneself and the partner(s).

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<sup>26</sup> J. Grzelak, *Współzależność społeczna*. [Social interdependence], in: J. Strelau (ed.), *Psychologia. Podręcznik akademicki* [Psychology. University textbook], GWP, Gdańsk 2003, vol. 3, p. 125-145.

<sup>27</sup> P. van Lange, *What People Look for in Others: Influences of the Perceiver and Perceived on Information Selection*, in: „Personality and Social Psychology Bulletin” 2000 nr 26, p. 206-219.

<sup>28</sup> D. Rutkowska & A. Szuster, (ed.). *O różnych obliczach altruizmu* [About the various faces of altruism], Wydawnictwo Naukowe SCHOLAR, Warsaw 2008.

<sup>29</sup> H. Kelley & J. Thibaut, *Interpersonal Relations: A theory of interdependence*. Wiley, New York 1978.

In summary, social value orientations may be treated as either individual, generalized inclinations to exercise particular types of control, or states of needs evoked on an *ad hoc* basis in a particular situation<sup>30 31</sup>.

#### Orientations and the perception and assessment of the others

Researches into social value orientations indicate an evident influence thereof on the processing of information on the social world, and on the assessment of interaction partners<sup>32 33 34</sup>. Depending on the social value orientations, people pay attention to various elements of the social world, and use those elements in order to form a specific assessment of the surrounding reality. Results of classical studies (“the triangle hypothesis”) indicate that competitive persons perceive the others as being competitive as well, while persons with the cooperative orientation consider other people to be more flexible i.e. either cooperative or competitive<sup>35</sup>; on the other hand, a “diagonal hypothesis” also exists, being opposed to the above one and empirically confirmed, which indicates the egocentric bias; according to the latter hypothesis, everybody perceives the others as being similar to

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<sup>30</sup> J. Grzelak, *Kontrola, preferencje kontroli, postawy wobec problemów społecznych* [Control, preferences of control, attitudes towards social problems], in: M. Lewicka & J. Grzelak (ed.), *Jednostka i społeczeństwo* [An individual and the society], GWP, Gdańsk 2002, p. 131-149.

<sup>31</sup> The author of this paper is inclined to favour the latter definition, and has been examining, in addition to assess the characteristics of the interaction partner, also the variability of orientations under the influence of various facial expressions being displayed by an interaction partner – the results of these analyzes are not presented in this article, but they are available in: Lewczuk J. (2014). The link between social value orientations and the interaction partner's emotional facial expression as regards the perception of other individuals' traits and a change in the observer's social value orientation. *E-methodology. The international scientific journal* 1, 45-72.

<sup>32</sup> H. Kelley & A. Stahelski, *Social interaction basis of cooperator's and competitor's beliefs about others*, in: „Journal of Personality and Social Psychology” 1970 nr 16, p. 66-91.

<sup>33</sup> J. Grzelak, *Preferences and cognitive processes in interdependence situations: a theoretical analysis of cooperation*, in: V. Derlega & J. Grzelak (ed.), *Cooperation and helping behavior. Theory and research*, New York Academic Press, 1982, p. 97-127.

<sup>34</sup> J. Grzelak, *Współzależność społeczna*. [Social interdependence], in: J. Strelau (ed.), *Psychologia. Podręcznik akademicki* [Psychology. University textbook], GWP, Gdańsk 2003, vol. 3, p. 125-145.

<sup>35</sup> H. Kelley & A. Stahelski, *Social interaction basis of cooperator's and competitor's beliefs about others*, in: „Journal of Personality and Social Psychology” 1970 nr 16, p. 66-91.

oneself<sup>36 37 38 39</sup>. The results supporting the „diagonal hypothesis” indicate that persons with prosocial orientations (cooperation, altruism) attribute the possession of prosocial orientations to the others to a greater extent than persons with proself orientations (individualism, competition) tend to do. A link was also demonstrated between the social value orientations and the accuracy of the judgement on the others: cooperators and individualists guess their partners’ intentions more accurately than competitors do<sup>40</sup>. The differences also concern the criteria applied for the assessment of the others: individualists and competitors perceive the social world in terms of power and strength, while persons with the cooperative orientation perceive it in terms of moral categories i.e. good and evil<sup>41 42</sup>. Paul van Lange and Wim Liebrand<sup>43</sup> concluded that cooperators perceived other cooperators to be intelligent, while non-cooperators were perceived by them as unintelligent and weak. The perception of persons with non-cooperative orientations is opposite<sup>44</sup>.

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<sup>36</sup> J. Grzelak, *Ja, my, oni? Interes własny a procesy poznawcze i zachowanie ludzi w sytuacji konfliktu*, in: M. Kofta & T. Szustrowa (ed.), *Złudzenia, które pozwalają żyć*, Wydawnictwo Naukowe PWN, Warsaw 2001, p. 117-146.

<sup>37</sup> D. Kuhlman & D. Wimberley, *Expectations of choice behavior held by cooperators, competitors and individualists across four classes of experimental games*, in: „Journal of Personality and Social Psychology” 1976 nr 34, p. 69-81.

<sup>38</sup> W. Liebrand, *The effect of social motives, communication and group size on behaviour in a N-person multi-stage mixed-motive game*, in: „European Journal of Social Psychology” 1984 nr 14, p. 239-264.

<sup>39</sup> U. Schulz, *The influence of social orientation and generalized expectancies on decision making in interated experimental games*, in: R. Tietz, W. Albers & R. Stellen (ed.), *Bounded rational behaviour in experimental games and markets*, Springer-Verlag, Berlin 1986, p. 95-110.

<sup>40</sup> J. Maki & C. McClintock, *The accuracy of social value prediction: Actor and observer influences*, in: „Journal of Personality and Social Psychology” 1983 nr 45, p. 829-838.

<sup>41</sup> W. Liebrand, R. Jansen, V. Rijken, & C. Suhre, *Might over morality: Social values and the perception of other players in experimental games*, in: „Journal of Experimental Social Psychology” 1986 nr 22, p. 203-215.

<sup>42</sup> D. Sattler & N. Kerr, *Might versus morality explained: Motivational and cognitive interpersonal orientation*, in: „American Journal of Sociology” 1991 nr 71, p. 179-186.

<sup>43</sup> P. van Lange & W. Liebrand, *On perceiving morality and potency: Social values and the effects of person perception in a give-some dilemma*, in: „European Journal of Personality” 1989 nr 3, p. 209-225.

<sup>44</sup> S. Kopelman, J. Weber & D. Messick, *Factors Influencing Cooperation in Commons Dilemmas: A Review of Experimental Psychological Research*, in: E. Ostrom, T. Dietz, N. Dolsak, P. Stern, S. Stonich, & E. Weber (ed.), *The Drama of the Commons*, National Academy Press, Washington 2002, p. 113-156.

So far, it has not been directly examined as to whether social value orientations diversify the assessment of the same person displaying various facial expressions. The very fact of the influence of the identification of a sender's emotions on the type of the judgement on the sender being generated is obvious – identification of a facial expression, just like every categorization, simplifies and reduces the stimuli getting through; it selectively channels the attentions, which allows grouping and predicting the traits of any category item; it also allows constructing of a consistent system of general knowledge of other people, while specifying the expectations concerning the patterns of either typical behaviour or possible deviations therefrom. On the other hand, the expectations associated with the facial expression being observed affect the judgements on the sender of the message<sup>45</sup>.

As regards the link between the social value orientations and generating different judgements on other persons on the basis of facial emotional expressions being observed, there are reasons to argue that at least the cooperative orientation is conducive to putting trust in persons displaying positive expressions on the face. Generally, a happy facial expression is interpreted by people as an indicator of the cooperative orientation<sup>46</sup>, and assessing a person on the basis of the facial expression as being happy correlates with perceiving that person as being "trustworthy"<sup>47</sup>. On the other hand, it only occurs in the group of cooperators that attributing the cooperative orientation (which often involves a positive emotional state being expressed on the face) to a person correlates with assessing that person to be "trustworthy"<sup>48</sup>. Possibly, the facial expression of a positive emotional state not only inspires cooperative observers to feel trust and expect cooperation, but also to make positive assessments in other dimensions. Researches consistently indicate that the assessments of cooperators are more positive than those of non-cooperators in terms of such traits as: unselfishness, honesty, kindness

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<sup>45</sup> N. Cantor & W. Mischel, *Prototypy w spostrzeganiu osób* [Prototypes in the perception of people], in: T. Maruszewski (ed.), *Poznanie, afekt, zachowanie* [Cognition, affect, behaviour], PWN, Warsaw 1993, p. 20-52.

<sup>46</sup> R. Frank, T. Gilovich & D. Regan, *The evolution of one-shot cooperation*, in: „Ethology and Sociobiology” 1993 nr 14, p. 247-256.

<sup>47</sup> G. Shelley, M. Page, P. Rives, E. Yeagley & D. Kuhlman, *Nonverbal communication and detection of individual differences in social value orientation*, in: R. Kramer, M. Bazerman & A. Tenbrunsel (ed.), *Social decision making: Social dilemmas, social values, and ethical judgments*, Psychology Press, New York 2009, p. 147-169.

<sup>48</sup> Ibidem.

and cooperation <sup>49</sup>. Other researches also show that persons with prosocial orientations make a more positive impression on the others than persons with prosocial orientations. Judith Maki, Warren Thorngate and Charles McClintock (1979) <sup>50</sup> demonstrated that persons making individualistic and competitive choices have been assessed as being more egoistic, evil and unfriendly than persons exhibiting altruistic and cooperative behaviour. Furthermore, the respondents with prosocial orientations have been assessed as being more moral as well as fair and honest, as compared to those prosocial-oriented <sup>51</sup>. An important question is whether the assessment of a smiling person (most often associated with a tendency to cooperate), and of a person displaying a facial expression of a negative emotion, will vary depending on the observers' social value orientation (*proself* vs *prosocial*).

It is also interesting to see how the others are assessed by the representatives of social value orientations other than cooperation, depending on the facial expression being observed.

## Method

The research was carried out via the Internet according to the experimental scheme; it allowed the determination of assessments being generated in relation to a person displaying various facial expressions, depending on the observer's social value orientation.

The following techniques were applied in the research: a version of the Ring Measure of Social Values, as modified by Michael Kuhlman (2007) <sup>52</sup>, for the measurement of social value orientations, and photographs of a man (as obtained from the set of unpublished materials of M. Kuhlman (2007)) <sup>53</sup> displaying expressions of happiness, anger and neutrality on his face, for the performance of an experimental manipulation. For the purposes of the research, a scale for assessing the perception of a person being presented, his facial expression, and trust being put in this person.

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<sup>49</sup> Ibidem.

<sup>50</sup> J. Maki, W. Thorngate & C. McClintock, *Prediction and perception of social motives*, in: „Journal of Personality and Social Psychology” 1979 nr 37, p. 203–220.

<sup>51</sup> W. Liebrand, R. Jansen, V. Rijken, & C. Suhre, *Might over morality: Social values and the perception of other players in experimental games*, in: „Journal of Experimental Social Psychology” 1986 nr 22, p. 203–215.

<sup>52</sup> D. Kuhman, *Neutron study*, unpublished materials, University of Delaware, USA 2007.

<sup>53</sup> The materials were obtained courtesy of M. Kuhlman, professor at the University of Delaware.

In the research, the following variables were used:

*independent variables:*

- social value orientations
- the type of a facial expression being displayed (the intra – and interpersonal factor)

*dependent variables:*

- the perception of the person (in the dimensions of traits in terms of competence, predictability, intentions and being trustworthy) displaying various expressions on the face.

Tools for the measurement of variables. Indicators.

*Method of the measurement of the independent variable: social value orientations.*

For the measurement of social value orientations, a version of the Ring Measure of Social Values<sup>54</sup>, as modified by M. Kuhlman. In this method, the respondents made 12 choices between three options (A, B and C), with each option presenting a specific distribution of points between self (You) and the Person in the photograph (Fig. 1). An accurate and rather complex method of the analysis of results as obtained using the Ring Measure of Social Values is provided in a paper written by the author of this technique<sup>55</sup>.

Figure 1. An example of one of the offers in the modified Ring Measure of Social Values, in the version involving the distribution of points between self and the person in the photograph.

You receive 50	The person in the photograph receives -86
You receive 70	The person in the photograph receives -70
You receive 60	The person in the photograph receives -79

Source: Materials of M. Kuhlman (2007).

Using the tool as described, two types of indicators of social value orientations were developed:

- 1) a general indicator: *orientation on the self* (I) and *orientation on the others* (he)

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<sup>54</sup> W. Liebrand, *The effect of social motives, communication and group size on behaviour in a N-person multi-stage mixed-motive game*, in: „European Journal of Social Psychology” 1984 nr 14, p. 239-264.

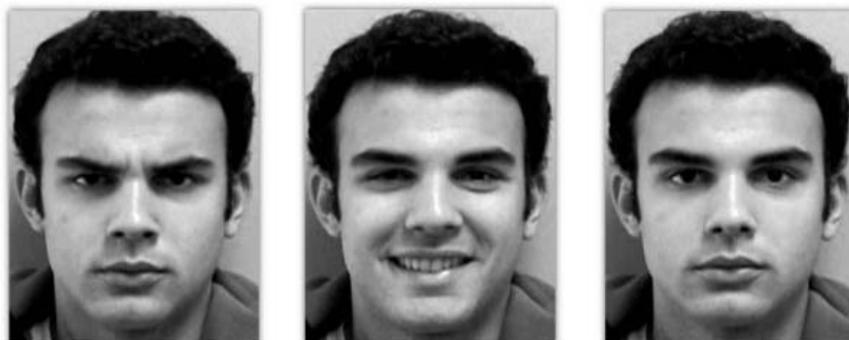
<sup>55</sup> W. Liebrand & C. McClintock, *The ring easmure of social values: a computerized procedure for assessing individual differences in information processing and social value orientation*, in: „European Journal of Personality” 1988 nr 2, p. 217-230.

2) specific indicators: *dominant social value orientations*: competition, individualism, cooperation, altruism.

*Method of the measurement of the independent variable: the type of a facial expression being displayed.*

Under the research procedure, a type of manipulation was applied which involved a change in the emotional expression being displayed on the face of a person with whom the respondent is in a situation of social interdependence, and distributes points being important for both parties. For this purpose, photographs of a man were used (having been selected from a couple of dozen of photographs of human faces (from Kuhlman's collection), tested for the lack of ambiguity of the facial expressions being presented (a study as conducted by Kuhlman's team, 2006<sup>56</sup>, 2007<sup>57</sup>), and chosen due to the appearance of the face being typical of a Polish citizen (studies for the purpose of the paper by Hubert Jakubiec, MSc, 2008<sup>58</sup>) and on the basis of opinions of competent judges), presenting facial expressions of anger, happiness and neutrality (Fig. 2).

Figure 2. Photographs of a man displaying expressions of anger, happiness and neutrality, as used in the research.



Source: Materials of M. Kuhlman (2007).

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<sup>56</sup> D. Kuhlman, *Photon study*, unpublished materials, University of Delaware, USA 2006.

<sup>57</sup> D. Kuhlman, *Photon study*, unpublished materials, University of Delaware, USA 2007.

<sup>58</sup> H. Jakubiec, *Czy istnieją uniwersalne gatunkowo i stabilne w czasie cechy fizyczne twarzy człowieka zdradzające jego orientację społeczną? [Are there any universal (in terms of the species) and stable over time, physical features of a human face that reveal his/her social value orientation?]*, unpublished MSc thesis, Faculty of Psychology at the University of Warsaw, Warsaw 2008.

The photograph of a person displaying a neutral expression (who was presented in the research as a partner for the distribution of points being important to both parties) was shown to all respondents, while for the purpose of bringing about a change in the image of the partner concerned, a proportion of the respondents were shown a photograph of the same man with a smiling face, and the remaining respondents were shown a photograph of him displaying the facial expression of anger.

*Method of the measurement of the dependent variable: the perception of a person displaying various expressions on the face.*

In order to determine the perception of the same person, depending on the emotional expression being displayed by him on the face, a scale for the assessment of the person in the photograph was developed for the purposes of the research. Questions concerned the intentions of the man being presented (e.g. whether or not he is willing to cooperate, help others, or rather compete or have mainly his own interest in mind), his competence (whether or not he is able, wise, and competent), and his predictability (whether or not he keeps his promises, is predictable). Respondents also assessed the degree of their trust in the person being presented in the photograph and, as part of the test of the manipulation, specified the type of the emotion being displayed on the face. Respondents made their assessments on a five-point scale (1-yes, 2-rather yes, 3-difficult to say, 4-rather no, 5-no) twice: in relation to the man with a neutral expression on his face, and in relation to the same man displaying a specific (either positive or negative) facial emotional expression.

## **Respondents**

The research was carried out entirely via the Internet on a random address sample of Polish residents, with the use of an application especially developed for the purposes of the research, which was put up on the website: [www.badanie.ankieta.pl](http://www.badanie.ankieta.pl) for the duration of the experiment. A computer system selected, by drawing of lots, a several tens of thousands of mail addresses (from the so-called mailing list), to which information on the opportunity to participate in the research, including a link to the research, was sent. The respondents willing to participate in the research visited the indicated website and followed the instructions. They were informed that the research contributed to the development of Polish science in psychology area, concerned the perception of people. Respondents were encouraged

to participate in the research with the possibility of being provided with collective feedback.

In total, over 2000 persons participated in the research, yet only 972 persons met the eligibility criteria for being included in analyses. A considerable proportion of respondents discontinued their participation in the research even before having completed the first task, or at a stage where it was not possible to collect sufficient data for performing analyses. The time of the beginning and end of the research was controlled using a filter rejecting persons filling in the questionnaire too quickly (in less than five minutes, which is only enough for mechanical checking of randomly selected answers) and too slowly (in more than 40 minutes – such an amount of time creates a risk of the occurrence of a pause between completing particular tasks, and thus a significant disturbance to the manipulation effect). The average amount of time for completing the task was 20–25 minutes.

Ultimately, the group of respondents consisted of 972 persons, including 603 women and 293 men (in 76 cases, no data on the participants' sex was available). The respondents' age fell within the range of 10–77 years, with the average age of 26 years. The sample included 136 persons aged below 18 years.

#### **The course of research**

The research was individualized, and basically consisted of 3 parts. Parts 1 and 2 required that points be distributed between the self and the person as seen in photographs in a situation where the person concerned displayed, on one occasion, a neutral expression on his face, and on another occasion the same person displayed one of the basic emotions. The 3rd part involved making assessments, using a scale, of the person in the photographs, depending on the facial emotional expression being displayed by that person.

Deliberately, the respondents had no opportunity to return to the previously displayed screens (yet they could return to the instructions). Making use of a computer and a specially developed application for the purposes of the research is, in this case, very helpful, since the researcher can acquire the certainty that the amounts of time spent by respondents for viewing the photographs were not too long or too diverse. Certainly, due to the Internet-based access to the research, there is a possibility that the same person may be willing to participate in the research many times. In practice, however, it should be assumed that during the subsequent visit to the research website, that person will not complete the entire set of tasks but only view the screens being of interest to him/her, and thus will not be included in analyses.

In the first part of the research, all participants were shown (in a rotational order) photographs of the same man who, on one occasion, displayed a neutral facial expression, and on another occasion displayed one of two basic emotions (happiness, anger). The respondents were therefore assigned (randomly) to one of 4 subgroups which differed in both the order of exposure of facial expressions, and the type of a basic emotion being presented:

1st subgroup of respondents: 1. exposure of a neutral facial expression  
2. exposure of a facial expression of happiness,

2nd subgroup of respondents: 1. exposure of a neutral facial expression  
2. exposure of a facial expression of anger,

3rd subgroup of respondents: 1. exposure of a facial expression of happiness  
2. exposure of a neutral facial expression,

4th subgroup of respondents: 1. exposure of a facial expression of anger  
2. exposure of a neutral facial expression.

In order to intensify the impact of a facial expression on the receiver of the message, both the exposure of a neutral facial expression and the specific basic emotion were presented three times. The photographs showing the face displaying one specific emotional modality only differed in the borders (which prevented the viewer's impression that the same photograph was being viewed; at the same time, a pilot study using the presented material indicated no differentiating effect of the type of photograph border on either the reception of the modality of the emotion being presented or the perception of the person in the photograph). The respondents viewed each photograph for approx. 4 seconds following the previously given instruction that they do not need to remember any details but only take a look at the photograph.

After having viewed a series of 3 photographs, the respondents distributed points (being important to both parties) between the self and the person as seen a moment ago in the pictures, using a modified version of the Ring Measure of Social Values.

Subsequently, the respondents were to assess (during a pause) the attractiveness of 3 advertisements, using a scale. All the advertisements were in a form of photographs of products, and included a written content either recommending a given commodity or informing of a certain campaign. Little known advertisements showing no human faces had been deliberately selected, so that their contents did not interfere with the facial expressions used in the experimental manipulation.

The next part involved the presentation of photographs of the face of the man known from the first part of the research, with the facial emotional

expressions being appropriately changed (depending on the subgroup). The instruction preceding the presentation of photographs, and the duration of the exposure, were the same as in the first part.<sup>59</sup>

In the third part of the research, the respondents were requested that they recall, in the first place, the photographs of the man as presented at the very beginning of the research, and assess it on the scale in accordance with the first impression they had had of him; subsequently, they were requested that they recall the photographs of the same man as shown to them in the second part of the research, and express their impression of him on the rating scale. In order to verify the accuracy of the reception of the material as used in the experimental manipulation, the respondents were asked about what type of facial emotional expressions had been presented in both parts of the research. The research concluded with the demographics section and acknowledgements for having participated, along with the information on the possibility of receiving the feedback on the research and relevant results.

### **Hypotheses**

Hypothesis I. Indicators of the perception of a person displaying various facial expressions are varied depending on the type of general (*orientation on the self/the others*) and specific (the dominant category) indicators of social value orientations.

I.I The cooperative orientation coincides with high levels of trust in, and positive assessments of a person displaying a facial expression of happiness.

### **Presentation of results**

Results of the Kolmogorov–Smirnov test indicated that the distribution of both the variables being the general indicators of social value orientations (*orientation on the self* vs *orientation on the others*) and the perception of persons and emotions was significantly different ( $p < 0.001$ ) from a normal distribution. In view of the above, in order to achieve the statistical correctness, appropriate non-parametric tests were mainly used for analyses, although in verifying certain hypotheses analyses were

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<sup>59</sup> After that, another measurement of social value orientations was carried out using the same tool as in the first part of the research (a modified Ring Measure of Social Values). In this way, the respondents' social value orientations were determined, which were under the influence of the observed partner's facial expression in the situation of social interdependence –but the results are set forth in the aforementioned article.

carried out using also parametric tests (e.g. ANOVA), which, however, had a status of exploratory analyses or analyses further confirming the hypotheses being verified, in order to achieve a greater correctness using mainly non-parametric tests.

The manipulation stimulus in each group of the dominant social value orientations was interpreted in accordance with the assumptions, and thus rendered the manipulation effective (Wilcoxon test;  $p < 0.05$ ).

Results of analyses for hypothesis I: on the diversity of indicators of the perception of a person displaying various facial expressions, depending on the type of general (*orientation on the self/the others*) and specific (the dominant category) indicators of social value orientations.

Among the descriptions of traits as used for the assessment of the person in the photograph, 2 phrases may be distinguished that describe the traits being more negative than positive ("willing to compete" and "prone to have his own interest in mind"), while the remaining 9 phrases describe the positive traits, including one concerning the issue of trust ("trustworthy").

Hypothesis I was confirmed by the results indicating the diversity of the perception of a person displaying various facial expressions (especially neutrality and happiness), depending on the type of both (general and specific) indicators of social value orientations.<sup>60</sup>

A correlational study on the *orientation on the self* and *orientation on the others* was carried out in relation to the assessments of traits of the person displaying facial expressions of neutrality, happiness and anger in the photographs. The obtained results mostly indicate a very weak or weak correlation; however, the absolute values of the correlation coefficients reach, at a high  $N$  value, the threshold values which allow recognizing the relationship between the variables as being significantly greater than zero.

*Orientation on the others* coincided with positive assessments in relation to the person displaying on his face both the happy and neutral expressions (Table 1).

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<sup>60</sup> Evaluation of social value orientation of the tested person was made on the basis of the first measurement of social orientation; determined before the manipulation with facial expression.

Table 1. Relationships between the orientation on the others and the assessments in relation to a person with a smiling face (manipulation +) and a neutral face (Spearman's rank correlation).

	Orientation on the others (manipulation +)	Orientation on the others (neutral face)
Willing to cooperate	0.171***	0.066*
Willing to compete	-	-
Prone to have his own interest in mind	-0.135***	-0.083*
Willing to help	0.110**	-
Willing to distribute evenly	0.123**	0.100**
Able	0.110**	-
Wise	0.124**	-
Competent	0.105**	-
Meets his promises	0.124**	-
Predictable	-	-
Trustworthy	0.185***	0.076*

\* significance at the level of 0.05

\*\* significance at the level of 0.01

\*\*\* significance at the level of 0.001

Source: Own research.

Cooperators and altruists (a high degree of the *orientation on the others*) assessed the person in the photograph (both smiling and displaying a neutral facial expression) more positively, and put more trust in him, than individualists and competitors did (Table 2 and 3).

Table 2. Comparison of the categories of social value orientations as determined before the manipulation in terms of the assessment of a person displaying the expression of happiness (ANOVA)

Competition		An average value in the group before the manipulation				F-statistics	Significance of the F-test
		Individualism	Cooperation	Altruism			
SMILE	Willing to cooperate	3.78	3.96	4.19	4.12	4.327	0.005
	Competent	3.33	3.38	3.61	3.56	2.771	0.041
	Meets his promises	3.51	3.4	3.68	3.68	3.115	0.026
	Trustworthy	3.09	3.12	3.44	3.59	4.269	0.005

Source: Own research.

Under the conditions of a positive manipulation, the highest ratings in relation to the indicated (as significantly differentiating) positive traits were those of cooperators and altruists; moreover, further *post-hoc* analyses indicated that, generally, altruists and cooperators assessed, in terms of the traits as indicated, the person displaying a smile on his face significantly ( $p < 0.05$ ) more positively than competitors and individualists did, and also put more trust in that person.

Table 3. Comparison of the categories of social value orientations as determined before the manipulation in terms of the assessment of a person displaying the neutral expression (ANOVA)

Competition	An average value in the group before the manipulation				F-statistics	Significance of the F-test	
	Individualism	Cooperation	Altruism				
NEUTRAL FACE	Willing to cooperate	3.4	3.56	3.69	3.82	3.303	0.020
	Willing to help	3.13	3.27	3.43	3.31	2.557	0.054
	Willing to distribute evenly	2.62	2.86	3.03	3.04	5.396	0.001
	Meets his promises	3.12	3.21	3.38	3.13	2.957	0.032
	Trustworthy	2.83	2.82	3.09	3.09	3.541	0.014

Source: Own research.

In the division into categories of orientations, in all cases (except for one case concerning individualists), the highest ratings in relation to the traits indicated (as differentiating significantly or, in one case, at the level of a statistical tendency) were those of altruists or cooperators. Further *post-hoc* analyses indicated that, generally, altruists and cooperators assessed, in terms of the traits as indicated, the person displaying a neutral expression on his face significantly ( $p < 0.05$ ) more positively than competitors and individualists did, and also put more trust in that person. An exception was the distribution of assessments in terms of the trait "meets his promises", where the significantly highest rating values, as compared to the other groups, were those of cooperators, with no differences being recorded between the assessments made by altruists, competitors and individualists.

*Orientation on the self* coincided with negative assessments, including the lack of trust, especially in relation to the person with the neutral expression on his face, and, to a lesser extent, in relation to the person displaying a happy expression (Table 4).

Table 4. Relationships between the orientation on the self and the assessments in relation to a person with a neutral face and an expression of happiness (manipulation +) (Spearman's rank correlation)

	Orientation on the self (neutral face)	Orientation on the self (manipulation +)
Willing to cooperate	-0.090**	-
Willing to compete	0.083*	-
Prone to have his own interest in mind	0.083**	-
Willing to help	-0.093**	-
Willing to distribute evenly	-0.138***	-0.129**
Able	-0.081*	-0.088*
Wise	-0.095**	-
Competent	-0.082*	-0.117**
Meets his promises	-0.102**	-0.106**
Predictable	-0.076*	-
Trustworthy	-0.126***	-0.113**

\* significance at the level of 0.05

\*\* significance at the level of 0.01

\*\*\* significance at the level of 0.001

Source: Own research.

On the other hand, individualists and competitors (a high degree of *orientation on the self* with negative *orientation on the others*) assessed the person in the photograph less positively, and put in him less trust, than altruists and cooperators did.

*Orientation on the others* (as opposed to the *orientation on the self*) also coincided with the perception of the selected positive traits in the person displaying an expression of anger on the face (Table 5).

Table 5. Relationships between the orientation on the others and the assessments in relation to a person with an expression of anger on the face (manipulation -) (Spearman's rank correlation).

	Orientation on the others
Willing to cooperate	0.109
Willing to compete	-0.049
Prone to have his own interest in mind	-0.138*
Willing to help	0.125*
Willing to distribute evenly	0.136*

\* significance at the level of 0.05

\*\* significance at the level of 0.01

\*\*\* significance at the level of 0.001

Source: Own research.

In general, prosocials assessed significantly more positively (and put more trust in) a person with a smiling and neutral expression on the face, than those oriented prosself did.

As a result of a (+) manipulation, in all categories of the dominant social value orientations, there was (even if varied) an increase in the positive perception of the person in the photograph. To put it more specifically: in the group of competitors, there was a significant increase in the indicator of 5 positive assessments (out of 9 possible ones); in the group of individualists, there was a significant increase in the indicator of 6 positive assessments; in the group of cooperators, there was an increase in the indicator of 8 positive assessments; and in the group of altruists, there was an increase in the indicator of 4 positive assessments. Moreover, in each group, significant decreases in the indicators of negative assessments occurred as a result of manipulation (+): in the groups of individualists and cooperators (when assessing the smiling face), there was a decrease (in relation to the assessment of the neutral face) in the indicators of 2 negative assessments (out of 2 possible ones), while in the group of altruists and competitors, there was a decrease in the indicator of 1 negative assessment (in the group of competitors, at a level of the statistical tendency).

On the other hand, as a result of a (-) manipulation, in all categories of the dominant social value orientations, there was a decrease in the positive perception of the person in the photograph. The smallest diversity in the assessments was observed among the representatives of the category of competitive orientation (significant diversity in relation to 3 traits) and

altruistic orientation (changes only at a level of the statistical tendency). In the group of individualists, there was a significant decrease in the indicators of 8 positive traits (out of 9 possible ones), and a significant increase in the indicator of 1 negative assessment (out of 2 possible ones). In the group of cooperators, there was a significant decrease in the indicators of 6 positive traits (out of 9 possible ones), and a significant increase in the indicator of 1 negative assessment (out of 2 possible ones).

It is worth noting that in relation to the research being described, an analysis of standardized data using parametric tests confirmed the results as obtained when using non-parametric tests.

**Hypothesis I.I, which concerned the link between the cooperative orientation and a high level of trust in, and positive assessments of a person displaying a facial expression of happiness, was also confirmed.**

Cooperators positively assessed the person with a smile on his face – an average rating for the positive traits exceeded 3.6, and, as regards the expectation of cooperation, it amounted to 4.19 (the highest results as compared to the other groups). It was also only cooperators (out of the other groups) who, while comparing the person with a neutral face and the person with a smiling face, assessed significantly (and in one case, at a level of the statistical tendency) more positively the happy face in relation to all 11 descriptions of traits as mentioned in the research ( $p = 0.000$ ).

The average value for trust in relation to the smiling face was, in the group of cooperators (similarly to the group of altruists), significantly higher than that in the other groups, and amounted to 3.44. For comparison, a significantly lower average value for trust in relation to the neutral face amounted, in the group of cooperators, to 3.14 ( $W = -3.616$ ;  $p = 0.000$ ), and the trust in the face expressing anger maintained at a level of 2.59. In turn, the correlation coefficient for the *orientation on the others* with the indicator of trust in relation to the smiling person turned out to be the highest (as compared to the other correlation coefficients in that group) and significant at a level of  $p = 0.001$ , which seems to be translated into the picture of cooperators (being characterized by a high degree of the *orientation on the others*).

## **Conclusions**

The research indicated a link between social value orientations and the assessment of an interaction partner depending on his/her facial emotional expression. Generally speaking, it can be concluded that the cooperative orientation as well as (when expanding the scope to include altruists) the

prosocial orientation were associated with a greater trust and more positive assessment of other people (including those with a negative emotional expression) than it was observed in the case of the prosself orientation. The results demonstrating this positive attitude of prosocials indirectly correspond to the previous empirical findings which indicate that prosocials attach positive significance to the situation and outcomes of another person<sup>61</sup>.

The results outlined a fairly consistent picture of persons with the prosocial orientation (cooperators and altruists) as opposite to the picture of those oriented prosself (individualists and competitors).

Proselfs assessed positively and put trust in not only a smiling person (whom they considered to be competent and willing to cooperate) but also a person displaying a neutral facial expression. Possibly, the prosocials, as opposed to those oriented prosself, preferred to analyse an ambiguous expression in positive terms, and were thus able to have confidence in the person with a neutral facial expression. Prosocials, which by definition are characterised by a high degree of the *orientation on the others*, were also able to discern selected positive traits in a person with an angry face. The cooperators themselves tended to trust, and attribute the traits of "trustful" and "honest" to a person with a positive facial emotional expression, discern positive emotions in a facial expression showing a negative emotional state, and assess a person with a neutral expression on the face as the one to most certainly keep his promises, and trustworthy as well (as compared with the assessments in the other groups of orientations). In general, the cooperative orientation was associated with the tendency to trust everybody (regardless of the type of facial expression) and assess them (as compared with the non-cooperators' assessments) to be honest. Therefore, the cooperative orientation seemed to perform the role of spectacles allowing them to perceive other people as being more positive and put trust in them even where the emotional expression on their faces was ambiguous or negative.

The cooperators' tendency to perceive the surroundings in positive terms was also indicated by the results of own pilot studies (not described in this paper). One of such studies, as carried out on 168 persons, concerned the link between social value orientations and the perception of persons with a emotionally neutral facial expression (a modified version of a Kuhlman's

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<sup>61</sup> J. Grzelak, *Homo economicus uspoleczny? Motywacyjne i poznawcze uwarunkowania działania w interesie społecznym*. [Homo economicus socialized? Motivational and cognitive determinants of acting in the public interest], in: „*Studia Psychologiczne*” 1988 nr 26, p. 5-30.

study). It turned out that with an increase in the degree of the observers' cooperative orientation, the tendency to assess persons with a neutral facial expression as being friendly also increased (Pearson's  $r = 0.247$ ;  $p < 0.01$ ).

In turn, the results for the proself-oriented persons (competitors, individualists) showed them (as compared with the prosocials) as those less positively assessing, and putting less trust in persons with a neutral and happy facial expression. They tended to assess a person with an angry face as one having his/her own interest in mind.

While commenting on the methodology of research, it is worth noting that for the purpose of the experimental manipulation, the emotional expressions being most accurately recognized in researches as carried out by Paul Ekman and Wallace Friesen (1971)<sup>62</sup>, namely happiness and anger, were deliberately used, which lent maximum credence to the accurate recognition of the modalities of emotions by respondents. The choice of the expression of anger out of the negative emotions was additionally dictated by the reports that the sight of an angry face triggered an exceptionally strong emotional arousal (the so-called maximum amplitude when measuring the brain's action potential) (Lang & Nelson 1990, quoted from<sup>63</sup>). This is supposed to significantly increase the probability of the perceptible impact of a manipulation stimulus on the respondents. However, when planning future researches to continue the empirical exploration of the subject being raised in this paper, it is worth considering the introduction of manipulations using other modalities of the basic emotions as well.

A methodologically debatable issue is the fact that the respondents were shown a photograph of one man displaying various facial expressions. Such a situation has its advantages, since it allows one to compare reactions to particular facial expressions without the interference of various types of human faces. On the other hand, however, the choice of no less than a man's face may be considered as odd – the author of the research was influenced by the information that the positive expressions are predominant in women (as compared with men), and that women are classified in the group of the

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<sup>62</sup> P. Ekman & W. Friesen, *Constants across cultures in the face and emotion*, in: „Journal of Personality and Social Psychology” 1971 nr 17(2), p. 124–129.

<sup>63</sup> E. Dolata & M. Czerniawska, *Czy widzisz to, co ja czuję; czy czujesz to, co ja widzę – dilematy komunikacji opartej o ekspresje mimiczne [Can you see what I am feeling?; can you feel what I am seeing? – Dilemmas about the communication based on facial expressions]*, in: „Annales Universitatis Mariae Curie-Skłodowska” 2005 nr 16(76), p. 347–351.

“weaker sex”, which may result in a more frequent manifestation of cooperative behaviour towards women. Moreover, there are more cooperators among women than among men, and we tend to respond to cooperation with cooperation. However, one question which remains unanswered is whether or not the obtained relationships between the perception of facial emotional expressions and social value orientations would have differed significantly if the model had been a woman?

In conclusion – the empirical data as obtained in own research seems to provide another “building block” of a new piece of knowledge on the link between social value orientations and the perception of facial emotional expressions and, consequently, the perception of people, at the same time revealing a number of variables and areas which need to be watched with interest in order to be able to speak, more confidently and in a wider context, of the relationships between a facial expression and social preferences. Moreover, the obtained results definitely confirm the utility of the Internet for carrying out experimental psychological researches.

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**Evaluating the characteristics of partner interaction based on his facial emotional expression and depending on the social value orientation of the observer**

The paper fits into the trend in the research into the link between social value orientations and the perception of a facial emotional expression. The issues addressed in this paper relate to main topic area: the link between social value orientations and the assessment of the characteristics of another individual displaying various emotions on their face.

An “*omnibus*” type representative survey was carried out according the experimental scheme, entirely via the Internet ( $N = 972$ ). The following tools were used: for the measurement of social value orientations, a modified version of the Ring Measure of Social Values<sup>64</sup>; for the experimental manipulation, photographs of facial expressions (happiness, anger, neutrality);

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<sup>64</sup> W. Liebrand, *The effect of social motives, communication and group size on behaviour in a N-person multi-stage mixed-motive game*, in: „European Journal of Social Psychology” 1984 nr 14, p. 239-264.

a scale for the assessment of the perception of the individuals presented on the photographs.

As expected, a link was demonstrated between the cooperative orientation and a high level of trust in, and positive assessments of a person displaying a facial expression of happiness. What was also revealed was the diversity of the perception of a person displaying various facial expressions (especially neutrality and happiness) depending on the type of (general and specific) indicators of social value orientations. In general, a person with a smiling and neutral facial expression was assessed significantly more positively (and more trust was put in that person) by prosocials (those with a high degree of the *orientation on the others*; cooperators and altruists) than by those oriented prosself (those with a high degree of the *orientation on oneself*; competitors and individualists).

