#### PRACE NAUKOWE UNIWERSYTETU EKONOMICZNEGO WE WROCŁAWIU RESEARCH PAPERS OF WROCLAW UNIVERSITY OF ECONOMICS AND BUSINESS

2021, vol. 65, nr 2

ISSN 1899-3192 e-ISSN 2392-0041

## Urszula Markowska-Przybyła

Wroclaw University of Economics and Business e-mail: urszula.markowska-przybyla@ue.wroc.pl ORCID: 0000-0002-1340-830X

# TRUST AND TRUSTWORTHINESS OF WOMEN AND MEN IN DECISION-MAKING PROCESSES IN CONDITIONS OF STRESS

DOI: 10.15611/pn.2021.2.05 JEL Classification: C72, D81, D91

#### © 2021 Urszula Markowska-Przybyła

This work is licensed under the Creative Commons Attribution-ShareAlike 4.0 International License. To view a copy of this license, visit http://creativecommons.org/licenses/by-sa/4.0/

*Quote as*: Markowska-Przybyła, U. (2021). Trust and trustworthiness of women and men in decision-making processes in conditions of stress. *Prace Naukowe Uniwersytetu Ekonomicz-nego we Wrocławiu*, 65(2).

**Abstract:** The article presents research on the influence of stress on making decisions, the importance of which is based on trust and trustworthiness. In particular, it also applies to the gender factor, as research shows that the reactions of women and men are different. The role of women in management processes is constantly growing, and the recognition of the reaction to stressful situations accompanying the decision-making process is noteworthy and little recognized in terms of trust and trustworthiness. The research used the theory-based experiment method and the questionnaire method, which made it possible to assess the intentional-behavioural gap, i.e. the assessment of the convergence of the declaration with the observation; 199 people (students of management) were subject of the study. The research results do not indicate the fragility of trust and credibility in the context of stress, nor do they show significant differences in changes in trust and credibility between women and men in response to stress. However, they indicate the need for the cautious use of the survey tool in the examination of trust and trustworthiness.

Keywords: trust, trustworthiness, stress, trust game, experimental economic, gender.

# 1. Introduction

The presence of psychosocial stress in society is a challenge in many economies of highly developed countries. It causes numerous health and social problems. Stress and its effects are the subject of research in medicine, psychology, neurobiology, psychiatry, as well as in management sciences. The results of stress also apply to organizations – the effectiveness and efficiency of their activities. They have an impact on the work efficiency of individual employees, team effectiveness and the accuracy of managerial decisions. The effect of stress on social decision-making remains poorly understood. Stress triggers psychological and physiological defence mechanisms, but their patterns in social decision processes are ambivalent (Steinbeis, Engert, Linz, & Singer, 2015).

One of the issues related to social decisions is the relationship between stress and trust in the organization, with credibility being its pillar. Trust is a unique resource in an organization that can be a valuable resource underlying the source of competitive advantage. Trust - according to Sztompka (2007) - is a kind of a bet that we make blindly, although it can also be understood as a reasoned calculation (Coleman, 1990). According to Gambetta's definition (Gambetta, 2000), if we trust someone, we believe that the probability that that person will behave favourably for us is high enough to consider engaging in cooperation with that person. According to James (James Jr., 2002), if A trusts B, it means that A expects B not to take advantage of A's weaknesses that A caused by engaging in the event. Bauer & Freitag (2016) treat the issue in a similar way, emphasizing the interdependence of trust and trustworthiness: "When speaking about trust, we essentially speak about a truster A that trusts (judges the trustworthiness of) a trustee B with regard to some behaviour X in context Y at time t". Trustworthiness is the willingness of person B to act favourably towards person A when A has placed an implicit or explicit demand or expectation for action on B (Ben-Ner & Halldorsson, 2010). Trustworthiness is to behave voluntarily in a way not to take advantage of the trustor's vulnerable position when faced with a selfserving decision that conflicts with the trustor's objective (Özer & Zheng, 2017). Trustworthiness is, therefore, a characteristic of the trustee, meaning the same as "worthy of confidence" or "worthy of being trusted" and can be seen as an element of reputation projected by the trustee (Sekhon, Ennew, Kharouf, & Devlin, 2014). According to Sztompka, trust is a bet on the uncertain future actions of other people. Trust, understood in this way, consists of two elements: beliefs and their expression in practice (Sztompka, 2007, pp. 69-71). Trustworthiness is inextricably linked with trust. It is one of its pillars, and it conditions it. Trust is easier when people are trustworthy. According to Hardin (Hardin, 2009, pp. 24-25), there are three different concepts of trust, and they all relate to the idea of trustworthiness. Hardin even argues that they are primarily about credibility and only indirectly about trust. Sztompka believes that trust is the a priori assumption about the credibility of strangers, all people (Sztompka, 2007, p. 148). Trust and trustworthiness are vital as they enable cooperation for mutual benefit. Trust is one of the reasons for engaging in risky cooperation, and trustworthiness is one of the reasons why such risk may pay off (Hardin, 2002, p. 173). Trust and trustworthiness play a great role in interactions between and within organizations, because it is impossible to envisage all contingencies and write a complete set of contracts to eliminate all possible vulnerabilities a trustor and a trustee face, or to account for all the uncertainties throughout the relationship.

Identification, measurement and learning about the determinants of trust and reliability are the starting point in the trust management process. For the organization, it is crucial to have trust in team members and management, but also to have generalized trust. It is the starting point for building trust among the team.

Generalized trust results from experience and the process of upbringing. It affects trust in the organization. The belief in the integrity of strangers with whom one interacts on a one-off basis affects the willingness to cooperate and share resources with team members. In today's increasingly interconnected modern society, prosocial behaviour like cooperation, trust and trustworthiness play a crucial role in daily decisions. Trust among employees affects not only the effects of collaboration but also decisions taken at the managerial level. At this level, stress is also a common factor influencing decisions.

Trust and trustworthiness, that is its source, bring many benefits in an organization, including promoting job satisfaction and reducing stress (Schill, Toves, & Ramanaiah, 1980). However, it can also be assumed that stress causes changes in trust and credibility which can become visible in the decision-making process. Presumably, stress causes changes in the perception of the situation. Stress creates a feeling of danger, insecurity and can contribute to reducing risk. On the other hand, stress can result in making wrong decisions that are too risky.

In the context of analysing the impact of stress on making decisions in which trust and credibility are essential factors, gender context is important. First, women play an ever-increasing role in social, political and professional life, and as managers they also take an increasing number of independent decisions. It is interesting to know if gender plays a role in these processes. Second, as numerous studies show, gender is a factor that differentiates reactions to stress (Cahlíková, Cingl, & Levely, 2019; Eisenbarth, 2019; van den Bos, Harteveld, , & Stoop, 2009; ), as well as the level of trust and trustworthiness (Balliet, Macfarlan, Van Vugt, 2011; Buchan, Croson, & Solnick, 2008; Chaudhuri & Gangadharan, 2003; Croson & Buchan, 1999; Schwieren & Sutter, 2008). Differences between the behaviour of males and females would be useful in explaining and understanding various micro and macroeconomic phenomena. As there is a lack of research on this subject concerning Poland and other countries of Central and Eastern Europe, this means there is an empirical gap and constitutes a justification for the research.

The scant research to date on the impact of stress on trust in decision-making processes has yielded inconclusive results. Some research results (FeldmanHall, Raio, Kubota, Seiler, & Phelps, 2015; Potts, McCuddy, Jayan, & Porcelli, 2019; Steinbeis et al., 2015) indicate a decrease in confidence as a result of stress. The results of studies analysing stress at work (Yu et al., 2020) also show the negative impact of stress on the level of trust. However, there are also research results (von Dawans, Fischbacher, Kirschbaum, Fehr, & Heinrichs, 2012) indicating the opposite results: stress increased the confidence and credibility of the respondents. According to

Dawans, these results show that stress triggers social approach behaviour, which operates as a potent stress-buffering strategy in humans, thereby providing evidence for the tend-and-befriend hypothesis.

Additionally, in previous studies, gender in this context was the subject of only one study (Potts et al., 2019). In the rest, only men were examined (FeldmanHall et al., 2015; Steinbeis et al., 2015; von Dawans et al., 2012). Gender differences are often seen in issues of attitudes, emotions, beliefs and reactions. The differences between men and women in the field of management sciences are more and more often addressed and still remain little explored. Besides, there are many stereotypes about the behaviour of women and men that should be verified in scientific research (Moczydłowska, 2017), hence the further analyses took into account, in particular, this characteristic of the respondents. The lack of research in this field is a research gap which this study aims to fill at least in part.

This study aims to identify and evaluate the effects of stress on the trust and credibility of women and men, as seen in the decision-making process. Moreover, the study aims to assess the intentional-behavioural gap, i.e. the convergence of the observation results and the declarations of trust and reliability. The analysis used the experimental method known as the "trust game" as well as the survey method.

# 2. The applied research method and description of the research sample

#### 2.1. Description of the research sample

The study covered full-time students of the 1st, 2nd and 3rd year of Economics and Management of the University of Economics and Business in Wrocław.<sup>1</sup> The study was conducted between January and May 2019. One hundred and ninety-nine people took part in the experimental study, of which 168 additionally completed the questionnaire. In the survey, the students were asked, among other things, about their trust and trustworthiness. The structure of the respondents by gender and the "stress" factor used is presented in Table 1.

Gender	Control group	"Stress" group	Total
Male	40 (34)	42 (34)	82 (68)
Female	55 (48)	62 (52)	117 (100)
Total	95 (82)	104 (86)	199 (168)

Table 1. The number of respondents by gender and the "stress" factor used

Note: in brackets is the number of people who completed the survey

<sup>&</sup>lt;sup>1</sup> In most of these types of experiments around the world, students were the participants.

Of the respondents 59% were women, 52% were subjected to an experiment using the stress factor, 84% completed the questionnaire (85% of the women and 83% of the men), 82% from the "stress" group and 86% from the control group.

#### 2.2. Procedure

The game theory experiment method was used to assess the impact of stress on the trust and credibility of women and men. The "trust game" was used for this purpose. Additionally, the survey method was used.

The *trust game* (also known as the *investment game*) was proposed in Berg, Dickhaut & McCabe (Berg, Dickhaut, & McCabe, 1995). There are two (commonly anonymous) players denoted: A and B. Player A is given a fixed X amount of money, and can transfer some or all of this money to Player B. The amount transferred, denoted as Y, is multiplied by a factor of  $\lambda$ , which is greater than 1 and commonly equal to 2 or 3. The rules of this transfer are known to both sides. Following this, Player B can return a portion of the money that he/she received,  $\lambda Y$ . The *trust game* illustrates trust via the amount transferred by Player A and trustworthiness via the amount returned by Player B relative to the amount he/she obtained.

According to the assumption of economic rationality, Player B should not return any money, since this would simply reduce his/her payoff. Taking this into account, Player A should not transfer any money to Player B. Hence, at the unique Nash equilibrium of this game, Player A does not transfer any money. However, in practice, players do not behave according to the assumptions of economic rationality. One explanation for this lies in the fact that Player A might expect different behaviour from Player B than that resulting from the assumption of economic rationality, i.e. based on trust that Player B will exhibit positive reciprocation by returning some of the money that he/she obtained. Player A might also be motivated by an aversion to inequality, which can lead to Player A transferring a small amount of money, even when he/she has no trust that Player B will reciprocate.

Similarly, Player B might return a portion of the money that he/she obtained. This may well result from a norm of reciprocity. In this way, Player B shows that he/ she is worthy of the trust showed by Player A.

About half of the respondents were subjected to the stress factor.<sup>2</sup> This consisted in the fact that the game was conducted just before the completion of the final test of the subject (to which the respondents agreed). The control group conducted the game during normal activities in a relaxed atmosphere.

 $<sup>^2</sup>$  In previous studies, the stressor used was the cold water test (immersing the hand in cold water, i.e. at a temperature of 4 degrees Celsius, for 3 minutes) (FeldmanHall et al. 2015; Potts et al. 2019), simulation of a job interview (Steinbeis et al., 2015), solving logical tests, speaking in front of the audience (von Dawans et al., 2012). In a subjective way – based on their own experience in many years of work – it was found that the exam is a stressful situation, which the respondents admitted when answering the generally asked questions. Stress levels were not measured, which was also not always the case in previous studies.

In this study, Player A was given 10 points (converted into activity points, being part of the item grade) and the amount transferred to Player B was multiplied by a factor of 3. The players were assigned these roles at random and did not know who they were playing with. One hundred and one played the role of A in the "trust game", and 98 the role of B.

Both groups (experimental and control) completed the questionnaire a few days after the experiment. The respondents were asked five questions<sup>3</sup> related to their trust and reliability.

- Overall, do you think most people can be trusted, or do you think that you can never be too careful with people? (1 = never too much caution, 2 = hard to say, 3 = most people can be trusted.) It is a commonly used measure of generalized trust.
- Do you feel trusted? (0 = rather not, 1 = rather yes)
- Do you consider yourself a suspicious person? (1 = definitely yes, 2 = rather yes, 3 = hard to say, 4 = rather not, 5 = definitely not)
- Are you sometimes naive, are you often deceived? (1 = never, 2 = quite rarely, 3 = from time to time, 4 = every so often)
- Do you abuse someone's trust? (1 = yes, I don't care too much, 2 = yes, although I don't think it's too good, 3 = no, trust is too valuable).

## 2.3. Method of analysis

The analysis of the relationship between the level of trust and stress, taking into account the gender factor, was performed using the methods of descriptive statistics, correlation analysis, statistical testing (non-parametric tests) and two-way analysis of variance. The two-way analysis of variance allows the assessment of the effect of two independent nominal variables (stress and gender) and the effect of the interactions between them on the quantitative dependent variable (trust and trustworthiness).

# 3. Results

### 3.1. Trust

The subjects with the role of A from the control group gave 5.14 points on average (women 4.83 and men 5.63 points). In the "stress" group, Player A's transfer, being a measure of his/her generalized trust, was higher than in the control group and amounted to 5.44 points. This increase was observed both in the group of women (4.93 points) and men (6.09 points). On average, the "stress" group transferred 5.8% more – women 2.1% and men 8.2% (Table 2).

The analysis of the significance of the mean differences in the groups shows that they are statistically insignificant between the "stress" group and the control group.

<sup>&</sup>lt;sup>3</sup> The first question is commonly used in research on trust (e.g. the World Values Survey, the General Social Survey, and the European Values Study), the remaining questions are original.

Group	Gender	Player A's average transfer (trust)	Standard deviation	Ν
Control group	Male	5.63	2.872	19
	Female	4.83	1.683	30
	Total	5.14	2.227	49
"Stress" group	Male	6.09	2.485	23
	Female	4.93	2.086	29
	Total	5.44	2.321	52

Table 2. The level of trust in the "stress" and the control group using gender division

Source: own research.

**Table 3.** Significance of differences for the means of the variable "trust" (the amount of transfer of player A in the "trust game") in the control and experimental groups, taking into account the division into gender

Mann-Whitney test (tested variable: transfer of player A (trust))	Total "stress" group	Female "stress" group	Male "stress" group	Female control group	Male control group
Total control group	0.536	-	-	-	
Female control group	-	0.781	-	-	0.467
Male control group	-	-	0.465	0.467	-
Female "stress" group	-	-	0.032*	0.781	-
Male "stress" group	-	0.032	-	-	0.465

\*\*\* Correlation is significant at the 0.01 level (2-tailed).

\*\* Correlation is significant at the 0.05 level (2-tailed).

\* Correlation is significant at the 0.1 level (2-tailed).

Source: own research.

Table 4. The results of the two-way analysis of variance - the effect of stress and gender on trust

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	26.813ª	3	8.938	1.776	0.157
Intercept	2815.388	1	2815.388	559.300	0.000
Gender	23.296	1	23.296	4.628	0.034
Stress	1.866	1	1.866	0.371	0.544
Gender * stress	0.780	1	0.780	0.155	0.695
Error	488.276	97	5.034		
Total	3349.000	101			
Corrected Total	515.089	100			
	*		er of Player A (trust) ed R Squared = 0.02		

These differences are also not statistically significant separately in the group of women and men. The only statistically significant difference is the difference in the average transfers between stressed women and stressed men – men transferred 23.5% more than women (Table 3).

The analysis of variance for two variables (stress and gender) indicates that for the amount of the transfer of Player A (trust) only the gender factor is statistically significant. The main effect of the stress factor and the impact of stress-gender interaction is not statistically significant (Table 4).

### 3.2. Trustworthiness

In the control group, men playing the B role (showing trustworthiness) transferred more than women. In the "stress" group, the transfer of men was lower than in the control group, and of women – higher (Table 5).

However, there are no significant differences between the control group and the experiment group in terms of the amount of transmission, as well as between men and women in these groups (Table 6).

Group	Gender	Player B's average transfer (trustworthiness)	Standard deviation	N
Control group	Male	46.20	22.98	21
	Female	42.17	15.80	25
	Total	44.02	19.29	46
"Stress" group	Male	41.94	16.41	19
	Female	43.60	15.71	31
	Total	42.97	15.83	50

**Table 5.** The level of trustworthiness in the "stress" group and in the control group dividing the participants according to gender

Source: own research.

**Table 6.** Significance of differences for the means of the variable "trustworthiness" (the amount of transfer of Player B in the "trust game" game) in the control and experimental groups, taking into account the division into genders

Mann-Whitney test (tested variable: transfer of Player B (trustworthiness))	Total "stress" group	Female "stress" group	Male "stress" group	Female control group	Male control group
Total control group	0.903	_	_	—	
Female control group	_	0.638	_	-	0.581
Male control group	_	—	0.764	0.581	_
Female "stress" group	_	_	0.801	0.638	_
Male "stress" group	—	0.801	—	—	0.764

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	243.64ª	3	81.21	0.26	0.86
Intercept	175342.53	1	175342.53	559.98	0.00
Gender	32.63	1	32.63	0.10	0.75
Stress	46.32	1	46.32	0.15	0.70
Gender * Stress	187.56	1	187.56	0.60	0.44
Error	28807.10	92	313.12		
Total	210457.55	96			
Corrected Total	29050.73	95			
De	pendent variable: transfer of a. R Squared = .008 (Adjus	-		,	

Table 7. The results of the two-way analysis of variance—the effect of stress and gender on trustworthiness

Source: own research.

An analysis of variance for two variables (stress and gender) indicates that trustworthiness (per cent return of Player B) is not affected by gender, stress, or the interaction of these factors. The main effects and the interaction effect of these factors are not statistically significant (Table 7).

#### 3.3. Intentional-behavioural gap

The analysed research problem was the intentional-behavioural gap, i.e. also the compliance of behaviour with declarations. Some studies show that such a gap exists; the statements of trust correlate poorly with the action that is supposed to be evidence of it. It was considered whether this gap differs due to the stress factor: whether the behaviour under stress is closer to the declarations, or the stress-free action, and tested the significance of these correlations in independent groups of men and women. The means for the responses broken down by gender are presented in Table 8. The correlations between the variables for the observed data (rows) and declared data (columns) are shown in Table 9.

There is a statistically significant difference between women and men when it comes to only one variable – the level of the average variable "naivety". Women are more likely to believe that they are being deceived.

Only in the group of women, the statistically significant correlations between observations and declarations were observed: more suspicious women transferred more as Player A (both in the control and stressed groups), i.e. they showed higher trust, which is inconsistent with expectations. Suspicious persons should not have given more to Player B, but they did. It should also be borne in mind here that Player A,

•					
Gender	Overall, do you think most people can be trusted, or do you think that you can never be too careful with people?	Do you feel trusted?	Do you consider yourself a suspicious person?	Are you sometimes naive, are you often deceived?	Do you abuse someone's trust?
Male	1.25	0.94	2.59	2.19	2.56
Female	1.28	0.94	2.49	2.51	2.65
Total	1.27	0.94	2.53	2.38	2.61
Asymp. Sig. (2-tailed) Mann-Whitney U (Grouping Variable: Gender)	0.712	0.975	0.521	0.006	0.469

Table 8. Average values of variables based on a survey describing trust and trustworthiness

Source: own research.

Table 9. Trust and trustworthiness - declared and observed - table of correlation between variables

\*\*\*Correlation is significant at the 0.01 level (2-tailed).
\*\*Correlation is significant at the 0.05 level (2-tailed).

\*Correlation is significant at the 0.1 level (2-tailed).

<sup>a</sup>Cannot be computed because at least one of the variables is constant.

apart from trust, is also driven by other motives, such as a tendency to risk, altruism or aversion to aversion (Cox, 2004). Further research would be needed to clarify this situation, especially in the context of research on gender differences. In the group of women, it was also observed that women who more rarely declared abuse of trust, less frequently did so in the game, but only when it was not accompanied by stress.

# 4. Discussion and conclusion

A lot of research on the differences between genders has been carried out based on psychology, and this has led to the increased understanding of the differences between the social and economic behaviour of males and females in such areas as altruism, aversion to injustice, consumption, investment, attitude to risk, competition and cooperation. However, there is surprisingly little research carried out by psychologists on trust and trustworthiness, which are also crucial in decision-making processes, and understanding them is essential for effective management processes. These processes are most often accompanied by stress, and this can affect both trust and trustworthiness. Women are playing an ever-increasing role in social, political and professional life; they are also making an increasing number of independent decisions. This suggests that studies on differences between the behaviour of males and females would be useful in explaining and understanding the influence stress on trust and trustworthiness.

The conducted research showed that stress did not affect the behaviour of men and women, neither in terms of trust nor trustworthiness. It was assumed, also based on the results of previous studies, that stress could cause behavioural changes due to increased anxiety, but the studies did not confirm this. Although stressed men and women with the role of A conveyed more in the trust game, and it was especially visible in men, the observed differences are not statistically significant. This tendency is consistent with the results of the research (von Dawans et al., 2012). Statistically insignificant differences (between the control group and the experiment group) also occur in the mean returns of Players B (trustworthiness).

There are also no significant differences in behaviour between men and women in response to stress. They are statistically significant in one case: in the stress group between the mean of the messages of men and women in the A role (trust). In this case, men transferred 23.5% more than women, which was not observed in the control group. The conducted analysis of variance also indicates that gender is the only factor that has a statistically significant impact on the level of trust.

It can be assumed that generalized trust and trustworthiness do not change easily under the influence of external factors and they are shaped through socialization. Research indicates that they are even inherited (Algan & Cahuc, 2010; Brosig-Koch, Helbach, Ockenfels, & Weimann, 2011; Sapienza, Zingales, & Guiso, 2006; Tabellini, 2010). On the one hand, trust is very fragile and easy to destroy, on the other it is very durable (Grudzewski, Hejduk, Sankowska, & Wańtuchowicz, 2009, p. 21) (and this is probably the most concerning generalized trust). The resistance of trust and trustworthiness to a stressful situation is good news. It allows to hope that longterm efforts to build it will not be destroyed in short-term situations. Obviously, long-term stress can have different effects.

An additional aim of the work was to identify the intentional-behavioural gap. As research on trust is usually carried out using the questionnaire method, it was decided to compare the results of the analysis based on observation with the results from the declarations. The research has shown a discrepancy between the statements and observations. This situation was also observed in previous studies (Ashraf, Bohnet, & Piankov, 2006; Ermisch, Gambetta, Laurie, Siedler, & Noah Uhrig, 2009; Glaeser, Laibson, Scheinkman, & Soutter, 2000; Holm & Nystedt, 2008; Lazzarini, Madalozzo, Artes, & Siqueira, 2004). Observation of behaviour related to trust should be treated as more important, because according to Sztompka (2007), trust is "a belief plus an action based on it, not just a belief itself." The declaration of trust was not correlated with the behaviour of Player A. For example, a detailed analysis showed that people declaring that "most people can be trusted" offered lower amounts in the "trust game" than those who declared that "you can never be too careful" (4.50 vs 5.27 points).

In the performed correlation analysis, statistically significant correlations between the observations and declarations were observed only in the group of women: more suspicious women showed higher confidence in the game, which is inconsistent with what was expected. Suspicious persons should not have given more to Player B, but they did. It should also be borne in mind that Player A, in addition to trust, can also be driven by other motives, such as risk-aversion, altruism or aversion to aversion (Cox, 2004). Further research would be needed to clarify this situation, especially in the context of research on gender differences. In the group of women, it was also observed that women who more rarely declared abuse of trust did so less often in the game, but only when it was not accompanied by stress. This would confirm the compliance of the declaration with the actual state of affairs resulting from the observation.

The research results do not indicate the fragility of trust and credibility in the context of stress, nor do they show significant differences in changes in trust and credibility between women and men in response to stress.

The work has its limitations. It is a pioneering study in this research field and can be an inspiration for further in-depth and extended research. Firstly, the research did not analyse the stress level of the respondents. The analysis of the stress level – especially with the use of methods other than declarations, e.g. by measuring the level of cortisol – and the response to this stress could bring new conclusions. Secondly, the work is limited by the selection of the research sample in which students were tested, as is usually the case in games from the field of game theory, and not real managers. Although the conclusions from such studies can be generalized with some reservations, as trust and credibility are inherited, (Algan & Cahuc, 2010; Brosig-Koch et al., 2011; Tabellini, 2010) however, the analysis of the reactions of women and men experienced in management, could provide new information. Thirdly, the analyses do not present a broad socio-cultural context and factors that could have influenced the decisions made, hence the presented analysis constitutes a preliminary recognition of the problem.

The work has mainly cognitive and application value, and it indicates the need for the cautious use of the survey tool in the examination of human beliefs (here: trust) and attitudes (here: trustworthiness).

## References

- Algan, Y., & Cahuc, P. (2010). Inherited trust and growth. *The American Economic Review*, 100(5), 2060-2092.
- Ashraf, N., Bohnet, I., & Piankov, N. (2006). Decomposing trust and trustworthiness. *Experimental Economics*, 9(3), 193-208. https://doi.org/10.1007/s10683-006-9122-4
- Balliet, D., Li, N. P., Macfarlan, S. J., & Van Vugt, M. (2011). Sex differences in cooperation: A metaanalytic review of social dilemmas. *Psychological Bulletin*, 137(6), 881-909.
- Bauer, P. C., & Freitag, M. (2016). *Measuring Trust* (SSRN Scholarly Paper ID 2852755). Social Science Research Network. Retrieved from https://papers.ssrn.com/abstract=2852755
- Ben-Ner, A., & Halldorsson, F. (2010). Trusting and trustworthiness: What are they, how to measure them, and what affects them. *Journal of Economic Psychology*, 31(1), 64-79. https://doi. org/10.1016/j.joep.2009.10.001
- Berg, J., Dickhaut, J., & McCabe, K. (1995). Trust, reciprocity, and social history. Games and Economic Behavior, 10(1), 122-142. https://doi.org/10.1006/game.1995.1027
- Bos van den, R., Harteveld, M., & Stoop, H. (2009). Stress and decision-making in humans: Performance is related to cortisol reactivity, albeit differently in men and women. *Psychoneuroendocrinology*, *34*(10), 1449-1458. Retrieved from https://doi.org/10.1016/j.psyneuen.2009.04.016
- Brosig-Koch, J., Helbach, C., Ockenfels, A., & Weimann, J. (2011). Still different after all these years: Solidarity behavior in East and West Germany. *Journal of Public Economics*, 95(11–12), 1373-1376. https://doi.org/10.1016/j.jpubeco.2011.06.002
- Buchan, N. R., Croson, R. T. A., & Solnick, S. (2008). Trust and gender: An examination of behavior and beliefs in the investment game. *Journal of Economic Behavior & Organization*, 68(3), 466-476. https://doi.org/10.1016/j.jebo.2007.10.006
- Cahlíková, J., Cingl, L., & Levely, I. (2019). How stress affects performance and competitiveness across gender. *Management Science*, 66(8), 3295-3310. https://doi.org/10.1287/mnsc.2019.3400
- Chaudhuri, A., & Gangadharan, L. (2003). Gender differences in trust and reciprocity (Working Papers No. 136). Department of Economics, The University of Auckland. Retrieved from https://ideas. repec.org/p/auc/wpaper/136.html
- Coleman, J. S. (1990). Foundations of social theory. Cambridge: Harvard University Press.
- Cox, J. C. (2004). How to identify trust and reciprocity. *Games and Economic Behavior*, 46(2), 260-281. https://doi.org/10.1016/S0899-8256(03)00119-2
- Croson, R., & Buchan, N. (1999). Gender and culture: International experimental evidence from trust games. *American Economic Review*, 89(2), 386-391. https://doi.org/10.1257/aer.89.2.386
- Dawans von, B., Fischbacher, U., Kirschbaum, C., Fehr, E., & Heinrichs, M. (2012). The social dimension of stress reactivity: Acute stress increases prosocial behavior in humans. *Psychological Science*, 23(6), 651-660. https://doi.org/10.1177/0956797611431576

- Eisenbarth, C. A. (2019). Coping with stress: Gender differences among college students. *College Student Journal*, 53(2), 151-162.
- Ermisch, J., Gambetta, D., Laurie, H., Siedler, T., & Noah Uhrig, S. C. (2009). Measuring people's trust. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 172(4), 749-769. https://doi.org/10.1111/j.1467-985X.2009.00591.x
- FeldmanHall, O., Raio, C. M., Kubota, J. T., Seiler, M. G., & Phelps, E. A. (2015). The effects of social context and acute stress on decision making under uncertainty. *Psychological Science*, 26(12), 1918-1926. https://doi.org/10.1177/0956797615605807
- Gambetta, D. (2000). Can we trust trust? In D. Gambetta (Ed.), *Trust: Making and breaking cooperative relations* (Vol. 2000, pp. 213-237). Department of Sociology, University of Oxford. Retrieved from http://www.loa.istc.cnr.it/mostro/files/gambetta-conclusion\_on\_trust.pdf
- Glaeser, E. L., Laibson, D. I., Scheinkman, J. A., & Soutter, C. L. (2000). Measuring trust. *The Quarterly Journal of Economics*, 115(3), 811-846.
- Grudzewski, W., Hejduk, I., Sankowska, A., & Wańtuchowicz, M. (2009). Zarządzanie zaufaniem w przedsiębiorstwie. Kraków: Wolter Kluwer Business.
- Hardin, R. (2002). Trust and trustworthiness. Russell Sage Foundation Publications.
- Hardin, R. (2009). Zaufanie. Warszawa: Wydawnictwo Sic!
- Holm, H., & Nystedt, P. (2008). Trust in surveys and games a methodological contribution on the influence of money and location. *Journal of Economic Psychology*, 29(4), 522-542.
- James Jr., H. S. (2002). The trust paradox: A survey of economic inquiries into the nature of trust and trustworthiness. *Journal of Economic Behavior & Organization*, 47(3), 291-307. https://doi. org/10.1016/S0167-2681(01)00214-1
- Lazzarini, S. G., Madalozzo, R., Artes, R., & Siqueira, J. de O. (2004). Measuring trust: An experiment in Brazil (Insper Working Paper). Insper Instituto de Ensino e Pesquisa. Retrieved from http:// econpapers.repec.org/paper/ibmibmecp/wpe\_5f42.htm
- Moczydłowska, J. M. (2017). Percepcja cech i zachowań osób na stanowiskach kierowniczych przez pryzmat ich płci. Zarządzanie Zasobami Ludzkimi, 3-4(116-117) "Zarządzanie różnorodnością w świetle wyzwań współczesnego rynku pracy" (Managing Diversity in Light of the Challenges of the Contemporary Labor Market), 9-21.
- Özer, Ö., & Zheng, Y. (2017). *Trust and trustworthiness* (SSRN Scholarly Paper ID 3046303). Social Science Research Network. Retrieved from https://doi.org/10.2139/ssrn.3046303
- Potts, S. R., McCuddy, W. T., Jayan, D., & Porcelli, A. J. (2019). To trust, or not to trust? Individual differences in physiological reactivity predict trust under acute stress. *Psychoneuroendocrinology*, 100, 75-84. https://doi.org/10.1016/j.psyneuen.2018.09.019
- Sapienza, P., Zingales, L., & Guiso, L. (2006). Does culture affect economic outcomes? Journal of Economic Perspectives, 20(2), 23-48.
- Schill, T., Toves, C., & Ramanaiah, N. V. (1980). Interpersonal trust and coping with stress. *Psychological Reports*, 47(3, Pt2), 1192-1192. Retrieved from https://doi.org/10.2466/pr0.1980.47.3f.1192
- Schwieren, C., & Sutter, M. (2008). Trust in cooperation or ability? An experimental study on gender differences. *Economics Letters*, 99(3), 494-497.
- Sekhon, H., Ennew, C., Kharouf, H., & Devlin, J. (2014). Trustworthiness and trust: Influences and implications. *Journal of Marketing Management*, 30(3-4), 409-430. Retrieved from https://doi.org /10.1080/0267257X.2013.842609
- Steinbeis, N., Engert, V., Linz, R., & Singer, T. (2015). The effects of stress and affiliation on social decision-making: Investigating the tend-and-befriend pattern. *Psychoneuroendocrinology*, 62, 138-148. Retrieved from https://doi.org/10.1016/j.psyneuen.2015.08.003
- Sztompka, P. (2007). Zaufanie: Fundament społeczeństwa. Kraków: Wydawnictwo Znak.

- Tabellini, G. (2010). Culture and institutions: Economic development in the regions of Europe. *Journal* of the European Economic Association, 8(4), 677-716.
- Yu, X., Dong, Y., Li, Z., Fang, Y., Wu, S., Wang, C., & He, S. (2020). Work stress and general trust: The mediating effect of depression and the moderating effect of the OXTR gene rs53576. *Journal of Affective Disorders*, 272, 283-288. Retrieved from https://doi.org/10.1016/j.jad.2020.03.160

## ZAUFANIE I WIARYGODNOŚĆ KOBIET I MĘŻCZYZN W PROCESIE PODEJMOWANIA DECYZJI W WARUNKACH STRESU

**Streszczenie:** Artykuł prezentuje badania nad wpływem stresu na podejmowanie decyzji, dla których znaczenie mają zaufanie i wiarygodność. W szczególności odnosi się do czynnika płci, ponieważ badania wskazują, że reakcje kobiet i mężczyn bywają odmienne. Rola kobiet w zarządzaniu nieustannie rośnie, zatem warto zbadać ich reakcje na sytuacje stresowe towarzyszące precesom decyzyjnym. W badaniu wykorzystano metodę eksperymentu teoriogrowego oraz metodę ankietową. Zastosowanie dwóch metod umożliwiło ocenę luki intencjonalno-behawioralnej, czyli ocenę zbieżności deklaracji z obserwacją. Badaniu poddano 199 osób (studentów zarządzania). Wyniki badań nie wskazują na niestabilność zaufania i wiarygodności w reakcji na stres ani na istotne różnice zachowań między kobietami a mężczyznami. Potwierdzają natomiast potrzebę ostrożnego sięgania po narzędzie ankietowe w badaniu zaufania i wiarygodności.

Słowa kluczowe: zaufanie, wiarygodność, stres, gra zaufanie, ekonomia eksperymentalna, płeć.