ROCZNIKI NAUK SPOŁECZNYCH
Tom 13(49), numer 4 – 2021
DOI: https://doi.org/10.18290/rns21494.7

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THE TRANSFORMATION OF SOCIAL BONDS DURING A PERIOD OF INTENSIFIED ONLINE STUDYING AND WORK CAUSED BY THE SARS-COV-2 PANDEMIC —THE CASE OF POLAND

INTRODUCTION

The SARS-CoV-2 pandemic has redefined social reality. Although this change may not be as profound as the transition from traditional to industrial society (for which sociology was created in the first place), it has undoubtedly affected the lives of millions of individuals and the organization of entire societies. Researchers have already started to examine the effect of pandemic-related social distancing (Murphy, 2020; Gupta et al., 2020; Chang, 2020; Usher et al., 2020), "socially distanced" medicine (Bond, 2020), and how lockdowns have redefined various industries (Azizi et al., 2020).

Many authors are advocating for public access to adequate and comprehensive information about the pandemic, something which could enhance responsible health behaviors in society (Mahmood, 2020) and thus reduce morbidity and mitigate the negative effects on public health and the economy. The issue of "responsible action" and the related concept of social order is in itself an important area of sociological inquiry. Responsible actions relate to social control, mechanisms of exerting influence, the process of internalizing social norms,

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and the tendency to obey them—all analytically linked in Jan Szczepański's concept of social bonding, a key idea on which this article is based.

Social bonds can be significantly transformed in times of serious social change, for example, through the transition from traditional society to modern society, or from pre-pandemic to pandemic society. However, it takes time to grasp the ramifications of this. Some may only be determined in the long-term, which is somewhat similar to the "long tail of the pandemic"—a notion used to refer to the persistent medical symptoms of the disease. Still, one can attempt to analyze new circumstances such as social changes related to the lack of face-to-face contact in daily life. In this paper the influence of remote studying on university students is focused on.

The pandemic has not only affected our mode of life (Giuntella et al., 2021), but our whole environment in real and symbolic terms (Gerasimova, Kholmogorova, 2020). Societies, as well as individual social strata, professional categories, groups, and individuals, need to reformulate previous assumptions used in learning and explaining the world. On the one hand, there is a need to return to earlier classical values, perspectives and concepts. On the other, the circumstances of the pandemic force creativity, flexibility, and acceptance of new solutions. Contradictory cognitive tendencies are also a challenge to scientists.

Among pandemic-related issues are transformations in the field of education conditioned by the transition to remote learning (Hasan, Islam, 2020; Farrah, Al-Bakry, 2020). In this paper, the results of a survey among the students (n = 555) of three Polish universities are presented. The main research question is how does the character of the social bond (using Jan Szczepański's model) change with the transition to remote learning? The authors also hypothesize that the field of study (technical vs. non-technical subject studied) is a variable that differentiates the effectiveness of adaptation (i.e. organization of the student group) to the new situation. Students of technical courses, with a greater competence in IT, should have a certain advantage in adapting to the new social reality. The role of social competences among non-technical students, an important component of their professional skills is also considered. These competences are acquired through contact with other people, something which has been significantly hindered during the pandemic.

This analysis also aimed to answer the question of what categories of students require special support and attention during the pandemic. Gender and field of study (social studies vs. technical studies) were selected as the main independent variables.

1. POLITICAL TRANSFORMATION IN POLAND AND ITS UNIVERSITIES

Like other post-communist countries, Poland experienced a major cultural change in university education, starting in the early 1990s. Unlike the current technological revolution, this change was gradual, although similarly unexpected and surprising for scientific circles at the time.

With the end of a centrally planned and controlled economy, universities began to compete for students by creating departments adapted to the needs of the free market system, that is, primarily the requirements of employers. The development of this sector was fostered by a significant demand for educated employees, as well as by the unsatisfied educational aspirations of Polish society. In 1989, the number of university students in Poland did not exceed 400 thousand, while in 2000, it was over 1.5 million (Szkolnictwo wyższe w Polsce [Higher Education in Poland] (2013, p. 5). The response to these educational aspirations was an increasing number of places at state and newly established private universities. The latter mostly offered courses in the humanities and social sciences, which were very popular among students and did not require investment in laboratories, machines, or computers. The sudden outbreak of privatized universities was the result of the liberated entrepreneurial potential of Poles, which had previously been constrained. This process, incidentally, was in line with global trends observed at the time (Kinser et al., 2010). Studying was no longer elitist, as evidenced by the marked increase in enrollment rates. While in 1990/1991 the gross enrollment rate in Poland was 12.9 (Szkoły wyższe i ich finanse w 2014 r. [Higher Schools and their Finances in 2014] (2015), ten years later it reached 30.6, and peaked at 40.8 in the academic year 2010/2011 (Moroń, 2016, p. 11). A university degree became, in the bloc of post-socialist countries, a highly valued tool for achieving success in the new free market conditions (Mateju, Rehakova, 1996). Another type of qualitative change was the "liberation" of educational content from the fetters of former socialist and communist ideology, which was particularly important in the area broadly defined as humanistic and social studies. During the transformation, the very culture of education changed, with the emergence of new possibilities of communication within and outside the framework of one's studies (including international communication) (Depta et al., 2001, p. 7). Transformation, especially after joining the European Union in 2004, also meant greater opportunities for student exchanges and for academic staff to travel (for lectures and training).

All the aforementioned changes were also influenced by the intense transformations associated with globalization and the digital revolution. Universities, as well as education in general, were organized to fulfill new functions: to serve democracy, multiculturalism, environmental protection and sustainable development, individual progress and self-actualization (Dalin, Rust for 1996 after Wróblewska, 2004, p. 22) and to enable and support a young person's agency and ability to create and flourish in contemporary culture. In some countries, the culture of extreme individualism and self-actualization resulted in a crisis of ties in traditional social institutions: family, school, and local community (cf. documentary film directed by Erik Gandini, *The Swedish Theory of Love*, 2015). The doctrine of adaptive education was gradually replaced by critical education (Wróblewska, 2004, p. 28). All these changes—the increased proportion of university graduates, the transformation of the broadly understood culture of studying (including the student—professor relationship, which has become more open to negotiation), the evolution of curricula and functions of the university, the internationalization of teaching and research activities—occurred gradually. These also became visible in a longer time perspective. The evolutionary character of the changes distinguishes them from the revolutionary character of changes to the teaching process during the pandemic.

2. THE PANDEMIC AND DISTANCE LEARNING

According to a survey conducted among Polish students in the academic year 1998/1999, one in five were disappointed with their studies (study content and low requirements in the course of the programme). The respondents (students at the University of Warsaw and Nicolaus Copernicus University in Toruń) declared that they prefer individual learning (Depta et al., 2001, pp. 64-65), which could be an argument for the introduction, at least partially, of remote learning as it involves a significant amount of individual work. However, the survey also showed that computer technology was perceived as a threat to the teaching process. 17% of respondents believed that these techniques actually hindered the teaching process (Depta et al., 2001, p. 62).

The dangers of "technological isolation" go beyond the educational processes of acquiring knowledge and professional skills. The timing of academic studies coincides with a very important period of human development. It is often associated with leaving the family home, sometimes also with taking up a first job, and entering the first serious intimate relationships, thus facing

one of the eight developmental crises (identity vs. identity diffusion) (Erikson, 1980). All of these activities typically involve face-to-face contact and relationships. These relationships are also an important element in the development of broadly understood social competencies (teamwork, assertiveness, effective communication). They are also the basis for creating social capital (a network of relations), on which social support is built. Lockdown, caused by the pandemic, may have reversed some students' development during their identity crisis. Instead of striking out on a path of growing independence and agency (Kubiak-Szymborska, 2003), students, like the vast majority of the population, have been confined to their homes and become, as it were, the "subject" of the university's influence as an online education provider.

The emergence of a dangerous virus has triggered global changes in formal education at various levels. The switch to remote learning requires adjustments on the part of both teachers and their charges. The first publications reporting on the problems and benefits of this process appeared as early as 2020. Turkish researchers analyzed the opinions of geography students in their final year (Özkaral, Bozyiğit, 2020) and reported that stress and dissatisfaction with the transition to online learning were due to technical problems such as a lack of a good enough internet connection and inadequate computer equipment. Dissatisfaction also stemmed from uncertainty about graduation and obtaining qualifications, e.g., associated with the issue of completing internships required by the program. Moldovan scholars who surveyed undergraduate course students (Xhaferi, Xhaferi, 2020) reported that only 20% of respondents felt that they "often" manage to be *successful online learners* ("rarely" was given in half of responses). Ninety percent of respondents believed that lecturers were rarely or occasionally good at remote teaching. As many as 60% of the respondents reported that remote teaching processes lack elements that are present in traditional classroom teaching. More than half of the respondents further indicated that remote lessons often or always impaired their contact with other students. 55% of respondents believed that face-to-face interaction is necessary for successful teaching. This study, based on the subjective perspective of students, shows a relatively clear picture of remote learning as impaired, insufficient, makeshift, and provisional.

When using the objective criteria, the evaluation of remote learning becomes more positive. Researchers evaluating distance learning in India, for example, emphasize that it may level the educational playing field in the future as it may decrease the overall cost of education. For the time being, however, the cost of equipment and Internet connection remains a barrier for many families.

The authors also point out that remote learning may be made more attractive by including elements of gamification (Kumar, Pathak, 2020), although this can also become another technological barrier between the teacher and the student. At a Moroccan medical university, Bentata (2020) reports that online teaching of theoretical concepts was manageable, but practical classes that traditionally took place in hospitals at the patient's bedside were difficult to conduct. Nigerian researchers, on the other hand, reflect on the role of libraries in the post-Covid era (Ifijeh, Yusuf, 2020). They believe that the current pandemic will force permanent (rather than temporary) changes in the learning system—libraries and librarians should adapt to new conditions and support digital learning. The role and frequency of face-to-face interactions with information seekers will thus be radically reduced. The role of librarians will thus undergo a permanent and significant transformation.

The model of the university has always adjusted to the changing reality and has constantly been redefined, from the oldest form of a community of scholars, to a bureaucratic organization, and finally an enterprise (Wróblewska, 2004, p. 44). After the pandemic, which demonstrated the difficulty of studying without a direct relationship with others, one may wonder whether there is a chance for a return to the community-oriented form. Or rather it will result in an acceleration of the process of indirect and technology-subordinated contact becoming dominant. Regardless of the responses to these questions, which will ultimately be verified by time, it is worth monitoring the process of "technological mediation," which is already playing a significant role in the sphere of education.

3. SOCIAL BONDING IN TIMES OF PESTILENCE

The social bond had already been discussed in the works of the pioneers of sociology, including Émile Durkheim and Ferdinand Tönnies. Developed mainly by European scholars (Bouvier, 2005), the term has also enjoyed considerable interest in Poland in the works of academics such as Stanisław Ossowski (Ossowski, 1966), Jan Szczepański (Szczepański, 1970), Paweł Rybicki (Rybicki, 1979), or Władysław Jacher (Jacher, 1987). Despite its reduced popularity currently it is still being used (Marody, Giza-Poleszczuk, 2018).

According to Szczepański, a social bond is the totality of relations, connections, and dependencies linking people into permanent communities (Szczepański, 1970, pp. 158-240). This approach links the concept of social bonds with the

basic idea of a social system, a term involving the question of permanence and reproducibility of individual behaviors. The social bond, as the basis of social order, is created spontaneously and is not always as part of political or religious institutions. In this approach, social bonds are a classic subject of sociology, the discipline that emerged from the reflection on the inherently spontaneous correlates of the social world. Szczepański characterizes a social bond in a typically analytical manner, distinguishing a number of stages (elements) of bond formation: spatial contact, mental contact, social contact, mutual interactions, patterns of mutual interactions, social relations, social dependences, social institutions, and social control. Through this process (and these elements), persistent communities emerge that are able to reconcile various expectations and aspirations of individuals.

The formation of bonds is most visible on a micro-social scale, for example, in a group of first-year university students. Many meet for the first time in a lecture hall (spatial contact). They perceive their mutual presence in the space, followed by an assessment of similarities and differences and the chance for satisfying one's needs through contact with the new acquaintances (mental contact), which forms the basis for bonding—sympathy and attachment. The first social contacts start to appear (e.g. when exchanging notes), which is followed by mutual interactions (e.g. in discussing and presenting one's own arguments), from which, over time, patterns of mutual interactions emerge. Norms that underlie social relationships start to appear—actions are no longer random, they are shaped by rules that emerge from interrelationships. Students also become aware of interdependencies—that their own situation also depends on how others behave. Institutions are needed to regulate the emerging order: students appoint student representatives, leaders for practical classes, and so forth. Finally, internal and external social control appears among students, associated with positive sanctions (rewards) and negative sanctions (punishments) (Szczepański, 1970, pp. 158-240).

All of these elements are important for the continuity of a given community. In the process, an emergent entity (community) arises whose mechanisms can no longer be explained at the individual level. For example, patterns of interactions may be individually accepted by group members, considered rational, or are even intentionally implemented at the organizational level. However, this more-or-less explicit intentionality always has certain structure-defined boundaries. This is because higher-order structures are always present in the process, such as the general style of interaction, value system, or systems of social relations. These conditions, imposed on the members of the community (resulting in the dichotomy structure vs. agency), mean that the resulting

mechanisms of maintaining order are not the sum of the expectations of the members of the community and cannot be explained in this way. From an individual perspective, these mechanisms can be seen as independent of the will of individuals and therefore fully spontaneous.

This bond, as the basis of social order, undergoes constant changes. Some important tendencies in this area include the gradual opening of social relations to negotiation. For example, in the student—professor relationship, over the years, students become increasingly involved in shaping the didactic process. This includes the process of "negotiation" between the lecturer and students who may now communicate their expectations and preferences. The indirect influence of students is also significant, e.g. during the evaluation of the lecturer at the end of the semester.

The aforementioned cultural changes have been accompanied by a no less significant proliferation of digital technologies which can be used to mediate previously direct contacts. Before the outbreak of the SARS-CoV-2 pandemic, many of the stages of "associative" bonding (*Gesellschaft*) or organic solidarity associated with academic institutions had retained the characteristics of personal contact. This means that contact with another human being (another student or lecturer) provided gratification of some kind, something that was separate from other goals, such the need to pass a semester, hand in a paper or pass an exam. The master—student relationship or camaraderie between fellow students was based on daily face-to-face contact, which often went beyond scheduled class hours.

When the first restrictions appeared in Poland in the first half of March 2020, teaching in universities was replaced by remote teaching (initially, at most universities, lecturers only assigned material that was to be completed by students on their own; in some universities, this lasted for as long as until the end of the second semester of the 2019/2020 academic year). Although teaching in such a way allowed the implementation of curricula, it significantly reduced opportunities related to the formation of bonds even at the very first stage of spatial contact. When we meet in a so-called virtual space, for example during classes with a lecturer, we lack the dimension of direct contacts, and our field of vision is severely limited. Often contact is limited to sound when participants decide to turn off their cameras. Students also seem to be much less eager to speak during online meetings, supposedly because of "hardware problems." In this way, the impoverished social space is subjected to a further intentional reduction. The new situation of remote learning was somewhat rescued by the fact that the students had already completed their first semester of classes, and thus had some time to form a study group and develop bonds.

However, the situation was worse for the next year of students who began their first semester during the pandemic. This problem goes beyond the framework of university studies analyzed in the empirical part of this article. The problem with the integrating new members into an organization is often mentioned in the context of hiring new employees. It is difficult, for example, to impart the organizational culture of a company while only working remotely.

4. RESEARCH—SAMPLE STRUCTURE

The research was conducted in June 2020 among students at universities in Szczecin. At the time the research was conducted, students had been studying remotely for 3 months, i.e. via computers at home. The survey was conducted using the CAWI technique. A link to the online survey was sent to students of selected departments at the University of Szczecin, West Pomeranian University of Technology and West Pomeranian Business School. The research sample included 555 people, which amounts to two percent of the total student population of these universities. 229 respondents represented technical departments, 110 studied the social sciences and 91 were in the linguistic departments (Table 1). The sample was constructed in such a way that the number of students studying at technical departments was roughly similar to non-technical students in order to compare them.

Table 1. Respondents by Field of Study

Fields of study	Number of respondents	
Technical	229	41.26%
Social Studies	110	19.82%
Linguistic studies	91	16.40%
Humanistic Studies	57	10.27%
Law, Management, Economics	53	9.55%
Medical Sciences	2	0.36%
No data available	13	2.34%
Final total	**555**	**100%**

Source: own research.

The study was dominated by students taking their first degree, usually a 3-year bachelors (82% of the respondents). The remaining respondents came from a 5-year course combining bachelors' and master's degree (8%) and a 2-year master's degree (8%). When taking into account the year of study, bachelor students in their 1st and 2nd year were most dominant.

Table 2. The Year and Degree of Study

Degree	Year of study										
	1		2		3		4		5		Total
5-year master's	31	5.59%	5	0.90%	1	0.18%	5	0.90%	1	0.18%	43
2-year master's	25	4.50%	22	3.96%	–	–	–	–	–	–	47
Bachelors	**176**	31.71%	**169**	30.45%	95	17.12%	13	2.34%	–	–	453
No data available											12
Final total	232	41.80%	196	35.32%	96	17.30%	18	3.24%	1	0.18%	555

Source: own research.

The gender distribution of respondents showed an almost equal representation of women (n = 291; 52%) and men (256; 46%) with a slight overrepresentation of the former (no data for 2%). Women were more likely to represent non-technical majors (77%), while men were more likely to represent technical majors (79%). The mean age of the respondents was 22.63 years, with the central part of the distribution (50% of the respondents) falling between 21 and 23 years (Table 3). This is the age that should be considered as typical in the presented study.

Table 3. Age of Respondents—Descriptive Statistics

No. of valid responses	Average	Min	Max	Lower quartile	Upper quartile	*SD*	Skewness	Kurtosis
543 (98%)	22.63	18	48	21	23	3.41	4.37	25.24

Source: own research.

The time it takes for students to commute to university was also found to be a significant independent variable (although not strictly part of the sample structure itself) (Table 4). This variable strongly differentiated the respondents, as shown by a relatively high coefficient of variation (Vx = 83%).

Table 4. Student Commute Time to College from Home in Minutes—Descriptive Statistics

No. of valid responses	Average	Min	Max	Lower quartile	Upper quartile	*SD*	Skewness	Kurtosis
540 (97%)	35.25	1	250	15	45	29.39	2.63	11.20

Source: own research.

This variable is important because it can significantly differentiate the evaluation of remote learning (as a significant gain of time previously spent on commuting). In this context, it seems justified to take it into account in this analysis.

5. RESEARCH FINDINGS —STUDENT GROUP WORK DURING A PANDEMIC

Students were asked to respond to a dozen statements about working in a study group during a strict lockdown and the period of lighter restrictions during which they studied remotely. Respondents had seven response options (ranging from "strongly agree" to "strongly disagree"—Likert scale). The responses obtained are presented in Tables 5 and 7.

Table five includes responses to questions about group work during remotely taught classes. The responses grouped here relate to respondents' negative feelings (difficulties) about working online. As can easily be seen in each of the highlighted areas, non-technical students are characterized by a more negative assessment of learning in new (pandemic) realities. An exception to this rule is the evaluation of the statement: *If I currently communicate with other students, it is only on matters related to studies,* where the percentage of positive responses (for non-technical and technical majors) should be considered comparable.

Table 5. Assessment of the Negative Effects of the Pandemic on Functioning in a Student Group

Statements	% of affirmative responses*		% of negative responses Cramér's *V* (type of major — evaluation of statements)	
	non-technical majors	technical majors		
I miss face-to-face contact with other students	65.95		26.31	0.23
	73.16	57.21		
My involvement in the life of the study group decreased significantly during the pandemic	53.69		37.30	0.18
	60.38	45.41		
If I am currently communicating with other students, it is only on matters related to my studies	52.43		42.34	0.06
	52.72	52.40		
I feel that I am losing touch with other students	39.46		48.65	0.16
	43.77	34.50		
Relationships between students have deteriorated during the pandemic	29.91		45.77	0.16
	34.82	23.58		

*Aggregated response frequencies: definitely yes, yes, somewhat.

Source: own research.

The presented results of the research show the disappearance of the social bond is already in its initial stages. The majority of students (65.95%) consider the lack of direct contact, based on spatial tangency, as a problematic situation. This is particularly evident in the case of non-technical students, among whom this problem is noted by approximately three out of four respondents. A more negative assessment of social relations in student groups during the pandemic persists when controlling the gender variable. In Table 6, for example, one may observe that female non-technical students are more likely to feel the lack of face-to-face contact with other students (73.84% of affirmative responses) than their female technical student counterparts (58.33%).

Table 6. Deficit of Face-to-Face Contacts—Women's Assessment.

I miss face-to-face contact with other students	Non-technical studies f_i (% of column)	Technical studies f_i (% of column)	Total
Definitely yes	106 (44.73%)	14 (29.17%)	120
Yes	40 (16.88%)	10 (20.83%)	50
Somewhat	29 (12.24%)	4 (8.33%)	33
Hard to say	11 (4.64%)	5 (10.42%)	16
Not much	16 (6.75%)	6 (12.50%)	22
No	14 (5.91%)	5 (10.42%)	19
Definitely not	21 (8.86%)	4 (8.33%)	25
Total	**237**	**48**	**285**

Source: own research.

The distribution of responses shown in Table 5 cannot be explained by the gender variable. A hypothetical explanation for the observed variation could be in the better honed computer skills of technical students. However, this is only one of many hypotheses that could explain the variation indicated in Table 5 and, as such, requires further empirical research. There is no doubt, however, that non-technical students required more support during the periods of transition to distance learning as indicators of proper group functions such as engagement and the quality of relationships were lower in this group. The evaluation of the relationship between the students themselves was slightly better. For a large part of the respondents (45.77%), they have not deteriorated. However, a large percentage of "hard to say" responses (22.76%, the most frequent answer on the seven-point scale) may indicate that such relations have actually disappeared.

Table 7 provides ratings of positive statements regarding student group functioning. Again, the more optimistic ratings of how the student group is functioning during the pandemic are indicated by the technical students. The exception to this is the last statement: *During the pandemic, I meet students from my group (in the "real world")*, which is more frequently true for non-technical students. This disparity again indicates a greater need for face-to-face relationships within the non-technical major student group. The responses to the first three statements are relatively optimistic. They testify to the development of patterns of interaction, decision-making, or strategies of efficient functioning, which are replacing

traditional patterns based on face-to-face contact. The group perceived realistically (i.e. as a whole) rather than in a nominalist way (as a mere sum of individuals), has undergone an efficient process of adaptation and was able to execute its tasks and functions effectively. The evaluation of the group from an individual perspective was worse. For the vast majority of students, remote learning does not provide opportunities for easier communication or for the exertion of influence in the group. They see it as effective in terms of the continuation of studying in the time of pandemic, they do not perceive any special positive aspect of remote learning for the functioning of the group. These solutions, indicated by the evaluation of the group's organizational abilities, are therefore makeshift in the sense that they cannot be considered better than those associated with pre-pandemic functioning.

Table 7. Assessment of the Group's Adjustment to the New Online Work Environment

Positive statements	% of affirmative responses		% of negative responses	Cramér's *V* (type of study—evaluation of statements)
	non-technical majors	technical majors		
We have developed effective methods of online collaboration	68.29		20.36	0.20
	61.34	78.60		
We have developed fair ways to make decisions online	63.24		20.00	0.16
	58.47	70.74		
We have learnt to function efficiently (as a group of students) in an online work setting	63.24		20.90	0.22
	55.59	73.80		
Today, my study group is better organized than before the pandemic	27.93		41.98	0.24
	19.49	40.17		
It is easier to communicate now (in a group of students) than in the pre-pandemic period	26.31		50.63	0.27
	18.53	37.12		
I have more influence now on what happens in our group than I did before the pandemic	25.95		45.95	0.19
	21.73	32.31		
During the pandemic, I meet with students from my group (in "real life")	16.22		80.36	0.10
	17.89	13.97		

Source: own research.

From the obtained responses (Table 5 and 7, 12 variables), an index of summary assessments of how the group functions during the pandemic was created. In constructing the index, the assertiveness of the respondents' declarations was taken into account (e.g., for the questions included in Table 5, the following scores were used: *definitely yes*—1, *yes*—2, *somewhat*—3, etc.). A higher value of the index obtained indicates a more positive evaluation of the adaptation of the students' group to online work. For interpretation purposes, the index values were standardized from –1 to 1.

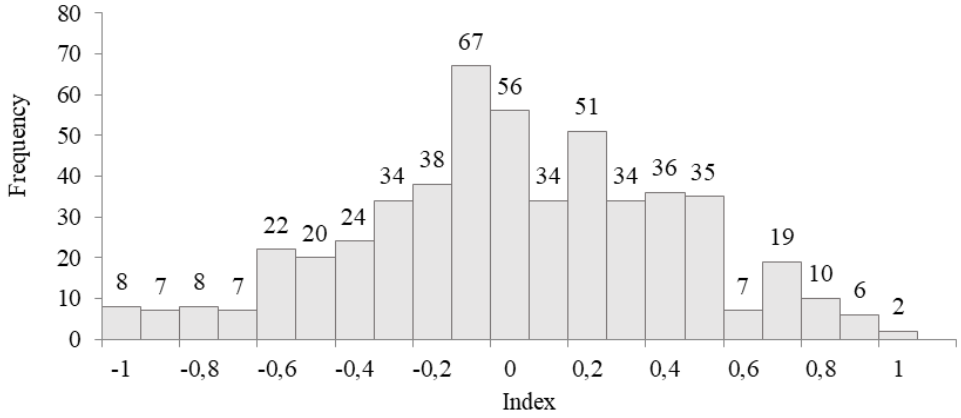

Figure 1. Standardized Index Values for Assessing Student Group Adjustment to Remote Working.

Source: own research.

The indicated variability (Figure 1) may be partially explained by commuting time. The correlation coefficients here are (R = 0.12, $R^{\wedge 2}$ = 0.015) respectively. Using the interpretation (PRE) of the $R^{\wedge 2}$ values, one may say that the variance observed in the index can be explained by the 1.5% of the 'commuting time' variable, where a longer commuting time means a tendency towards higher scores in the changes aggregated in the index. It can be cautiously assumed that such a relationship would also be confirmed in a study of the entire population of students at the examined universities. This thesis is supported by regression model statistics (β coefficient for independent variable of commuting to the place of study is statistically significant $p > .01$). However, hypothesis testing requires random sampling and this research was conducted on a convenience sample. Regardless of statistical significance, the meaning of this independent variable in explaining the variance of the constructed index should be considered low (1.5%).

Table 8. Index of Student Group Adjustment to Remote Learning—by Gender and Type of Studies

Gender	Field of study	*N* (valid responses)	Average	Confidence -95%	Confidence 95%	*SD*
Woman	Non-technical studies	226	-0.11	-0.16	-0.06	0.37
	Technical	46	0.11	-0.01	0.23	0.39
Male	Non-technical studies	67	-0.11	-0.20	-0.02	0.38
	Technical	175	0.05	-0.01	0.12	0.45

Source: own research.

The interpretation of the descriptive statistics of the obtained index requires a methodological comment. One should be highly cautious in generalizing the results based on confidence intervals as the study is based on a non-random sample. The obtained results confirm the previous (Table 7) observation of a worse evaluation of the functioning of the study group by students of non-technical sciences (Table 8). One can also see that gender did not have any effect on the responses in this group of students. However, the results among technical students shows that the overall evaluation of remote learning was more positive and rated higher by women. Women studying at technical faculties should therefore be considered as the respondents who gave the highest rating to the entire process of student adaptation to remote working during a pandemic.

6. DISCUSSION—PROVISIONAL EFFICIENCY VS. SUBJECTIVITY

Changes in the organization of higher education during the time of pandemics obviously influence the psyche and activities of individuals. Danilo Bzdok and Robin I. M. Dunbar (2020), in their article on the neurobiology of social distancing, emphasize the unprecedented scale of social isolation in lockdowns. At the same time, they remind us that the state of our psyche is determined by the number and quality of social connections and contact, especially in periods of stress, crises, and depression. Insufficient social stimulation negatively influences reasoning, memory, hormonal economy, connections between white and gray matter and resistance to disorders and mental illness. Interestingly,

what mainly matters here is the individual perception of isolation. Communicating one's depressed mood with others (facilitated by digital technologies) may spread these negative feelings, fostering a certain kind of "contagion".

In the presented research, Polish university students perceive and acknowledge the significance of the problems of isolation. This individual, psychological perspective clearly shows the need to rebuild social capital in the form of direct relations. The issue is less clear in the broader social context during the pandemic. Francesca Borgonovi and Elodie Andrieu (2020) point to a correlation between high social capital and readiness to adjust to lockdown measures. Social capital is thus associated with a greater ability to quell epidemics and lower the rates of illness and death. Ties within local communities have been most crucial. In contrast, Paul Vermeer and Joris Kregting (2020) show that stronger religious ties can increase the spread of epidemics. Higher amounts of social contact during religious rituals, as well as other behaviors associated with community values, such as celebrating various holidays or behavior during certain festivals such as carnivals are significant here.

Therefore, interpersonal relationships may have various effects in times of pandemic. This research was aimed at answering the question of how changes in the organization of teaching, i.e. the shift to remote learning and the disappearance of face-to-face contact, have affected students' perceptions of the social life within their study groups. In their opinion, their study groups, understood as a certain form of community, have passed the test in the technical sense. They have developed appropriate patterns of group function (elements of social bonding) that have allowed students to continue the learning process. However, the lack of personal contact, i.e. the first stage of social bond formation, is noticeable here. The functional efficiency of the group is not matched in terms of student involvement or contact beyond the issues directly pertaining to studies. The redefined social bond is now more professional and technical and less subjective and engaging. Functioning in a group becomes a method of achieving a goal, rather than a value in itself. This type of impoverished and instrumental social bond can only be a temporary solution. In the long run, it will be satisfactory neither for the students, who have the natural need for participation and agency, nor for the university which cares about maintaining the attractiveness of the whole process of studying. It seems in this context that the achieved efficiency of group functioning is temporary and provisional. Therefore, building personal ties within the social bond, created in a spontaneous way during normal times, now requires institutional support, such as appropriate university programs at rebuilding the community. According

to the presented research, the problem of redefining the social bond is more apparent for the students of social sciences, for whom contact with other people is an important element of building professional competence.

When analyzing social bonds in a broad theoretical context, one has to bear in mind that it is the material used to build social capital (Putnam, 2000), constituting a platform for social trust (Giddens, 1984; Fukuyama, 1995); Sztompka, 1999). As early as the 1970s, some researchers proposed that social bonds also include so-called weak social ties are characterized by fewer contacts, superficial relations, and being more business-like than personal (Granovetter, 1973). Nowadays, significant value is also ascribed to dormant ties which can give a lot of benefits when "activated" (for which the Web may be useful) (Levin et al., 2011). However, it should be remembered that both weak and dormant ties gain importance only when they are based and rooted in strong, close and long-term relationships. Some of these most meaningful ties are formed not only within the family but also in relationships with teachers as an authority and life guide, and between close friends, who are clearly (in the psychosocial dimension) different from the hundreds of "friends" on social networking sites. The chance to build such lasting bonds has been one of the unique features of the academic world. However, with the advent of the pandemic, the character of the university as a meeting place for different generations is slowly being erased. Young people seem to be losing the space that has so far played the role of a mirror shaping their identity. This function is particularly important in postmodern society, in which the reduced significance of social structure and roles forces the necessity of constantly forging one's own identity. This means that remote learning reduces the possibility of creating bonds of identity and solidarity in the young generation.

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THE TRANSFORMATION OF SOCIAL BONDS DURING A PERIOD OF INTENSIFIED ONLINE STUDYING AND WORK CAUSED BY THE SARS-COV-2 PANDEMIC — THE CASE OF POLAND

Summary

Classic sociology evaluates and explores changes in social bonds. The last discussion on significant changes in social bonds at Polish universities took place when they experienced a deep transformation after the collapse of communism in Eastern and Central Europe in 1989. Thirty years later, the period of lockdown triggered by the SARS-CoV-2 pandemic has provided an interesting opportunity to examine how social order is created and social bonds developed without direct, face-to-face interactions. The authors use the schema of social bond formation by Jan Szczepański to analyze the nature of the stages and elements of social bonds built during a time of enforced indirect methods of teaching, studying, working and communicating in general. The article presents the results of research (survey CAWI) conducted on a sample of 555 students of three Polish universities representing various fields of study (divided in the article into two categories: technical and non-technical). The results exhibit the significance of gender and the field of study in adjusting to the new circumstances of online learning including the impeded process of creating social bonds (especially at the very beginning of studies when direct contacts are needed). The authors discuss the consequences of weakening social bonds within academia whilst also referring to the phenomena of social capital, the strength of weak ties and dormant ties.

Keywords: COVID-19; higher education; distance learning; social bonds; social capital.

PRZEMIANY W TWORZENIU WIĘZI SPOŁECZNYCH W CZASIE ZINTENSYFIKOWANEJ NAUKI I PRACY ZDALNEJ WYWOŁANEJ PANDEMIĄ SARS-COV-2 – PRZYPADEK POLSKI

Streszczenie

Klasyczna socjologia ocenia i bada zmiany w więziach społecznych. Ostatnia dyskusja na temat znaczących zmian w więziach społecznych na polskich uniwersytetach miała miejsce, gdy doświadczyły one głębokiej transformacji po upadku komunizmu w Europie Wschodniej i Środkowej w 1989 roku. Trzydzieści lat później okres zamknięcia wywołany pandemią SARS-CoV-2 stał się ciekawą okazją do zbadania, jak tworzy się porządek społeczny i rozwijają więzi społeczne przy ograniczeniu bezpośrednich (twarzą w twarz) interakcji. Autorzy wykorzystują schemat powstawania więzi społecznych autorstwa Jana Szczepańskiego do analizy charakteru etapów i elementów więzi społecznych budowanych w czasie wymuszonych pośrednich metod nauczania, uczenia się, pracy i komunikacji w ogóle. W artykule przedstawiono wyniki badań (ankieta CAWI) przeprowadzonych na próbie 555 studentów trzech polskich uczelni reprezentujących różne kierunki studiów (podzielonych w artykule na dwie kategorie: techniczne i nietechniczne). Wyniki wskazują na znaczenie płci i kierunku studiów w przystosowaniu się do nowych warunków kształcenia online, w tym na utrudniony proces tworzenia więzi społecznych (zwłaszcza na samym początku studiów, gdy potrzebne są bezpośrednie kontakty). Autorzy omawiają konsekwencje osłabienia więzi społecznych w środowisku akademickim, odnosząc się jednocześnie do zjawisk kapitału społecznego, siły słabych więzi i więzi uśpionych.

Słowa kluczowe: COVID-19; edukacja wyższa; zdalne nauczanie; więzi społeczne; kapitał społeczny.