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## Explicit and implicit attitudes toward academic cheating and its frequency among university students

### Abstract:

Our study examines the relation between explicit and implicit attitudes toward academic cheating and the frequency of committing it among students of different faculties (pedagogy and psychology, and law and administration). The implicit attitudes were measured using two methods – the Implicit Association Test (IAT) and Implicit Relational Assessment Procedure (IRAP). As hypothesized, the explicit attitude toward academic cheating was positively related to the its frequency. Results indicate that the implicit measures did not predict the frequency of self-reported academic cheating behaviours. The field of study itself was not a differentiating factor for any studied variables. The methodological problems related with using IAT and IRAP as measures of implicit attitudes toward cheating and the study's possible limitations were discussed.

### Keywords:

academic cheating, explicit attitude, implicit attitude, Implicit Association Test (IAT), Implicit Relational Assessment Procedure (IRAP)

### Streszczenie:

W prezentowanym badaniu analizowano relacje między jawną i utajoną postawą wobec oszustw akademickich oraz częstotścią ich popełniania wśród studentów różnych kierunków (pedagogiki i psychologii oraz prawa i administracji). Pomiar postaw utajonych został dokonany za pomocą dwóch metod – Testu Utajonych Skojarzeń (IAT) oraz Procedury Utajonych Skojarzeń Relacyjnych (IRAP). Zgodnie z przewidywaniami jawna postawa wobec oszustw akademickich wykazywała pozytywny związek z częstotścią popełniania oszustw akademickich. Uzyskane rezultaty wskazują na to, że utajona postaw wobec oszustw akademickich nie była predyktorem deklarowanej częstotści oszustw akademickich. Kierunek studiów nie był czynnikiem różnicującym w przypadku żadnej z badanych zmiennych. Problemy metodologiczne związane z wykorzystaniem IAT i IRAP jako metod pomiaru utajonych postaw wobec oszustw akademickich oraz potencjalne ograniczenia badania zostały omówione w podsumowaniu.

### Słowa kluczowe:

oszustwa akademickie, postawa jawna, postawa utajona, Test Utajonych Skojarzeń (Implicit Association Test IAT), Procedura Utajonych Skojarzeń Relacyjnych (Implicit Relational Assessment Procedure, IRAP)

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## **Introduction**

Academic cheating has been researched for more than eighty years: one of its first analyses – conducted by Parr in 1936 – was measuring the frequency of dishonest behaviours and identifying factors that determine or were related to them. Interest in academic cheating is, on the one hand, a wish to learn the factors which determine taking ethical or moral decisions, and on the other hand, to learn more and more about cheating itself in academic and business circles as revealed in recent years (Wieczorek, 2011). Hence, learning possible ways to help develop ethical and moral attitudes as well as ways to eliminate cheating pathologies is not only a theoretical matter but is also a practical response to reputed public demand.

In our research we analyze previously unstudied relations between attitudes toward explicit and implicit academic cheating and its frequency among students of different faculties (law and administration, and pedagogics and psychology). The results benefit not only theoretical knowledge about dishonesty among students but also create practical, effective intervention programs. Moreover, our research introduces readers, for the first time, in Poland to the implicit attitude measurement method (Implicit Relational Assessment Procedure, IRAP) and to compare its predictive accuracy with the one obtained by using another method with an already well established research background (Implicit Association Test, IAT).

## **Academic cheating**

Academic cheating can be generally defined as behaviours aimed at the reception, transfer or acquisition of information from others, using unacceptable materials or information, and avoiding the adopted assessment process (Fauchner & Caves, 2009). Within this broad category we can identify behaviours connected with a particular student's knowledge acquisition and its further verification by university workers, for example, as exam cheating, namely, the “hidden use of information obtained from sources other than one's own knowledge and work, aimed at achieving the desired exam result” (Niemierko, 2006, p. 40).

Previous research, focused on academic cheating, presents quite a varied image, but the research generally confirms that it is common among university students (cf. Diekhoff, LaBeff, Shinohara, & Yasukawa, 1999; McCabe, Trevino, & Butterfield, 2001; Vandehey, Diekhoff, & LaBeff, 2007; Whitley, 1998). In a study by Jurdi, Hage and Chow (2011) carried out in Canada, 52.5% students admitted cheating, forgery or plagiarism, and an analysis by Trost (2009) proved that Swedish students most often lied about medical or other circumstances (e.g., they claimed that they or their family mem-

bers were ill) to obtain special treatment during an exam (81%) or postpone the deadline for submitting a written work (79%). Yang's research (2012) showed that between 4.4% and 28.3% of Taiwanese students have at least once behaved dishonestly, and 12.4% of Irish students participating in a study by Ballantine, McCourt, Larres and Mulgrew (2013) did not agree with the statement that "I think honesty is more important than getting good marks".

In Poland, studies on academic cheating popularity were conducted among others at the University of Warsaw and concerned judgements made by the university's Disciplinary Board between the academic years 1996/1997 and 2001/2002. Among the 52 analysed cases, 32 (61.5%) belonged to the broad category "forgery", involving behaviours such as raising a positive examination mark, allotting unjustified credit, falsifying a confirmation of tuition fee payment, using mobile phones during tests, plagiarism and substituting another person for an exam (Dębek et al., 2003). In addition, research among university students conducted by Gromkowska-Melosik (2007) showed that only 6% had never engaged in cheating during an exam.

## **Predictors of academic cheating**

### **Attitudes towards academic cheating**

Attitudes are well known predictors of social behaviours (Aronson, Wilson, & Akert, 2006). However, recent developments in implicit cognitions has shown that the relation between explicit and implicit attitudes toward particular behaviour and actual behavioural activity is more complex than expected (Maliszewski, 2005).

In academic dishonesty positive explicit attitudes – meaning relatively constant, consciously declared evaluations (Maliszewski, 2011) – were predictors of academic cheating in 16 studies analysed by Whitley (1998) with effect size  $d=0.811$ . In Bolin's (2004) study they accounted for nearly 40% of dishonest acts, leading to taking advantage of perceived opportunities to cheat, and according to the author's model were clearing the way for individuals with high self-control to deliberately commit dishonest acts and to those with low self-control to cheat impulsively. Explicit attitudes towards behaviour are also important in predicting intentions to take actions in reasoned action model (Ajzen, 1991). According to this model, positive attitudes toward academic cheating – as aggregated behavioural beliefs concerning behavioural outcomes and their evaluations, together with favourable subjective norms and perceived behavioural control – lead to stronger intentions to perform dishonest acts (Ajzen, 2012). Studies which have considered the relationship between attitude and intention to commit academic dishonesty (cf. Alleyne & Phillips, 2011; Beck & Ajzen, 1991; Harding, Mayhew, Finelli, & Carpenter,

2007; Stone, Jawahar, & Kisamore, 2010) showed that explicit positive attitudes significantly predict an individual's intention to cheat in an academic context.

Unlike explicit attitudes, implicit ones have so far not been extensively studied by researchers, who used to describe cheating as a rational choice, subject to volitional control (Harding et al., 2007). However, scientists who study implicit cognition show that automatic behaviours occur in situations in which standards concerning a particular action are ambiguous or poorly structured, which demonstrates their significance in studies focused on moral issues (Greenwald, Uhlmann, Poehlman, & Banaji, 2009). In accordance with implicit attitudes, defined as unidentified (or wrongly identified) traces of past experience, they can significantly affect an individual's reactions, even if the experiences are not remembered and accessible consciously (Greenwald & Banaji, 1995). Furthermore, studying an implicit attitude allows one to explain many cases dealing with lack of coherence between explicit beliefs and behaviour, and points out an additional, previously ignored aspect and its regulatory role (Greenwald, McGhee, & Schwartz, 1998; Maison, 2004; Maliszewski, 2005, 2009, 2011). Previous studies showed a significant relation between implicit attitude and dishonesty (Silva & Barnes-Holmes, 2013), between implicit beliefs concerning ethics in business and beliefs concerning the economy (Reynolds, Leavitt, & DeCelles, 2010) as well as implicit theories about the nature of moral beliefs (Chiu, Dweck, Tong, & Fu, 1997).

The premise to compare explicit and implicit attitudes toward academic cheating arises when in socially sensitive matters like moral transgressions or stereotypes, people often tend to hold socially or politically correct explicit attitudes while showing different evaluations implicitly (Chybicka, Kosakowska, & Karasiewicz, 2008; Huntsinger, 2013). Since implicit attitudes are introspectively inaccessible, are less susceptible to social desirability concerns, and reflect older convictions acquired through longer social experiences (Echabe, 2013), it is possible that incorporating them to models designed to explain cheating behaviours among students will allow us to predict actual dishonest behaviours to a greater extent (cf. Carpen, Jia, Rydell, 2012).

### **Field of study**

Research investigating the connection between academic cheating and academic field showed more dishonesty among business students in relation to students of other faculties (Crown & Spiller, 1998). They had lower moral development and reasoning scores than psychology students (Bernardi et al., 2004) and had more lax attitudes on what constitute cheating (Klein, Levenburg, McKendall, & Mothersell, 2006). Apart from business students, technical faculty students also demonstrated a high level of academic cheating. In comparison with liberal arts students, they reported a higher level of cheating during exams and when preparing individual assignments (Harding et al., 2007).

In extensive research by Newstead, Franklyn-Stokes and Armstead (1996), science (e.g., chemistry, biology, geography) and technical (e.g., IT, engineering) students reported the highest frequencies of cheating, followed by the social sciences (e.g., sociology, psychology, law, economics), liberal arts and pedagogy. Students of faculties connected with social work and health protection had the lowest scores. The reasons for these differences are sought in student motivation for studying (Newstead et al., 1996; Whitley, 1998), in university authorities' attitudes to academic cheating (McCabe, Butterfield, & Trevino, 2006), the nature of the courses themselves (Frank, Gilovich, & Regan, 1993; Harding et al., 2007) and individual traits leading to the selection of a particular profession (Tang & Tang, 2010).

With regard to the students enrolled in law and administration or pedagogics and psychology, the differences between academic cheating are attributed to the above-mentioned nature of the course and the individual's characteristics, such as attitude toward dishonesty, which are either shaped by exposure to specific contextual factors common to a particular field or are specific from the beginning for individuals studying it. Chodkowska et al. (2010), examining the understanding of morality among students on various faculties, showed several significant differences between law and pedagogics undergraduates. The differences involved understanding morality as acting in accordance with personal values (higher for pedagogics students) and as an obligation to do good and avoid evil (higher for law students). Moreover, law students, when compared to pedagogical students, connected morality in social life more to striving to make right and wise decisions and less to promoting the welfare of others. Furthermore, research conducted at the Law and Administration Faculty at the University of Warsaw showed that only 23% of students strongly agreed that unethical acts should be condemned by students (Raczkowski, 2005) and only 23% agreed that students from their faculty are trying to achieve high academic performance only through their knowledge even if there are other possibilities to acquire good grades (Boryczka, 2005).

## **Research project objectives and hypotheses**

Three basic goals were adopted in our study. The first involved looking for significant relations between explicit and implicit attitudes to academic cheating and the frequency of committing various academic dishonest acts. The second goal was to compare students from different faculties regarding explicit and implicit attitudes to academic cheating and the frequency of committing it. Previous empirical evidence indicates differences between students and graduates of business and non-business courses in attitudes to academic cheating and the behavioural tendency to it (e.g., Whitley, 1998; Hard-

ing et al., 2007). However, frequency of academic cheating and attitudes to it are practically absent from Polish literature (Chudzicka-Czupala, in press). The third goal was to compare implicit attitudes measured with two computer-based chronometric methods with a different theoretical background: IRAP (used for the first time in Polish conditions) and IAT. Former studies comparing IRAP and IAT (e.g., Barnes-Holmes, Murtagh, Barnes-Holmes, & Stewart, 2010; Barnes-Holmes, Waldron, Barnes-Holmes, & Stewart, 2009; Chan, Barnes-Holmes, Barnes-Holmes, & Stewart, 2009; Cullen & Barnes-Holmes, 2008) point out the advantage that IRAP has as an experimental procedure. IRAP makes it possible to investigate one's attitude to a certain object directly (unlike IAT, where the contrast is used), and it has higher predictive accuracy than IRAP regarding behaviours (Roddy et al., 2011). It was assumed that measured implicit attitudes using IRAP and IAT, in contrast to self-descriptive questionnaires not based on automatic reactions, would not only determine whether implicit attitude affects one's behaviour (the declared frequency of committing various academic cheating acts) but also would compare the impact strength of explicit and implicit attitudes on cheating, as well as to find out if it is a better behavioural predictor (explains greater variance) when connected with academic cheating.

The following hypotheses were formulated on the basis of the literature:

- H1: A more positive attitude toward academic cheating (both explicit and implicit) will be related to its higher committed frequency it.
- H2: Explicit and implicit attitudes toward academic cheating will be predictors for determining how frequently academic cheating is committed.
- H3: There will be statistically significant differences between explicit and implicit attitudes toward academic cheating and its frequency among students of different faculties.
  - a) Law and administration students will have more positive (explicit and implicit) attitudes toward academic cheating than pedagogy and psychology students.
  - b) Law and administration students will more often commit academic cheating than pedagogy and psychology students.
- H4: There will be statistically significant differences concerning observable relations, when the implicit attitude is measured using IAT or IRAP.

## **Materials and Methods**

### **Academic Dishonesty Scale**

The behavioural measure for academic cheating was an original version of the Academic Dishonesty Scale by Kevin Eastman, Jacqueline Eastman and Rajesh Iyer (2008).

The questionnaire is used to determine how frequently declared forms of academic cheating are committed. It lists 16 academic cheating acts, including the first 11 statements out of the 12 mentioned in the ADS (McCabe & Trevino, 1993, 1997), e.g. “Using crib notes on a test”, “Receiving substantial, unpermitted help on an assignment”. In the questionnaire there are also five additional questions concerning Internet cheating and using other modern technologies to do it, for example, to “Browse Internet sources for ideas without giving the source.”, “Submit another’s material as your own – from another student, a book, or the Internet – without giving credit”. The first two are taken from the multi-dimensional questionnaire Independent School Health Check (ISHC, <http://www.independentschoolhealth.com/>), used in a nationwide study of approach to academic cheating in the USA, and the next three, from the SNA by Eastman et al. (2008). A respondent is asked to use a 5-point Likert scale to answer how often he or she has committed certain forms of academic cheating while at university (from never – 1 to many times – 4). Despite identifying different ways to cheat among students, in our study academic dishonesty (in accordance with its previous conceptualizations) is treated as a one-dimensional construct. The higher the score obtained in the questionnaire, the higher the frequency of academic cheating during one’s university education. Cronbach’s  $\alpha$  coefficient of internal consistency for SNA was 0.89.

### **Attitude Toward Cheating Scale**

The explicit attitude to academic cheating was measured with The Attitude Toward Cheating Scale by Gardner and Melvin (1988), translated by ourselves, upon receiving consent from the tool’s authors to use it for research purposes. The questionnaire comprises 34 statements written in third person, 20 of which reflect tolerance to cheating. The answers are given in a 5-point Likert scale (from 1 – I completely disagree to 5 – I completely agree). The respondent’s task is to assess various forms of academic cheating among students: assess the attitude to cheaters (e.g. Most students who cheat are unethical people), evaluate moral judgements about cheating (e.g. Cheating on college tests is morally wrong) and explain academic teacher behaviours (e.g. If a teacher leaves the room during a test, that teacher is in effect okaying cheating). The higher the score in the ATC 34 test, the lower the tolerance to cheating. In the reported study, the tool had a satisfactory validity level ( $\alpha=0.84$ ).

Neither SNA nor ATC 34 were adapted to the Polish conditions. Before the study, both tools were translated into Polish by ourselves and evaluated by two competent jurors. The collected opinions were used to draw up the tool’s final versions.

### **Implicit Association Test (IAT)**

The two-category IAT, testing the strength of associations between different positively or negatively evaluated concepts, was used to measure the implicit attitude to academic

cheating (Greenwald et al., 1998; Greenwald, Nosek, & Banaji, 2003; Maliszewski, 2005). In IAT, measuring implicit attitude was carried out using a computer, which records the response time and the correct way to perform the task. The respondent classifies a series of stimuli appearing on the computer screen into two categories, using two keys (in this case: E and I).

In our study, the key stimuli (concepts) were expressions belonging to two categories: academic dishonesty (cheating during an exam, copying homework, plagiarism, making up references, using crib sheets) and academic honesty (studying before an exam, preparing a bibliography, providing references to others' input, providing your own arguments, submitting your own works, citing sources). The other two stimuli (attributes) categories involved words with both positive and negative emotional connotations (love, pleasure, joy, happy, laughter, great on one hand and death throes, horrible, failure, disgusting, bad, hurt on the other). The test procedure included five parts: the first two involved simple categorizations, whereas the third and fifth, complex categorizations, being elements combined from the first two tasks. The D-IAT effect, resulting from the difference in averaged response times in test blocks concerning the complex categorization, is the index of implicit attitude to academic cheating. If academic honesty is positively associated by the respondent, it should have a shorter response time in the third test task than in the fifth one, which indirectly indicates the implicit positive attitude to academic honesty. In the reported study, IAT was carried out using Inquisit software.

### **Implicit Relational Assessment Procedure (IRAP)**

A tool alternative to IAT, used to directly measure implicit attitudes, is IRAP: a computer-based study method with behavioural background, developed by a team of researchers directed by Barnes-Holmes (e.g., 2006, 2009). IRAP methodology directly refers to one fundamental Relational Frame Theory assumption, which says that the basic elements of cognition and language are relational. Thus, this approach concentrates on single relations between stimuli situated within broader relational networks (relevant relational-response, R-R) instead of the stimulus-reaction (S-R) response used in IAT. Just as in IAT, IRAP is based on response time but also includes elements characterising the Relational Evaluation Procedure drawn up by the same team of researchers, and involves presenting certain relational terms (here: "true" and "false" on the computer screen) to evaluate relational properties between the exposed key stimuli and label stimuli. Just as in IAT, what matters is the quickness and accuracy of the answers provided by the respondent (Power, Barnes-Holmes, Barnes-Holmes, & Stewart, 2009; Nicholson & Barnes-Holmes, 2012).

Two label stimuli ("it is good to" and "it is bad to") and related key stimuli, referring to examples of academic honesty and dishonesty, were presented using IRAP. One



set included expressions with a positive tinge, exemplifying work done by the student personally (citing sources, preparing bibliography, studying before an exam, submitting your own works, and referring to others' input). The other set were expressions with a negative tinge, being short examples of academic dishonesty (plagiarising, cheating, using crib sheets, cheating during an exam, making up references, and copying homework). The respondents were to determine whether the stimuli (the key and label) complied or not with the rule presented at the beginning of the task, pressing key D for the answer "true" and K for the answer "false", respectively.

The IRAP procedure began with doing between two and six trial blocks. Achieving the pre-set index of response accuracy (min. 80%) in these blocks, combined with an average reaction time not exceeding 2,000 ms, was the condition for proceeding to the test part including six blocks. In the test blocks, the respondents had to give answers following two alternating rules: (1) "academic honesty is right, and academic dishonesty is wrong" or (2) "academic dishonesty is right, and academic honesty is wrong". Calculations in IRAP, just like in IAT, is done with an adjusted algorithm by Greenwald et al. (2003), referred to as the IRAP effect and being a difference in latency time in each test block between the answers given in accordance with the rule in which academic honesty is evaluated positively (the rule 1) and the rule evaluating it negatively (the rule 2). Apart from estimating the total result for IRAP, in order to interpret the results properly, the authors of the method recommend separately calculating the D algorithm for the results in each trial types (IRAP<sub>1</sub>, IRAP<sub>2</sub>, IRAP<sub>3</sub>, IRAP<sub>4</sub>). The test was carried out using a computer program developed by Barnes-Holmes (<http://irapresearch.org/downloads-and-training/>).

## **Participants**

Students of the University of Silesia in Katowice were participants in the two-step study (N=53). In the first part, 25 students from the Faculty of Law and Administration (further: FLA) took part, and in the second, 28 from the Faculty of Pedagogy and Psychology (further: FPP). Nineteen individuals (35,8%) studied pedagogy, 19 law as well, nine (17%) psychology, 5 (9,4%) administration, and 1 (1,9%) business. Participant age was between 19 and 25 (M=21,43; SD=1,69). The dominant groups were women (W=45; M=8), as well as those in the second year of study (21 persons) or in the first year (14 persons), in total 66%. Concerning the psychology students only those who studied at the first or second year were included in the sample in order to exclude a possible strong interfering variable: they already knew the experimental methods based on response time measurement and the personality questionnaires.

## Procedure

Our anonymous and voluntary experiment was conducted individually in the laboratory (FPP students) and in a specially prepared and soundproof room (FLA students). The researcher arranged the time with individual interested students by e-mail or met them before classes and told them about the study. The qualified persons first did a computerized IRAP test, measuring implicit attitudes. Those who had completed the trial and test procedure in IRAP were then asked to do a computerized IAT test, treated as an indirect measurement of implicit attitudes. The questionnaires concerning academic cheating (measuring explicit academic cheating attitudes and their behaviour) were scheduled as the last part so as not to suggest the aim of the study to the participants. The study procedure took between 30 and 40 minutes. The respondents did not receive any financial reward for taking part in the study.

## Results

Correlation analysis (Pearson's  $r$  coefficient) was used to verify hypothesis 1. Testing hypothesis 2 was based on multi-variable regression analysis conducted with the entry method. Hypotheses 3 and 4 were verified on the basis of  $t$  test results for independent groups. All statistics applied in the study were calculated with SPSS Statistics 21 software. Descriptive statistics, correlations (Pearson's  $r$  correlation coefficients, bilateral tests) between the studied variables and Cronbach's alpha coefficients of internal consistency (diagonally, in brackets) for self-descriptive measurements are shown in Table 1.

**Table 1.** Means, standard deviations, reliabilities and correlations among measured variables ( $N = 53$ ).

Variable	M	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) D-IAT	-0.88	0.26	-									
(2) IRAP honesty	0.37	0.28	-0.11	-								
(3) IRAP dishonesty	0.22	0.30	-0.04	0.40**	-							
(4) D-IRAP	0.29	0.24	-0.09	0.82***	0.85***	-						

(5) IRAP <sub>1</sub>	0.40	0.33	-0.24	0.72***	0.22	0.54***	-				
(6) IRAP <sub>2</sub>	0.14	0.44	-0.07	0.32*	0.87***	0.73***	0.29*	-			
(7) IRAP <sub>3</sub>	0.35	0.39	0.05	0.82***	0.39**	0.71***	0.18	0.21	-		
(8) IRAP <sub>4</sub>	0.29	0.31	0.02	0.34*	0.71***	0.64***	0.01	0.28*	0.47***	-	
(9) Frequency of academic cheating	28.11	8.73	-0.13	-0.14	-0.02	-0.10	-0.04	0.09	-0.17	-0.18	(0.89)
(10) Explicit attitude to academic cheating	97.58	14.19	0.02	0.01	0.09	0.06	0.13	0.19	-0.09	-0.10	0.34* (0.84)

**Note.** D-IAT – D index for the total IAT score; IRAP honesty – the mean time of evaluation of academic honesty in IRAP; IRAP dishonesty – the mean time used to evaluate academic dishonesty in IRAP; D-IRAP – D index for the total IRAP score; IRAP<sub>1</sub> – D for the first test block in IRAP; IRAP<sub>2</sub> – D for the second test block in IRAP; IRAP<sub>3</sub> – D for the third test block in IRAP; IRAP<sub>4</sub> – D for the fourth test block in IRAP. Cronbach's alpha coefficients of internal consistency for self-descriptive measurements are on the Table's diagonal (in brackets).

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

### Explicit and implicit attitudes toward academic cheating as frequency predictors for committing academic cheating (verification of hypotheses 1 and 2)

Correlational analysis revealed only a positive relation between the explicit attitude to academic cheating and its frequency in being committed it ( $r = 0.34$ ;  $p < 0.05$ ). Contrary to expectations, no statistically significant relations were found between the tendency to commit academic dishonesty and the implicit attitude to cheating, both measured with IAT and IRAP.

In the next stage a number of linear multivariable regression models were constructed with the entry method in order to find out whether attitudes towards academic cheating (implicit and explicit) can predict the frequency of committing academic cheating (Table 2).

**Table 2.** Multiple Linear Regression Models for the dependent variable: frequency of academic cheating in the university student sample.

Independent variables	beta	t	p	Regression summary
Model I				
Explicit attitude to academic cheating	0.35	2.67	0.01	Adjusted R <sup>2</sup> =0.10 F=2.97 p<0.05
D-IAT	-0.15	-1.13	0.26	
D-IRAP	-0.13	-0.99	0.33	
Model II				
Explicit attitude to academic cheating	0.35	2.62	0.01	Adjusted R <sup>2</sup> =0.10 F=2.36 p>0.05
D-IAT	-0.16	-1.17	0.25	
IRAP honesty	-0.17	-1.17	0.25	
IRAP dishonesty	0.01	0.11	0.94	
Model III				
Explicit attitude to academic cheating	0.32	2.33	0.02	Adjusted R <sup>2</sup> =0.08 F=1.73 p>0.05
D-IAT	-0.16	-1.14	0.26	
IRAP <sub>1</sub>	-0.15	-0.99	0.33	
IRAP <sub>2</sub>	0.12	0.78	0.44	
IRAP <sub>3</sub>	-0.06	-0.40	0.69	
IRAP <sub>4</sub>	-0.14	-0.90	0.37	

**Note.** D-IAT – D index for the total IAT score; IRAP honesty – the mean time for evaluating academic honesty in IRAP; IRAP dishonesty – the mean time for evaluating academic dishonesty in IRAP; D-IRAP – D index for the total IRAP score; IRAP<sub>1</sub> – D for the first test block in IRAP; IRAP<sub>2</sub> – D for the second test block in IRAP; IRAP<sub>3</sub> – D for the third test block in IRAP; IRAP<sub>4</sub> – D for the fourth test block in IRAP.

In the first equation, the behavioural tendency to cheat (frequency) academically was adopted as the dependent variable, whereas attitudes to academic cheating (D statistics in IAT and IRAP as well as the score obtained in ATC 34), were adopted as the predictors. The tested regression model proved to be statistically significant ( $F(3, 49)=2.97$ ;  $p=0.04$ ). Regression analysis showed that there is no relation between implicit attitudes and the behavioural tendency to commit academic cheating. There is only a significant relation between the explicit attitude to cheating and its frequency ( $\beta = 0.35$ ;  $p < 0.05$ ). In the next step statistics “IRAP honesty” and “IRAP dishonesty” ( $F(4, 48)=2.36$ ;  $p=0.07$ ), or alternatively, results obtained in individual test blocks ( $F(6, 46)=1.73$ ;  $p=0.14$ ) instead of D statistics calculated for the total score obtained in IRAP, were entered into the equation as predictors. Both regression models proved to be statistically insignificant.

**Explicit and implicit attitudes to academic cheating and its frequency in being committed among students of different faculties (verification of hypothesis 3)**

In order to verify differences in the explicit and implicit attitudes toward academic cheating among FLA and FPP students, as well as the declared frequency in committing it, t tests were used for independent groups. Results indicate that there is no statistical significance between students of different faculties in the quantity of committed acts ( $t(51)=0.24; p>0.05; d=0.07$ ), the explicit ( $t(51)=-0.72; p>0.05; d=-0.20$ ) and implicit ( $t(51)=0.69; p>0.05; d=0.19$ ) attitudes to cheating both for IAT and the D index for the total IRAP score ( $t(51)=0.03; p>0.05; d=0.01$ ). The means and standard deviations for each variable obtained in the student groups, the values of t-Student tests and Cohen’s d coefficient are presented in Table 3.

**Table 3.** Means, standard deviations among FLA (N= 25) and FPP students (N= 28), the values of t-Student tests and Cohen’s d coefficient.

Variable	FLA		FPP		t	df	d
	M	SD	M	SD			
D-IAT	-0.90	0.29	-0.85	0.23	0.69	51	0.19
IRAP honesty	0.38	0.30	0.36	0.26	-0.25	51	-0.07
IRAP dishonesty	0.20	0.26	0.23	0.35	0.28	51	0.08
D-IRAP	0.29	0.23	0.30	0.26	0.03	51	0.01
Frequency of academic cheating	27.80	10.76	28.39	6.62	0.24	51	0.07
Explicit attitude to academic cheating	99.08	14.75	96.25	13.80	-0.72	51	-0.20

**Note.** D-IAT – D index for the total IRAP score; IRAP honesty – the mean time for evaluating academic honesty in IRAP; IRAP dishonesty – the mean time for evaluating academic dishonesty in IRAP; D-IRAP – D index for the total IRAP score.

\* $p<0.05$ ; \*\* $p<0.001$ .

**Differences in measuring the implicit attitude with IAT or IRAP (verification of hypothesis 4)**

Analysis results in this area mostly focused on comparing the IAT effect and D index for the total IRAP score (obtained by measuring response time to the key stimulus and the number of correct answers) in two groups (FLA and FPP students) depending on the explicitly preferred academic dishonesty and declared frequency of committing it. As for the results (D index values) obtained in IAT and IRAP (both for the total score and for particular test blocks), they were not correlated, which partially sanc-

tions theoretically separating the two study methods (e.g., Barnes-Holmes et al., 2006; Power et al., 2009). The *t* tests conducted for independent groups (Table 3) also did not confirm the contrastive character of academic cheating patterns among students from different faculties depending on the applied method for measuring implicit attitudes. The differences between FLA and FPP participants regarding implied academic cheating preferences or self work were statistically insignificant, regardless of whether the estimation was carried out with IAT or IRAP.

## **Discussion**

The basic aim of our study was to determine the character of relations between the explicit and implicit attitudes towards academic cheating and its frequency. The results partially confirmed the initial assumptions. There were only weak correlations with the expected directions between the explicit attitude to cheating with the frequency to commit it. Contrary to expectations, implicit attitudes did not allow a significant prediction of the behavioural tendency to cheat, which suggested that there existed a more complex pattern between the variables. Academic cheating involves a wide behavioural spectrum, motivated both by personality factors and contextual factors, related to certain external goals being accomplished (cf. Johnson & Gormly, 1972; Murdock & Anderman, 2006; Rettinger & Kramer, 2009; Whitley, 1998). In literature, it is approached from the cognitive perspective (resulting from a failure to master the effective learning strategies), the developmental (as a result of developmental differences connected with acquiring cognitive abilities, shaping values and learning to function socially and educationally), and the motivational (as a consequence of assuming positive or negative attitudes to cheating and reflecting individual differences in the control and self-efficacy) (Anderman & Murdock, 2007). As a result the attitudes toward cheating may not play the decisive role in dishonest behaviour throughout one's studies, as either planned or spontaneous. The results can also suggest that possible moderators may be important for their predictive power in measuring implicit motives, which is consistent with previous findings (e.g., Friese, Hofmann, & Schmitt, 2008; Greenwald et al., 2009; Nosek, 2005).

In our study divergent relational patterns were expected between the tested variables for students of different faculties. It was anticipated that preference for academic cheating (both declared and implicit), combined with the number of declared acts, would be higher among law and administration than among students of pedagogy and psychology. Contrary to expectations, significant disproportions between the par-

ticipants from different educational fields were not observed, which can be connected with our sample's relative small size and homogeneity.

Due to considerable sensitivity toward tolerance for academic cheating and the inclination to commit it as a 'socially approved' variable, two computer-based methods were used apart from the questionnaire measures, based on measuring response time and calculating the proportions of correct answers – IAT and IRAP. The choice of two alternative tools for measuring implicit attitudes was primarily to maximise predictive accuracy. Comparing the results did not allow for definitive confirmation of significant differences between the investigated variables depending on the applied study method.

There are several possible reasons why IAT and IRAP were not particularly successful in measuring implicit motives in our study. Results when IAT and IRAP are compared may be the effect of IRAP's test character as a method used to measure implicit attitudes adopted from English. Because measuring explicit attitude was not based on stimuli used in IRAP, the failure to achieve a correlation may also result from the measurement of different properties referring to academic cheating at the explicit and implicit levels. What is more, the considerably complex construct 'attitude to academic cheating' may make the study of its implicit level difficult or even impossible. Thus it seems that the selected stimuli adequately representing different manifestations which violate academic honesty would require both a considerably greater number of unethical acts and clearly moderating the negative tone of some expressions used in our study.

The last methodological issue which could affect the IAT and IRAP scores refers to our study's procedure. Its length and many stages may have distorted the results, especially since tiredness, stimulation and motivation play a significant role in studies based on the response time (Golombek, Zdybek, & Ogonowski, 2012). Using repetitive measurements (first in IRAP and then in IAT) may have additionally affected preciseness. The answers in the successive trial and test blocks in both study methods may have been learnt. This effect may especially refer to the scores obtained in IAT to a greater extent, as this tool was used in the study after using IRAP, and previous research suggests that the IAT effects are fakeable (Röhner, Schröder-Abé, & Schütz, 2011).

Our study was not free from limitations. First of all there were methodological problems connected with measuring the inclination to unethical behaviours among students. Issues concerning morality, questions referring to religion, voting preferences, sexual behaviours and drug or alcohol abuse belong to the basic "socially sensitive" research areas, particularly susceptible to giving distorted, biased results (Tou-

rangeau & Yan, 2007). So as to minimize interference for fear of disclosing one's nature, social approval and following one's impressions, in former questionnaire-based empirical studies concerning academic cheating, Internet use or paper-and-pen surveys ensuring complete anonymity were most popular. As an alternative, in order to maximize external validity, a computer analysis of cheating committed during the academic year was carried out post factum in the studied groups, and natural or laboratory experiments were designed simulating real exam situations. The respondents were each time informed about the study's anonymity and the impact their responses would make on the marks in the subject the experiment referred to. Although the authors took analogous steps aimed at ensuring the full participant anonymity individual contact with the researcher was necessary involving computer-based chronometric methods (IRAP and IAT), which might have contributed to activating self-presentation behaviours directed at shaping oneself's positive image and increasing the reluctance to report some forms of academic cheating, especially the socially condemned ones, such as plagiarism or cheating during exams.

Another important factor that may have distorted our results was participant selection, especially the failure to observe the principle of step one – randomisation. Volunteers and women (85% of all participants) dominated in the sample. Problems with selecting respondents also occurred at the IRAP stage, since the attrition rate exceeded 10%, considered to be the author's acceptable level for the method. The sample itself may be another factor which could affect the results. Distribution analysis of the estimated questionnaire measurement variables may indicate considerable homogeneity of both subgroups. It should also be emphasized that due to the sample's low numerical strength, only simplified statistical analyses were carried out.

It seems justified to take into consideration the above-mentioned methodological and theoretical doubts in future studies. When designing future experiments devoted to analysing student dishonesty, it is worth considering extending the study plan to incorporate additional cultural, situational, demographic, motivational, cognitive, personality and ethical factors into the model, as they may be decisive for developing attitudes towards academic cheating and its frequency (McCabe et al., 2001; Miller, Murdock, Anderman, & Poindexter, 2007; Newstead et al., 1996). It would also be good to conduct studies by using a particular theoretical model concerning academic cheating (e.g., Murdock & Anderman, 2006), and attitudes or ethical behaviour in an organisation. In the light of empirical evidence showing that much academic cheating (especially the form assuming direct interaction) occurs in dyads (Nathanson, Paulhus, & Williams, 2006), interesting research perspectives would also appear when including the dual character of academic cheating in the research pattern. Especially an analysis



of different personality traits and attitudes between students who cheat during exams, and those who make it possible by making their own work available for others would not only have important theoretical implications but also practical ones. A more comprehensive approach would make it possible to develop more effective ways to prevent dishonesty among students.

The study procedure itself should also be modified. Dividing it into stages spread out over some time would help minimize interference of factors connected with tiredness or motivation drop in the respondents. And engaging trained research assistants, who could conduct the individual study of implicit attitudes, would contribute to reducing the impact of variables connected with the researcher on the results. Another issue is the problem of social approval in questionnaire-based studies devoted to ethical behaviour. Although IAT and IRAP did not eliminate it completely, apparently it would be justified to include in self-descriptive questionnaires a cheating scale or a way to measure explicit attitudes that would allow the respondent to autonomously administer this part, for example, using the computer without the researcher or other persons being present. This would maximize anonymity – of a key importance for answering the questions concerning unacceptable explicit attitudes. As an alternative, in replicating this study, we might completely abandon the traditional self-descriptive methods based on the respondents' declarations and use computer-based methods and measurements of actual behaviour in natural or laboratory situations.

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