Soc Psychol Educ (2018) 21:409–426
https://doi.org/10.1007/s11218-017-9421-y

Gender differences and the awareness of plagiarism in higher education

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Received: 25 October 2016 / Accepted: 21 November 2017 / Published online: 18 December 2017

Abstract Plagiarism is increasingly prevalent in the educational and research culture in higher education. Students are more and more looking for quick solutions when writing research papers and theses. In this paper, students' awareness of plagiarism and possible gender differences in this awareness are presented. Gender differences in plagiarism awareness were analysed both generally and within several socio-economic contexts (e.g. social life, living with parents/grandparents, living in a student hall of residence, motivation for study and working during studies). Our study was conducted at the University of Maribor in Slovenia. The findings have revealed statistically significant gender differences in students' plagiarism awareness; specifically, women have a much more negative attitude towards plagiarism than men. Regarding awareness, students could be divided into three groups: (1) students who are aware of plagiarism but do not consider it wrong or unethical, (2) students who are unaware of plagiarism, and (3) students who are aware of plagiarism but continue to plagiarise despite knowing it to be wrong. A very busy social life, strong motivation for study and working during studies also strongly affect plagiarism and reveal gender differences. Based on the findings of the study, this paper puts forward recommendations for plagiarism prevention. Our recommendations encompass the implementation of a plagiarism policy within academic institutions, strict sanctions on plagiarism, teaching students how to avoid plagiarism and, finally, a national programme for the promotion of academic integrity.

Keywords Plagiarism awareness · Gender differences · Students · Higher education

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1 Introduction

Student plagiarism is a growing problem within universities. If students claim that the work of others is theirs, this is simply cheating; moreover, this is not merely a problem of the academic realm but is in fact an ethical issue. If intellectual property rights are violated, the resulting academic work is unethical. Whether intentional or unintentional, the growing prevalence of plagiarism (Park 2003) raises important questions concerning academic integrity, student learning and the validity of higher education degrees awarded to those engaging in plagiaristic behaviour. Moreover, if a person is dishonest at university, how will he or she go on to act in the workplace?

While plagiarism is seen to have many causes and to take many forms (Park 2003), there is general agreement that issues associated with correct referencing of quotations and paraphrasing are a significant problem for many students and their academic instructors (Allan et al. 2005; Brimble and Stevenson-Clarke 2005; de Lambert et al. 2006; McGowan 2005; Scanlon 2003; Wilhoit 1994). Plagiarism in this study has been defined as "the action or practice of taking someone else's work, ideas, etc. and passing it off as one's own; literary theft" (Oxford English Dictionary 2016). Although the prevalence of plagiarism is not known precisely, large-scale studies have found that more than 30% of students admit to reproducing others' ideas or words in an assignment without proper acknowledgement, with up to 20% of students doing so with significant portions of text (Christensen Hughes and McCabe 2006; McCabe 2005; Underwood and Szabo 2003).

Recognising attitudes towards plagiarism is an essential basis for educating students about and deterring them from plagiarising (Comas and Sureda 2008; Jones et al. 2008; Pupovac et al. 2008). Plagiarism is a highly complex phenomenon and, as such, it is likely that there is no single explanation for why individuals engage in such behaviour. In fact, different researchers have attributed plagiarism to a number of factors, including lack of knowledge of what constitutes plagiarism (Harris 2001; Marshall and Garry 2006; Ryan et al. 2009), a disconnect between staff and students' understandings of plagiarism (Brimble and Stevenson-Clarke 2005), time pressures (Bannister and Ashworth 1998), and poor language and academic skills (Devlin and Gray 2007). In one of our former studies we investigated the factors suggested by previous researchers to affect student plagiarism and agree with most of their findings. Our study shows information and communication technologies and the internet to be the most apparent causes for plagiarism, followed by factors related to teachers and academic skills (Šprajc et al. 2017). Furthermore, the factors affecting plagiarism can generally be structured within a framework of cultural context factors, institutional-contextual factors and individual factors. Students' cultural context (Teixeira and Rocha 2010) and their peer group or social membership (Iyer and Eastman 2006) have been found to affect their level of academic misconduct. Among institutional-contextual factors are the presence of foreign instructors, classes taught in a foreign language (Ledesma 2011), students' perspectives of peer behaviour (McCabe et al. 2008), faculty and administrators' attention to and commitment to eradicating academic misconduct, the existence of comprehensive programmes about academic honesty (Christensen Hughes and

McCabe 2006), and beliefs in the existence of strict punishment (Scanlon and Neumann 2002). Among individual/personal factors, the relevant variables have been found to include gender, age, academic achievement, department, class, self-esteem, graduate level, educational background and ethnicity (Iyer and Eastman 2006; Ledesma 2011).

There is a growing body of research on the antecedents, attitudes to and consequences of plagiarism and on methods to detect and prevent it. Underpinning most of this research is the assumption that students know what constitutes plagiarism (Voelker et al. 2012), though Hansen (2003) disputes this. Dee and Jacob (2010) also state that students have a generally poor understanding of what plagiarism is. Dawson and Overfield (2006) determined that students were aware that plagiarism was wrong but were uncertain about what precisely constitutes plagiarism and how to avoid it. Blum (2009) and Carroll (2007) also state that many students did not understand what constitutes plagiarism—i.e. its nature and components—and that some students were not taught the proper way to acknowledge sources. In this context, we attempted to determine whether students know what plagiarism is, whether they are aware of doing it, whether they consider it wrong and whether there are any differences in gender regarding plagiarism.

Some research on gender and morality has suggested that women tend to be more moral and ethical than men (Bateman and Valentine 2010). Men have been identified as generally being more autocratic, competitive, aggressive and willing to take risks than women (Apesteguia et al. 2012; Arano et al. 2010; Katungi et al. 2008). In general, women have been found to be more participatory, nurturing, gentle and sensitive than men (Eagly and Carli 2004; Groves 2005; Nye 2012). Other research suggests men to be more agentic, career-focused, compensation-oriented and risk-taking, with women tending to prefer a more communicative approach to leadership, emphasising community, family, and friendships (Ferriman et al. 2009). On the other hand, men have been found to be better and more willing negotiators (Amanatullah and Tinsley 2013; Babcock et al. 2006; Greig 2008), to have better access to social networks, and to spend more time building broader professional networks because they are more active and engaged in their work and have greater exposure than women do (Forret and Dougherty 2004; Morrill et al. 2013).

More recently, Kidwell and Kent (2008) considered attitudes to cheating behaviour, including plagiarism, among Australian students studying on campus and via distance learning. They reported that while age and gender were significant influences on cheating behaviour, the mode of study (i.e. on-campus vs. distance learning) was found to be more significant. Research findings assessing academic cheating are mixed, but it appears that males are more likely to self-report cheating (Fisher and Brunell 2014). There has also been found to be a moderate gender difference in attitudes toward cheating, with women reporting more negative attitudes towards it than men (Fisher and Brunell 2014; see also Becker and Ulstad 2007). Looking at other gender differences in the academic field, Jurajda and Münich (2011) studied multiple university entrance exams and found that women do not shy away from applying to institutions that are more competitive. Interestingly, men outperform women in entrance exams for the more prestigious

institutions, while no such differences exist for exams for the less competitive schools. Meanwhile, Ors et al. (2013) found that males outperformed females on highly competitive tests, while it was the other way around in tests with low competitive levels.

Another strand of the literature suggests that males are generally more confident than females (Correll 2001), which may potentially explain why it seems that females dislike competition more than males do and feel a need to cheat or plagiarise less. On the other hand, while there may indeed be some innate differences between men and women in terms of cheating behaviour, the results of research on gender differences in cheating may also be influenced by the pressure on women to appear better behaved than men (Fisher and Brunell 2014).

We could not find any studies directly and empirically comparing gender differences and plagiarism awareness. Therefore, our baseline research question concerned the differences between males and females in the area of awareness of plagiarism. We focused our research mainly on one individual/personal factor (i.e. gender) and within this variable compared students regarding their social life, place of living (e.g. student residence or parents'/grandparents' home), motivation level for study and working status. We attempted to answer the following basic research questions:

- Are there any differences between males and females concerning awareness of plagiarism?
- Do social life, place of living, motivation for study and working status (our study variables) affect awareness of plagiarism? And are there any differences between males and females within the study variables and awareness of plagiarism?
- Are there any correlations between the study variables and the frequency of plagiarism?

2 Method

2.1 Sample

The paper-and-pencil survey was carried out in the 2015/16 academic year at the University of Maribor in Slovenia. Students from six faculties—two of technical sciences, two of social sciences and two of natural sciences—took part in the questionnaire survey. Students were verbally informed of the nature of the research and invited to freely participate. They were assured of anonymity.

A sample of 139 students (85 males (61%) and 54 (39%) females) participated in the study. Ages ranged from 19 to 36 years, with a mean of 21 years, 7 months ($M = 21.57$ and $SD = 2.164$). More than half (53%) of the participants were technical science students, 23% were social sciences students and 23% natural sciences students. The majority (75.5%) attended traditional courses and the remainder (24.5%) blended learning.

More than half (52.5%) were working at the time of the study. More than two-thirds (70%) were highly motivated to study and 30% less so. More than two-thirds (69.8%) of them indicated a busy social life and more than two-thirds (78.4%) were living with parents/grandparents. One-third of the participants never plagiarised (33.1%), a few more than a third (37.4%) had plagiarised once, and a few less than a third (29.5%) two or more times. The study variables are presented in Table 1.

2.2 Data collection instrument and statistical procedure

The questionnaire contained closed questions referring to (1) general data (gender, age, study level, study area, study method, study motivation), (2) social status (social life, working status, residence), and (3) awareness of plagiarism. The items in groups (1) and (2) represent independent variables (study variables) and those in group (3) dependent variables. The items in the group (3) used a 5-point Likert scale from strongly disagree (1) to strongly agree (5), with higher values indicating stronger orientation.

All statistical calculations were performed using SPSS. Parametric tests were selected for normal and near-normal distributions of the variables. Spearman rank

Table 1 Frequency distributions of the study variables

Gender	Male	85	61%
	Female	57	39%
Study level	Bachelor	118	85%
	Masters	21	15%
Study area	Technical sciences	74	53%
	Social sciences	32	23%
	Natural sciences	32	23%
Way of study	Classic learning	105	75.5%
	Blended learning	34	24.5%
Busy social life	No	42	30.2%
	Yes	97	69.8%
Living with parents/grandparents	No	30	21.6%
	Yes	109	78.4%
Living in a student hall of residence	No	89	65.4%
	Yes	47	34.6%
Motivation for study	Low	41	29.7%
	High	97	70.3%
Working within time of study	No	66	47.5%
	Yes	73	52.5%
Students plagiarised	Never	46	33.1%
	Once	52	37.4%
	Two or more times	41	29.5%

correlation tests were used to measure the degree of association between two variables. Chi Square tests were used to investigate the independence between variables and the investigation of variable relationships was carried out using factor analysis.

2.3 Results

Mean values and standard deviations for responses to awareness-of-plagiarism items are shown in Table 2.

Items 6 and 13 were confirmed to have the highest means (3.12 and 3.01) and were not significantly different to each other at a 5% significance level using Paired—Samples t Test ($t = 0.861$, $p = 0.391$).

Factor analysis using the residuals from regression was performed to identify latent variables that are reflected in the observed variables. A principal-axis factor analysis was conducted on the 12 items (Awareness of Plagiarism Items 1–12) with oblique rotation. Item 13 was eliminated from the analysis because of low correlation with all other items (absolute value of correlation coefficient below 0.11). The determinant of the correlation matrix was 0.007, indicating no problem of multi-collinearity. The Kaiser–Meyer–Olkin measure verified the sampling adequacy for the analysis, KMO = 0.861, and all KMO values for individual items were higher than 0.79. Since the values of KMO testing are higher than 0.5, it can be derived that the factor analysis is suitable for our dataset. The exploratory factor analysis resulted in three factors with eigenvalues over Kaiser's criterion of 1 which together account for 51% of the variance, the first factor explaining 38%, the second 8% and the third 5% thereof. Table 3 shows the factor loadings after rotation. The items that cluster on the same factor suggest that factors can be interpreted as

Table 2 Mean values and standard deviations for responses to awareness-of-plagiarism items

Awareness-of-plagiarism item		Mean	SD
1	I do not believe that plagiarism is unethical	2.46	1.15
2	My parents accept that I plagiarise	2.01	0.99
3	I do not know what plagiarism is	1.66	1.00
4	I do not know that plagiarism is a form of cheating	1.80	1.09
5	I do not know that there are different types of plagiarism	2.29	1.10
6	Everybody is doing it	3.12	1.13
7	Plagiarism is nothing wrong	2.25	0.98
8	I am not aware of doing it	2.34	0.99
9	It hurts no one	2.74	1.03
10	I feel good when plagiarising	2.17	0.96
11	I do not care	2.41	0.98
12	I just dare to plagiarise	2.37	1.08
13	There is no or low awareness of plagiarism at the country level	3.01	1.05

Table 3 Factor loadings

Awareness-of-plagiarism item		Factor 1	Factor 2	Factor 3
1	I do not believe that plagiarism is unethical	0.58		
2	My parents accept that I plagiarise	0.55		
3	I do not know what plagiarism is		0.72	
4	I do not know that plagiarism is a form of cheating		0.79	
5	I do not know that there are different types of plagiarism		0.53	
6	Everybody is doing it			− 0.33
7	Plagiarism is nothing wrong	0.75		
8	I am not aware of doing it		0.68	
9	It hurts no one			− 0.36
10	I feel good when plagiarising			− 0.55
11	I do not care			− 0.98
12	I just dare to plagiarise	0.37		− 0.46
	Percentage of variance explained	38	8	5
	Cumulative percentage of variance explained	38	46	51
	Cronbach alpha	0.76	0.79	0.81

Only loadings of absolute value > 0.3 are shown

acceptability of plagiarism (first factor has characteristics observable in items 1, 2, 7 and 12), *unknowingness of plagiarism* (second factor has characteristics observable in items 3, 4, 5, and 8), and *responsibility towards plagiarism* (third factor has characteristics opposite to what observable in items 6, 9, 10, 11 and 12 measure). Factor score coefficients were used to determine factor scores for each observation on each factor. Students who are aware of plagiarism but do not consider it wrong or unethical are expected to have a high Factor 1 (acceptability) score; students with a high Factor 2 (unknowingness) score do not have enough knowledge about plagiarism or are unaware of using it; while high Factor 3 (responsibility) scores indicate students who are aware of plagiarism and find plagiarism wrong. The index of reliability (Cronbach alpha) is 0.87. For the acceptability sub-scale, the alpha is 0.76, for the unknowingness sub-scale 0.79 and for the awareness sub-scale 0.81.

Next Independent—Samples t-Test to search for significant differences in responses for each individual item between males and females was performed. Statistically significant differences were revealed for Items 1, 3, 4, 8, 10, 11 and 12 (higher for males than females; see Table 4). Accordingly, males and females differed significantly with regard to unknowingness (Factor 2) and awareness (Factor 3) identified by factor analysis, with males in general having higher Factor 2 scores and lower Factor 3 scores than females. No significant differences in Factor 1 scores according to gender were found (see Table 5). The correlations between gender and the various factors were also confirmed using Spearman correlation tests (see Table 6).

Table 4 Descriptive statistics for items referring to the awareness-of-plagiarism, by gender and results of the *t*-test

Awareness-of-plagiarism item		Male		Female		*p*
		Mean	SD	Mean	SD	
1	I do not believe that plagiarism is unethical	2.64	1.23	2.17	0.94	*
2	My parents accept that I plagiarise	2.06	1.00	1.93	0.97	
3	I do not know what plagiarism is	1.80	1.06	1.44	0.86	*
4	I do not know that plagiarism is a form of cheating	2.01	1.19	1.48	0.84	**
5	I do not know that there are different types of plagiarism	2.36	1.14	2.19	1.03	
6	Everybody is doing it	3.16	1.15	3.06	1.11	
7	Plagiarism is nothing wrong	2.29	0.98	2.20	0.98	
8	I am not aware of doing it	2.47	1.03	2.13	0.89	*
9	It hurts no one	2.83	1.07	2.59	0.96	
10	I feel good when plagiarising	2.35	0.97	1.89	0.86	**
11	I do not care	2.58	0.94	2.15	0.98	*
12	I just dare to plagiarise	2.54	1.09	2.11	1.02	*
13	There is no or low awareness of plagiarism at the country level	2.98	1.07	3.07	1.03	

* $p < 0.05$; ** $p < 0.01$

Table 5 Descriptive statistics for factor scores by gender and results of the t-test

	Male		Female		*p*
	Mean	SD	Mean	SD	
Factor 1	0.08	0.89	− 0.13	0.91	
Factor 2	0.17	0.96	− 0.26	0.76	**
Factor 3	− 0.17	0.92	0.26	0.93	*

* $p < 0.05$; ** $p < 0.01$

Table 6 Correlations between study variables and factors

	Factor 1	Factor 2	Factor 3
Gender	− 0.13	− 0.22**	0.21*
I have a very busy social life	0.19*	− 0.01	− 0.12
I live with my parents/grandparents	0.21*	0.13	− 0.08
I live in a student residence	0.07	0.11	0.04
Motivation for study	− 0.14	− 0.22*	0.15
I also work within time of study	0.01	− 0.02	− 0.01

* Correlation is significant at the 0.05 level

** Correlation is significant at the 0.01 level

In order to establish the relationship of gender (coded as 0 for "male" and 1 for "female") and selected study variables listed in Table 6 (coded as 0 for "no" and 1 for "yes") with the factors, we calculated Spearman correlation coefficients (see Table 6).

Gender has a weak but significant negative correlation with Factor 2 (− 0.22) and a weak but significant positive correlation with Factor 3 (0.21). The negative correlation with Factor 2 indicates male students to be in general less educated about plagiarism than female students, while the positive correlation with Factor 3 shows more frequent plagiarism among male than female students although they know it to be unethical. The significant positive correlation of having very busy social life with Factor 1 (0.19) indicates that students with a very busy social life are more likely to believe that plagiarism is acceptable. The same conclusion can be derived for students living with parents or grandparents (significant positive correlation with Factor 1). The negative correlation of motivation for study with Factor 2 (− 0.22) indicates that highly motivated students are in general better educated about plagiarism than poorly motivated ones.

Further, a two-way ANOVA was performed to test whether there is an interaction between gender and each individual study variable (independent variables) on each individual factor identified by factor analysis (dependent variables). Since none of the interaction terms (gender * study variables) was significant, we conducted all pairwise comparisons based on estimated marginal means to search for significant mean differences of factor scores between males and females. There were no significant mean differences on Factor 1 scores. Factor 2 scores were confirmed to be significantly higher for males than females in four groups, i.e. the group of students with very busy social life, the group of students living with parents/grandparents, the group of students not living in a student residence and the group of students working during their time of study. On the other hand, Factor 3 scores were confirmed to be significantly lower for males than females in the exact same groups of students. Hence the analysis showed that male students in these groups are in general less educated about and less aware of plagiarism than female students from the same group (the results are presented in Table 7).

Finally, Chi Square tests of Independence were performed to determine whether there was a significant match between the study variables and the frequency of plagiarism. A significant difference in frequency of plagiarism was confirmed (Chi Square = 7.242, $p = 0.027$) only between students with very busy social life and other students (plagiarism is more common among students with very busy social lives). The relationships between variables can be seen in Table 8. Gender differences in the frequency of plagiarising were not confirmed.

3 Discussion

In considering the results collected within the empirical research, we found that there were certain differences between males and females regarding awareness of plagiarism. Statistically significant differences were discovered for the items "I do not believe that plagiarism is unethical", "I do not know what plagiarism is", "I do

Table 7 Mean differences of factor scores between males and females

	Factor 1	Factor 2	Factor 3
I have a very busy social life			
No	− 0.19	0.28	− 0.28
Yes	0.37	0.49*	− 0.48*
I live with my parents/grandparents			
No	− 0.17	− 0.30	− 0.11
Yes	0.33	0.62*	− 0.51*
I live in student residence			
No	0.31	0.52*	− 0.62*
Yes	0.01	0.27	− 0.03
Motivation for study			
Low	− 0.03	0.51	− 0.42
High	0.28	0.35	− 0.37
I also work within time of study			
No	0.16	0.42	− 0.29
Yes	0.25	0.43*	− 0.58*

* The mean difference is significant at the 0.05 level

Table 8 Cross-tabulation of social life with plagiarism (N = 139)

	Students plagiarised			
	Never	Once	2 or more times	Total
I have a very busy social life (friends, parties, etc.)				
Yes	26.8% (26)	38.1% (37)	35.1% (34)	100.0% (97)
No	47.6% (20)	35.7% (15)	16.7% (7)	100.0% (42)
Pearson Chi Square 7.242				
Asymptotic significance (2-sided) 0.027				

not know that plagiarism is a form of cheating", "I am not aware of doing it", "I feel good when I plagiarise", "I do not care" and "I just dare to plagiarise". In all of these items, higher average values are seen for males (Table 4). The differences in estimates of the arguments relating to the awareness of plagiarism are characteristic for items covering the belief that plagiarism is nothing controversial in the behaviour of students. Based on the results, we can say that women generally have a much more negative attitude towards plagiarism than men do. Bowers (1964) also found that academic dishonesty in faculties was more prevalent among men than women. While most studies replicate this early finding (e.g. Jensen et al. 2002), however, non-significant results are also present in the literature (e.g. Yardley et al. 2009), while other studies (e.g. Graham et al. 1994) even indicate that women cheat more often than men do. One possible explanation for these differences is that men and women engage in distinct forms of dishonesty (Yardley et al. 2009). Indeed, when scholars break down academic dishonesty, gender differences often emerge. For instance, although data gathered by Thorpe et al. (1999) initially indicated that men cheated more often than women did, further analyses revealed gender

differences present only for turning in a plagiarised paper. We believe that differences between men and women are the result of different global mind-sets, i.e. that men are more competitive, aggressive, and willing to take risks and to break rules than women are. This is also evident in the field of plagiarism: the fact that the male population in our sample dares to plagiarise more can simply be seen in the higher average value for men found under "I just dare to plagiarise". As already mentioned in the introduction women tend to be more participatory, sensitive and less likely to break rules than men are. Consequently, they also tend to have a more negative attitude towards plagiarism.

For further research, we clustered students into three groups according to awareness of plagiarism. The first was the group of students who are aware of plagiarism but do not consider it wrong or unethical (Factor 1—"acceptability"), the second the group unaware of plagiarism (Factor 2—"unknowingness") and the third the group aware of plagiarism and considering it wrong (Factor 3—"responsibility"). Gender was seen to have a weak but significant correlation with Factors 2 and 3. The negative correlation with Factor 2 (− 0.22) indicates male students to be in general less educated about plagiarism than female students, while the positive correlation with Factor 3 (0.21) points to more frequent plagiarism among male than female students although they both know it is unethical.

Social skills are one of the most important indicators of an individual's social competence, and these skills form a connection between the individual and the environment, allowing a person to be a part of the community (Beauchamp and Anderson 2010). According to Wheeler et al. (1983), men and women differ greatly in their levels of social skills, with women being generally more socially responsive, empathic and intimate than men. Female and male students have different gender characteristics as a result of cultural influences on their upbringing and socialising processes (Lekaviciene and Antiniene 2012; Ozben 2013). Thus, compared to men, women are generally better at developing close relationships, in opening up about themselves to friends and in expressing their emotions (Deniz et al. 2005; Wheeler et al. 1983). For the purposes of our research, we also separated students into two group those with very busy social lives and those without. We found differences between men and women mostly in the group with very busy social lives. The significant positive correlation between having a very busy social life and Factor 1 (0.19) indicates that students with a very busy social life are more likely to believe that plagiarism is acceptable (Table 6). Our research also revealed that plagiarism is more common among students with a very busy social life (Table 8). Differences between males and females with very busy social lives could also be seen in Factors 2 and 3 (Table 7). Male students with a very busy social life had less knowledge about plagiarism and were less responsible towards plagiarism than female students with a very busy social life. Very similar results were seen for the group of students who lived with and were supported by their parents or grandparents. Students living with their parents or grandparents were more likely to believe that plagiarism is acceptable (Table 6). Male students who live with and are supported by their parents or grandparents had less knowledge about plagiarism and were less responsible towards plagiarism than female students (Table 7). The same holds true for male students who work during their studies. The lives of students during their

studies, before entering the working environment, may be relatively relaxed and full of social interactions with peers. Our research showed that just as social life plays an important role in terms of attitude towards plagiarism, so living with parents/grandparents and being supported by them also cannot be ignored. Problems that can occur due to a very busy social life in this period are associated with poorer academic achievement, or in the worst case even failure to complete studies. Our survey suggests that there are indeed differences between men and women in terms of cheating and plagiarising and that women tend to be more honest, fair and less likely to cheat.

Students' goals and perceptions of their work on a particular learning task play a significant role in determining their motivation as well as the strength of individual motives (Kosonen 2010; Shachar and Fischer 2004). Gender differences in the psychological characteristics of students affecting their ability to study are the result of complex factors and of the interaction between internal and external factors (Gang and Guiyang 2000). Intrinsic motivation refers to doing something because it is inherently interesting or enjoyable while extrinsic motivation refers to doing something because it leads to a distinct outcome or reward (Ryan and Deci 2000). A person is always in a state of motivation that is affected by his or her goals, motivational orientation or direction, earlier experiences, knowledge and skills, emotions, social interaction, and attitude (Kosonen 1996). Motivation for the purposes of this study was divided into two levels: low and high motivation for study. We found a negative correlation between motivation for study and Factor 2 (-0.22), which indicates that highly motivated students are in general better educated about plagiarism than poorly motivated ones. The level of students' motivation for study is clearly one of the basic preconditions for progress in their studies. People primarily follow the internal factors of motivation, which are considered to be the most powerful attributes. However, the external factors of motivation also play an important role and affect an individual in relation to his or her baseline needs and desires. Connecting the level of motivation to study with the factors of plagiarism awareness again show the male population to be more prone to cheating. The reasons for this may lie in the different characteristics of men and women described in the introduction.

Another socio-economic factor that was researched was students' work status during their studies. Male students working during their studies were found to have less knowledge about plagiarism and to be less responsible towards plagiarism than working female students.

The data on gender differences in academic dishonesty remain inconclusive. Females have consistently reported lower cheating rates than males in colleges (Davis et al. 1992; Smyth and Davis 2004; Brown and Choong 2005). Males have reported having cheated more than females did and to have more positive attitudes towards cheating than females did (Whitley et al. 1999). Males have also tended to report using fraudulent excuses more frequently than females did (Roig and Caso 2005). In contrast, according to Crown and Spiller's review (1998) of empirical research on collegiate cheating, studies published after 1982 did not find significant gender differences, while Roig and Caso (2005) also reported no significant difference in plagiarism between the genders. Despite these research findings, we

did find a clear difference between men and women regarding plagiarism awareness connected with specific socio-economic factors.

The analysis of the results also indicates a poor overall understanding of plagiarism, a point also made by other authors (e.g. Ramzan et al. 2012; Power 2009; Moore and Davies 2009). The study by Ryan et al. (2009), for example, revealed deficiencies in students' awareness and knowledge about plagiarism at the University of Sydney: most of the students did not perceive plagiarism to be a grave threat to academic integrity, while the study found that the majority of the students were involved in it and were not citing source materials properly. On the other hand, Dawson and Overfield (2006) found that students were aware that plagiarism was wrong but were not clear on what constitutes plagiarism and how to avoid it.

On balance, it appears that men are more susceptible to academic cheating. As we have already noted, men and women differ in their levels of social skills, which is inextricably linked both to the way they conduct their social lives and at the same time to their attitudes towards cheating in general and plagiarism in particular. In our opinion, socialisation during education is a crucial component that contributes to the growth of a young person. And in this it is not only parents that play an important role: educators too share the responsibility for students' behaviour as they are responsible for helping to create a study environment that does not permit dishonesty, cheating and plagiarism. In addition, educators need to instruct students on the definition of academic dishonesty and ethics in general.

We should also remember that students in higher education come from diverse backgrounds and have different knowledge levels. Regardless of the group students belong to, it is important that they become familiar with the basics of ethics, academic dishonesty and plagiarism. This is an important component of the issue that universities should consider.

Regardless of the gender our recommendation to reduce plagiarism is to teach both students and teachers about plagiarism and how to avoid it. This should involve teaching students not only about ethics and intellectual property, but also the pragmatic skills of how to cite, summarise and paraphrase and how to use software for automatic referencing and citing. Librarians could lead this part of education.

Next, universities should implement a clear plagiarism policy and be strict in executing sanctions. The policy should be published in a student handbook and be accessible through the university website. Perhaps the general public and higher education institutions could also contribute to the knowledge of young people about plagiarism through their social networks. One step towards such awareness is clearly the responsibility of universities and their teachers, but society as a whole should also be educating young people to become responsible and helping them develop an ethical sensibility that would discourage them from cheating. It is important that young people understand academic dishonesty and understand it to be a problem: every student should know the definition of plagiarism and should be aware that plagiarism is an offence in the academic environment. The range of information and communication technologies and the scope of the internet are enormous, so students should be aware of ways of using information obtained from various different websites; in addition, they need the knowledge to distinguish

"good" information from "bad". They also need to be familiar with the correct use of citations from printed material texts and websites.

Ultimately, however, the most basic point is that students should be aware that if they borrow anything from the work of another author (text, pictures, etc. from articles, books, e-books, expert reports, etc.), it is necessary to adequately cite the author and that if they do not know how to do so, it is their responsibility to learn. Even the re-use of one's own work needs to be cited, else it may be considered "self-plagiarism". Every student should be proud of his or her own work and should be able to defend it confidently. However, there will always be those who will plagiarise despite having all the relevant knowledge and guidance. Therefore, universities and other educational institutions will probably continue using plagiarism-detection software. The study by Ryan et al. (2009) also recommended creating a balance of prevention, detection and punishment for plagiarism cases. Moreover, other authors (Townley and Parsell 2004) recommend that the best way to reduce plagiarism is to proactively teach students and deploy technologies to help them to avoid it instead of using plagiarism-detection software.

4 Conclusion

Students' awareness of academic integrity and honesty plays a major role in determining their attitudes towards plagiarism. Therefore, it is a key task of both the educational system and society in general to educate young people about morality and ethics during their adolescence. When students enter the higher education system, they already have a certain system of values. At this point, teachers and the general academic setting have to promote the level of integrity in a manner that will clearly acknowledge the regulated area.

Our study revealed some differences between men and women in their attitudes towards plagiarism which may be the result of specific personal characteristics of men and women, not only in the field of education but later also in the field of working life and life in society in general.

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