

**The Integration of Rational Choice and Self-Efficacy Theories: A Situational Analysis of
Student Misconduct**

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Abstract

Research on the causes of student misconduct in higher education has largely overlooked the values of integrating individual and situational perspectives to structure empirical examinations. Such research has important implications for the prevention and management of academic misconduct by higher education institutions. In this study perceptual deterrence (Piquero & Pogarsky, 2002; Stafford & Warr, 1993) and self-efficacy (Bandura, 1997) theories were adopted to model the impact of situational factors and individual differences on students' intentions to engage in plagiarism. A questionnaire using a scenario method and manipulating the situational deterrence variables of the certainty and severity of sanctions was administered to 536 undergraduate university students. Analysis of covariance results indicated that the objective manipulations of the certainty and severity of sanctions had no effect on intentions to engage in plagiarism. However, Tobit regression results indicated that both situational perceptions of costs and benefits, and academic self-efficacy were significant predictors of intentions to engage in plagiarism. Furthermore, academic self-efficacy was found to moderate the effects of deterrence perceptions on intentions to engage in plagiarism. The results highlight the significance of the interaction between situational and individual characteristics on decisions to engage in deviant behavior. Implications for the management of misconduct in higher education institutions are discussed.

Keywords: Academic Misconduct; Plagiarism; Rational Choice; Perceptual Deterrence Theory; Self-Efficacy.

Available evidence consistently indicates that academic misconduct is highly prevalent among higher education students (McCabe & Trevino, 1993, 1997; McCabe, Trevino, & Butterfield, 2001; Newstead, Franklyn-Stokes, & Armstead, 1996). Academic misconduct should not be viewed as a trivial form of deviant behaviour, as it has the potential to produce lasting repercussions for individuals and institutions. At an individual level, engagement in misconduct has the potential to compromise student learning, where knowledge may be deficient for future occupational roles or advanced study. At an institutional level, misconduct threatens the equity and efficacy of educational assessment, and harms the reputation of educational institutions. Furthermore, misconduct may harm the integrity of the future workforce, where those who engage in misconduct may be more likely to engage in misconduct in their future occupational roles (Harding, Passow, Carpenter, & Finelli, 2004; Haswell, Jubb, & Wearing, 1999; McCabe, Butterfield, & Trevino, 2006).

While there is an extensive body of empirical research examining the causes and prevalence of academic misconduct among students in higher education institutions (Crown & Spiller, 1998; Whitley, 1998) only a limited number of attempts have been made to apply criminological theories as frameworks to guide investigations (For example see, Bolin, 2004; Cochran, Chamlin, Wood, & Sellers, 1999; Nagin & Pogarsky, 2003; Smith, Davy, Rosenberg, & Haight, 2002; Tibbetts, 1998, 1999; Vowell & Chen, 2004). However, attempts to model misconduct from criminological frames of reference have failed to incorporate individual-level constructs with direct theoretical and empirical relevance to academic contexts, instead relying on generalized constructs of individual-differences, such as self-control. Investigations into the causes of student academic misconduct have focused on the roles of individual differences in identifying those most likely to engage in misconduct at the expense of neglecting the

situational aspects of the educational environment that facilitate fraudulent academic behavior. Criminological theories have the potential to model academic misconduct at multiple levels of analysis, including individual propensities, social processes and situational perspectives. Situational and contextual factors embedded in learning environments have been found to be powerful explanatory variables of student academic misconduct above individual characteristics, which highlights the problems that may arise in attempting to model misconduct solely from individual differences perspectives (McCabe & Trevino, 1993, 1997; Murdock, Miller, & Kohlhardt, 2004; Nagin & Pogarsky, 2003; Passow, Mayhew, Finelli, Harding, & Carpenter, 2006; Pulvers & Diekhoff, 1999).

The present study sought to examine student academic misconduct at both individual and situational levels of analysis using the frameworks of self-efficacy theory (Bandura, 1997) and the rational choice model of perceptual deterrence theory (Piquero & Pogarsky, 2002; Stafford & Warr, 1993). While there have been previous attempts to integrate individual and situational levels of analysis in the study of academic misconduct (e.g., Nagin & Paternoster, 1993), few studies have made use of individual-level constructs with direct relevance to academic settings. Therefore, the primary aim of the present study was to improve knowledge concerning how individual differences and situational factors interact to influence engagement in misconduct, using individual-level constructs directly relevant to explaining academic behaviour (i.e., academic self-efficacy to explain plagiarism). Specifically, this research addressed three research questions;

1. Does the certainty and severity of punishment impact students' reported likelihood of plagiarism?

2. Do students' perceptions of the sanctions and benefits associated with being caught plagiarising impact on their reported likelihood of plagiarism?
3. Do students' academic self-efficacy perceptions contribute to their reported likelihood of plagiarising while controlling for their perceptions of the associated sanctions and benefits?
4. Do students' perceptions of sanctions and benefits vary across levels of academic self-efficacy?

Plagiarism

Academic misconduct refers to a diverse range of behaviors that are performed in academic settings to undermine the educational process, and include but are not limited to acts of plagiarism, cheating, fabrication of data or research, unauthorised collaboration and false allegations of misconduct (Park, 2004). The present study focused on the specific behavior of plagiarism in order to clearly define the form of misconduct being examined and promote the generalisability of results. Plagiarism itself covers a diverse range of academic actions that center around the appropriation of another author's words or ideas without proper acknowledgement, excluding words or ideas regarded as general knowledge (Park, 2004). Park (2004, p. 475), argues that there are four main types of plagiarism: 1) the theft of information from another source to pass it off as one's own without proper acknowledgement; 2) passing off and submitting an assessment item as one's own that was written by another individual; 3) directly copying information from a source without proper documentation to give the impression

the information was paraphrased; and 4) failing to provide appropriate documentation for sourced information that was paraphrased. The seriousness of plagiarism acts vary along a continuum, ranging from minor infractions (e.g., copying a couple of words without paraphrasing), to more serious infractions (e.g., stealing another student's paper and passing it off as one's own without proper acknowledgement). The present study examined plagiarism in relation to written assessment in higher education settings, ranging on a continuum from less serious to serious infractions.

Theoretical Models

Rational Choice Theories

Rational choice theories operate on the principle that individuals are rational beings with limitations, and are able to weigh up the risks, benefits and effort associated with particular courses of behaviour in specific situations (Clarke & Felson, 1993). Deviant behaviour is viewed as nonpathological, since behaviour is argued to be a direct product of decisions based on cost-benefit analyses of situational circumstances (Cornish & Clarke, 1986). Decisions to engage in specific courses of action are motivated in part by individual needs (Clarke & Felson, 1993; Cornish & Clarke, 1986). All deviant behaviour is argued to a function of individuals' subjective calculations of the costs and benefits associated with the perceived consequences of behavior within a situational context (Clarke & Felson, 1993).

Academic misconduct can be conceptualised as a form of nonpathological deviant behavior performed to obtain benefit, with the most salient benefits likely to be increased marks

and less time spent completing academic tasks. The adoption of the rational choice perspectives allows for an examination of the situational and perceptual-cognitive processes that operate to impact on students' decisions to engage in misconduct. Grounding in the rational choice perspective allows for an examination of how situational and perceptual-cognitive processes differ between individuals more or less likely to engage in misconduct in academic settings.

Perceptual Deterrence Theory. The key thesis of the perceptual deterrence model posits that there is an inverse relationship between threat perceptions and engagement in deviant behaviour (Paternoster, 1987). The three primary threat perceptions that influence whether an individual will engage in deviant behaviour include perceptions of sanction certainty, severity and celerity. All threat perceptions are shaped through direct and indirect experiences of punishment and avoidance of punishment (Stafford & Warr, 1993). Perceptions of certainty refer to beliefs about the likelihood of being caught and punished for a deviant act, severity refers to beliefs concerning the magnitude of punishment, and celerity refers to beliefs about the imminence of punishment (Nagin & Pogarsky, 2001; Paternoster, 1987). Individuals estimate the risks (certainty, severity and celerity of punishment) of engaging in deviant behaviour from a variety of sources of information both temporally and proximally related to the deviant act and the context it is situated within. Such perceptions are subjective and situationally specific, rather than being based on an objective reality. It is assumed that rational individuals will estimate the expected utility of a deviant act from perceptions of the certainty, severity and celerity of sanctions in a given situation, where engagement in the act will be more likely when the expected utility is greater than the risk and severity of sanctions (Becker, 1968).

Available empirical research indicates that perceptions of the certainty of punishment are consistently the strongest determinants of deterrence from deviant behaviour when compared to

both perceptions of severity and celerity (Paternoster, 1987). Previous research indicates that students are less likely to engage in misconduct when there is a high certainty that deviant behaviour will be detected (Bunn, Caudill, & Gropper, 1992; Covey, Saladin, & Killen, 2001; Leming, 1980; McCabe & Trevino, 1997). However, the deterrent effect of perceptions of the severity of sanctions has yet to be supported within the academic misconduct literature, where there is no evidence to indicate that students will be less likely to engage in misconduct when perceptions of severity are high.

Perceived punishments or sanctions can also refer to informal and internally imposed punishments, including rejection from socially significant others and feelings of guilt, embarrassment and shame (Cochran et al., 1999; Grasmick & Bursik, 1990; Nagin & Paternoster, 1993). In recognition of the limited deterrent effects of formal or legal sanctions on deviant behaviour, Grasmick and Bursik (1990) have argued that both attachments to socially significant others and internalised norms operate as potential sources of punishments that vary in certainty and severity to exert their effects on rational decision making in parallel to formal punishments.

Deterrence is argued to be a two stage process involving two distinct links: the first being perceptual, where threatened or actual punishment and other events and experiences influence an individuals' perceptions of the costs and benefits of engaging in deviant behaviour; and the second being behavioural, where an individuals' perceptions of punishment influence their behaviour (Pogarsky, Piquero, & Paternoster, 2004). Perceptions of punishments are dynamic, where they change in response to situational demands and opportunities, individual experiences, and prior consequences of behaviour over time (Pogarsky et al., 2004). This is to argue that the objective nature of the certainty and severity of sanctions in a given situation exert their

influence on behavior through individuals' subjective perceptions of expected utility. However, there is significant heterogeneity across studies in terms of the influence of sanction threats on behavioural intentions within the criminological deterrence literature (Klepper & Nagin, 1989; Paternoster, 1987; Pogarsky, 2002). At present, it is believed that the effects of sanction threats in a given situation are mediated through individuals' subjective perceptions of those risks.

Examining academic misconduct, it may be argued that students' decisions to engage in academic misconduct are partly shaped through perceptions of the risks and benefits involved in such behaviour. These perceptions themselves are likely to be shaped by direct (e.g., plagiarising without being caught) and indirect (e.g., observing a peer plagiarise without being caught) experiences of punishment and punishment avoidance in academic contexts (Stafford & Warr, 1993).

There are a number of studies that have employed the perceptual deterrence model in academic contexts to examine student misconduct. Cochran et al (1999) applied a perceptual deterrence model, focusing on the deterrent effects of internally imposed punishments on decisions to engage in academic misconduct. Academic misconduct was defined broadly with five measures, including lying to instructors, receiving illicit copies of exams, copying another students' exam answers, falsifying term paper information, and plagiarising a term paper. The five dependent measures of misconduct were found to be highly left-censored, and thus were converted into dichotomous variables to represent students who did and did not engage in misconduct. This likely resulted in a significant degree of loss in variation in the dependent measures. Results indicated that the certainty and severity of formal sanctions for engaging in misconduct did not act as significant deterrents of misconduct within the sample. The only sanction threats that emerged to significantly effect students' decisions to engage in academic

misconduct were internally imposed punishments. Students reporting the highest likelihood of experiencing shame as a result of engaging in misconduct reported the lowest frequencies of involvement in misconduct. Further results indicated that students who reported the highest levels of moral condemnation for academic misconduct reported the lowest frequencies of involvement. These results suggest that self-imposed sanctions and perceptions of the wrongness of misconduct are important variables in deterring individuals from committing academic misconduct. It is argued that informal sanction threats from both socially salient others and one's self, vary across levels of certainty and severity and integrate to deter deviant behaviour (Cochran et al., 1999; Grasmick & Bursik, 1990). Therefore, perceptions of both formal and informal sanctions were examined in the present research.

Further support for the application of the perceptual deterrence model to examine academic misconduct in the university context can be derived from a randomised experimental study conducted by Nagin and Pogarsky (2003). The study examined the effects of both the certainty and severity of punishment, and the individual characteristics of preference delay and self-serving biases on the probability of cheating. Participants were randomly allocated to one of four conditions manipulating the certainty and severity of sanctions for cheating: 1) high certainty/high severity; 2) high certainty/low severity; 3) low certainty/high severity; and 4) low certainty/low severity. Results indicated that the probability of engaging in cheating was significantly higher in conditions where the certainty of detection was low when compared to situations where the certainty of detection was high. However, severity was found to have no significant deterrent effect on the probability of cheating.

Nagin and Paternoster (1993) also examined the explanatory power of both individual differences to offend (self-control) and situational factors (certainty and severity of sanctions) in

predicting students' intentions to commit three offences (drink-driving, theft, and sexual assault). The certainty and severity of sanctions depicted in the scenarios was found to have limited direct deterrent effects on intentions to engage in the three offences. Rather, the deterrent effects of the certainty and severity of sanctions were argued to have impacted indirectly on behavioral intentions to offend through participant's perceptions of the risks and benefits associated with a course of action. Perceptions of greater benefits led to a higher likelihood of engaging in crime, while perceptions of greater costs led to a lower likelihood of engaging in crime. The findings of Nagin and Paternoster (1993) lend support to the notion that situational-level factors affect decisions to engage in deviant behaviour indirectly through perceived expected utility.

The application of a deterrence model of decision-making, encompassing both perceptual and behavioural processes, has the potential to explain significant variance in student misconduct at a cognitive and situational level. We acknowledge that human decision-making is a complex process, involving both temporal (Ariely & Loewenstein, 2000; Ariely & Zakay, 2001; Nagin & Pogarsky, 2001) and emotional (Carmichael & Piquero, 2004) aspects among other factors. Due to the exploratory nature of the study, only the certainty and severity of sanctions were examined in terms of their effects on intentions and perceptions of formal and informal (shame) costs, and benefits.

Self-Efficacy Theory

Self-efficacy is an individual-level, domain-specific construct that has been shown to explain significant variance in students' performance, decision-making and effort and persistence in

completing academic tasks (Linnenbrink & Pintrich, 2003; Multon, Brown, & Lent, 1991; Murdock & Anderman, 2006; Pajares, 1996, 2003; Schunk, 1991, 2003; Zimmerman & Bandura, 1994; Zimmerman, Bandura, & Martinez-Pons, 1992). Self-efficacy beliefs refer to individuals' judgments of their knowledge and abilities that are necessary to execute and perform given courses of action in order to obtain designated levels of performance (Bandura, 1986, 1997). Thus, self-efficacy beliefs are argued to mediate the links between knowledge, skills and action, where individuals are unlikely to perform an action if they do not believe that they can achieve a desired outcome. Academic self-efficacy is specific to educational domains, and refers to an individual's judgments of their abilities to adequately perform prescribed academic tasks to a specified level (Gore, 2006). Students' academic self-efficacy beliefs have been consistently demonstrated to explain academic motivation and attainment in excess of academic skills, where academic skills alone are insufficient to explain academic outcomes (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Zimmerman & Bandura, 1994). Low academic self-efficacy is likely to impede effective learning and academic processes, which serves to increase the probability an individual will engage in deviant academic behaviours to obtain a desirable outcome or level of performance.

Low academic self-efficacy beliefs have been found in previous research to be significant predictors of engagement in various forms of academic misconduct among university students (Finn & Frone, 2004; Marsden, Carroll, & Neill, 2005). However, at present there have been no attempts to examine the possible interactions between the situational aspects of the certainty and severity of sanctions and student self-efficacy beliefs, and the effects such interactions may have on intentions to engage in academic misconduct.

The Integration of Self-Efficacy and Rational Choice Theories

Contemporary empirical research on perceptual deterrence and rational choice models has highlighted the importance of examining how the effects of sanction threats on deterring deviant behaviour vary across individuals and contexts (Carmichael & Piquero, 2004; Nagin & Paternoster, 1993; Nagin & Pogarsky, 2003; Piquero & Tibbetts, 1996; Pogarsky, 2002; Wortley, 1996; Wright, Caspi, Moffitt, & Paternoster, 2004). For example, in the study conducted by Nagin and Paternoster (1993), results suggested that low self-control (Gottfredson & Hirschi, 1990) had both direct and indirect positive associations with intentions to engage in theft, drink driving and sexual assault. In terms of the indirect effect, results suggested that participants with low self-control perceived the benefits of offending as more valuable and the costs as less aversive, which in turn was associated with stronger intentions to offend. Further evidence supporting the utility of integrating individual differences and situational perspectives in understanding the variable effects of sanction threats across individuals and contexts can be derived from the study conducted by Piquero and Tibbetts (1996). Their results indicated that low self-control had both direct and indirect effects on intentions to engage in shoplifting and drink driving. The indirect effects of low self-control were argued to be mediated by situational perceptions of pleasure and shame but not perceived sanctions. Wright et al (2004) also found the effects of sanction threats on intentions to offend to vary according to the individual-level construct of self-control.

Collectively, these studies provide support for the argument that the effects of sanction threats on intentions to offend are partly mediated by individual-level characteristics. Mediation

refers to a relationship where an independent variable (e.g., self control) does not have a direct relationship to a dependent variable (e.g., behavioural intentions), but rather exerts its effects on the dependent variable by impacting on a third, or mediational variable (e.g., perceptions of costs and benefits), which in turn affects the dependent variable.

Research studies that have incorporated individual differences in propensities to offend into situationally-based deterrence examinations of deviant behaviour in academic settings have mainly adopted criminological constructs, such as self-control (Nagin & Paternoster, 1993; Piquero & Tibbetts, 1996; Smith, 2004; Wright et al., 2004) for example. The incorporation of individual-level constructs with proven predictive validity and reliability in academic contexts to situational examinations of student misconduct has the potential to significantly increase the explanatory power of analyses in identifying those individuals at greater risk of engaging in misconduct and situations that facilitate involvement in misconduct.

One of the aims of the study was to explore whether the effects of the certainty and severity of sanctions on intentions to engage in misconduct vary across self-reported levels of academic self-efficacy (i.e., an interactive effect). No studies have examined this type of interaction in academic contexts. Both rational choice and self-efficacy theories are cognitive models of human decision-making. Self-efficacy theory moves beyond the rational choice perspective by recognising that not all decisions are based on utility maximisation. Instead, the model views decision-making partly as a function of how individuals appraise their own abilities to complete a task to a desired level of performance. These two theories may be integrated in several different ways.

Similar to Wright et al (2004), it is proposed that the deterrent effects of sanction threats vary according to individuals' motivational characteristics. In contrast to deterrence theories, it

is argued that the propensity or motivation to engage in deviant behaviour varies across individuals rather than being constant. Individuals with a high propensity to engage in deviant behaviour are less likely to be deterred from deviant behaviour by threatened punishments. Appraisal of sanction threats is assumed to be a function of both the characteristics of individuals and situations. High propensity individuals are more likely to place greater emphasis on benefits, and neglect threatened punishments associated with a course of action. In contrast, low propensity individuals are more likely to place greater emphasis on threatened punishments and less on potential benefits.

In combining self-efficacy and rational choice deterrence theories, self-efficacy may be viewed as an individual characteristic contributing to the propensity to engage in deviant behaviour. In situations where individuals perceive that they cannot perform a given task, the risks and benefits associated with various course of action will be appraised differently compared to when efficacy beliefs are high. Low self-efficacy beliefs are argued to increase the propensity to engage in plagiarism by increasing individuals' sensitivity to reward and decreasing the salience of threatened sanctions. For example, low self-efficacy students may report stronger intentions to engage in misconduct across all situations compared to high self-efficacy students and report stronger intentions in low certainty and severity of sanctions situations compared to high certainty and severity situations. Similar to low self-control, it may be argued that students with low self-efficacy will perceive greater benefits resulting from engagement in academic misconduct, and perceive sanctions as less aversive. Therefore, it is proposed that the effects of risks and benefits on decisions to engage in academic misconduct will vary according to academic self-efficacy beliefs.

In summary, a rational choice perceptual deterrence model was employed in the present

study that also incorporated aspects of internally imposed sanctions and the individual-level construct of academic self-efficacy. The study sought to address three overarching research questions based on current empirical evidence and the theoretical frameworks of perceptual deterrence and self-efficacy theories:

1. Does the certainty and severity of punishment impact students' reported likelihood of plagiarism?
2. Do students' perceptions of the sanctions and benefits associated with being caught plagiarising impact on their reported likelihood of plagiarism?
3. Do students' academic self-efficacy perceptions contribute to their reported likelihood of plagiarising while controlling for their perceptions of the associated sanctions and benefits?
4. Do students' perceptions of sanctions and benefits vary across levels of academic self-efficacy?

Method

Participants

Participants for the study were undergraduate university students non-randomly recruited across all academic disciplines and year levels within a major university in Queensland, Australia. The 536 participants consisted of 138 (26%) males and 398 (74%) females, with a mean age of 23.00 years ($SD = 7.09$) and age range of 17 to 58 years. The sample was derived from all four academic elements within the university: 49 participants (9.1% of total sample) were from Business; 364 (67.9%) from Arts, Education and Law; 115 (21.5%) from Health; and 8 (1.5%) from Science, Environment, Engineering and Technology. A total of 964 responses to the questionnaire were received. However, students in their first semester of study were excluded ($n = 175$) along with 253 students who did not complete the entire questionnaire. From the final sample, 308 students participated for experimental credit, while all other students received no rewards for participation.

Scenario Design

Four scenarios were developed and randomly allocated to participants to manipulate the certainty of detection and the severity of sanctions to examine their potential deterrent effects on plagiarism. Participants were not informed that scenarios differed across other participants. Certainty had two probability levels of detection (high and low), and severity had two levels of seriousness of sanctions (high and low). High certainty of detection for plagiarism was operationalised through the use of plagiarism detection software and vigilant markers, while low certainty of detection was operationalised by inexperienced markers with low vigilance for plagiarism and a large workload. High severity was operationalised by a stance of zero tolerance

toward plagiarism by the lecturer and adherence to university protocols in dealing with instances of plagiarism. Low severity was operationalised by a sympathetic stance toward student plagiarism by the lecturer. The independent variables (IVs) of certainty and severity were fully crossed, making four scenario conditions: (1) high certainty and high severity; (2) high certainty and low severity; (3) low certainty and high severity; and (4) low certainty and low severity. All scenarios shared a common introduction and characters to limit the variability of information conveyed

The following is an example of the High Certainty-High Severity scenario, with the certainty manipulations in bold and severity manipulations in italics:

Mark's is a first year student at University. He moved to the city to complete a university degree in psychology after completing his high school education. His parents support his career direction, though he sometimes feels that they compare him to his older brother Damien, who is in his final year of a law degree and already lined up a job with a major local law firm. Mark really wants to do well to prove his ability not only to himself, but to his family as well.

Mark lives on campus, and has settled into university life quite well, where he has found a good circle of friends, who are more than willing to help each other out with both personal problems and university work. It is week 10 of second semester, and it seems that everything is due in the next 3 weeks. He has 6 assessment items to complete before study week. For one of his subjects, Introductory Individual and Social Psychology, he has a major essay due in week 11 that he has not started yet.

During the lecture in week 10 for the course, *the lecturer emphasises the significance of the assessment, and the importance of working on it individually.* **She highlights that last year there were some issues with students plagiarising previous students work, and that this years markers will be looking for plagiarised work,** *stressing that such behaviour would not*

be tolerated in her course, with such matters being reported to the Dean or the chair of the assessment board in a formal report in-line with university policy. She also informs the students that a new plagiarism detection software program will be being trialled for the essay, and that the students have to submit their papers electronically. After the lecture, Mark runs into one of his acquaintances, Heather, who is a second year psychology student. Heather offers her assignment that she wrote for the course to Mark as guide so he would know what was needed for a good grade. Week 11 comes around, and Mark still hasn't started the essay because of all the other course work he has had to get done. He decides to copy Heather's essay and submit it, making only a few minor changes to the headings and paragraphs.

Manipulation checks were included to measure the participant's perceptions of the certainty of detection and severity of sanctions. Participants indicated the probability of detection and severity of punishment on two 10-point scales ranging from 0 (no chance of detection/not severe at all) to 10 (100 percent chance/highly severe).

Measurement of Variables

The dependent variable (DV) was the participant's self-report measure of the probability (intention) that they would engage in plagiarism outlined in the scenarios, and was measured on an 11-point from 0 to 10, with 10 indicating a 100% probability.

The independent variables included;

Academic Self-Efficacy. The Academic Self-Efficacy Scale (ASES) consisted of 62-items derived from the two self-efficacy scales of academic regulation efficacy (Devonport & Lane, 2006) and writing efficacy (Zimmerman & Bandura, 1994). Previous research with the writing

efficacy scale indicated that it was internally reliable, with a Cronbach's alpha of .91, while no internal reliability statistics have been reported for the academic regulation efficacy scale. The 62-items of the ASES scale were each measured on a 100-point scale (Bandura, 2006), ranging in 10 unit intervals from 0 indicating 'cannot do at all', to 100 indicating 'highly certain can do'. Higher scores on the scale reflected a greater level of academic self-efficacy.

Perceived Sanctions. Participants were required to answer a number of questions after reading the scenario, with these answers used to create indices of perceived sanctions and benefits. The index of perceived sanctions contained a number of components, where costs could be elicited by both detection by formal authorities and informal detection by socially salient others (Nagin and Paternoster, 1993). The index was adapted from Nagin and Paternoster (1993), who constructed the index to measure participants' estimates of the chances of deviant behaviour being discovered formally (e.g., arrest), and discovered by exposure (e.g., informal social networks). Furthermore, the index also measures participants' perceived consequences (risks) resulting from both formal and informal methods of discovery. A certainty of detection measure was calculated by multiplying the probability of each type of detection by its corresponding risk component. Thus, the index measured both a participants' perception of the probability of being detected engaging in deviant behaviour (formal and informal), and their perception of the consequences resulting from different methods of detection to create a measure of the certainty of risks involved in deviant behaviour. The costs of sanctions were measured through participants' perceptions of the severity of each sanction. The total sanction index was calculated by summing the product of each certainty component and its corresponding severity component. For example, a participant would first be asked what the chance of detection would be by authorities (detection event), followed by a question asking whether the participant would

experience guilt or shame by being detected by authorities (consequences/risk), and finally asked how much of a problem the consequence would be (severity). The method used to calculate the index of total sanctions is displayed in Appendix A. A high score on the index indicated perceptions of greater costs.

Perceived Benefits. A measure of perceived benefits was included, and comprised of five statements of potential benefits of engaging in plagiarism, where participants were required to estimate the probability of obtaining that benefit on a 10-point scale ranging in from 0 indicating ‘no chance at all’ to 10, indicating ‘100 percent chance’. A benefits index was calculated from the sum of each participant’s responses on the five items.

Perceived Shame. A measure of shame was also included to account for internally imposed punishments and costs of engaging in plagiarism (Grasmick & Bursik, 1990). The shame index for both formal and informal discovery was calculated through the product of a binary indicator of shame (yes/no) by the intensity of shame, measured on a 100-point scale ranging in 10-unit intervals from 0, indicating that shame would cause ‘no problem at all’, to 100 indicating that shame would cause ‘a very big problem’.

Prior Behavior. This measure contained 18 questions representing plagiarism that ranged on a continuum of seriousness. Participants indicated on how many times they had engaged in the form of plagiarism outlined in each item during the last completed teaching semester (approximately 6 months) on a seven point scale ranging from ‘Never’ to ‘More than six times’. Participants’ responses to the 18 items were summed to produce a composite scale of previous plagiarism behavior. The composite scale had a minimum of 0, indicating no reported instances of plagiarism, and a maximum of 108 representing engagement in a substantial level of plagiarism.

Demographics. The demographic and academic characteristics of gender, age, and Grade Point Average (GPA) were also collected. GPA was self-reported by participants and ranged from 0 to 7, with seven representing the highest GPA an Australian student may achieve, with four representing a passing average.

Procedure

The questionnaire was administered through an online survey website. Students were recruited through e-mails and advertisements on university websites. Each participant was randomly assigned one of the four scenarios to protect against any selection biases. The questionnaire was completely voluntary and anonymous in order to reduce the effects of social desirability biases.

Results

Descriptive statistics

Intention to Engage in Plagiarism. Sixty-four percent of participants reported a zero probability of engaging in plagiarism. The mean response on the intentions DV was 1.09 (SD = 1.95), while the median response was 0, indicating that the DV was highly skewed and censored at zero. Only 18 participants (less than 1% of participants) reported a probability of engaging in plagiarism greater than 50 percent. In an effort to retain the variability in the measure of plagiarism intentions, the DV was left untransformed.

Prior Behaviour. In terms of previous plagiarism behaviour, 86.9 percent of participants self-reported involvement in some form of plagiarism during the last completed semester, which included both minor (e.g., copying a couple of words without referencing) and serious (e.g., copying another student's assignment without permission) plagiarism infractions. On average participants self-reported engaging in a mean of 8.85 (SD = 9.50) plagiarism instances during the last semester.

Scale Reliabilities. All scales were found to have high internal consistency. The Cronbach's alpha for the scales were: Academic self-efficacy scale ($\alpha = .98$), Perceived sanctions index ($\alpha = .91$), Benefits index ($\alpha = .81$), and Prior behavior ($\alpha = .86$).

Associations among the Variables. To further examine the associations among the variables included in the analyses, Spearman's bivariate correlations were obtained (Table 1). All signs were in the expected directions. The student's age and gender were significantly associated with the intention to engage in plagiarism (DV). Older students and female students were less likely to plagiarise. However, GPA was also significantly related to intention to plagiarise as well as gender and age. The variables most strongly associated with the intention

to engage in plagiarism (DV) were prior behaviour ($\rho = .35$) and shame ($\rho = -.35$). This finding indicated that higher self-reported intentions to engage in plagiarism were associated with higher levels of past self-reported involvement in plagiarism and lower perceptions of shame. The largest correlation ($\rho = .58$) was found between the perceived sanctions and shame indexes, indicating that higher perceptions of greater formal sanctions were associated with higher perceived informal sanctions. This finding suggests that while perceptions of formal and informal sanctions overlap to a degree, they do not fully account for each other.

Insert Table 1 here

Research Question 1: Does the certainty and severity of punishment impact on students' reported likelihood of plagiarism?

To address the first research question manipulation checks for the certainty and severity of sanctions were examined to determine whether participant perceptions of the certainty and severity of sanctions differed significantly across scenario groups. Perceptions of the certainty of detection were found to differ significantly across the two levels of certainty ($t(534) = -4.08$, $p < .0005$), where participants who obtained the high certainty scenarios reported a higher mean perception of the certainty of detection. Perceptions of the severity of sanctions did not differ significantly across the two levels of severity ($t(534) = -1.43$, $p = .15$).

Based on these findings, the certainty of detection was focused on to examine the objective effects of the scenario manipulations on intentions to plagiarise. This resulted in two certainty groups: the high certainty group ($N = 262$), and the low certainty group ($N = 274$). A

one-way ANCOVA was performed using participants' self-reported intention to engage in plagiarism as the dependent variable, with the between subjects factor of certainty group (two levels: high and low certainty). Age and gender were included as covariates. The DV was logarithmically transformed due to its non-normal distribution. Adjusting for the covariates, there was no significant difference in the logarithm of participants' estimated probability of engagement in plagiarism across certainty group, $F(1, 532) = .01, p = .94$.

Research Question 2: Does students' perceptions the sanctions and benefits associated with being caught plagiarising impact on their reported likelihood of plagiarism?

Research Question 3: Does the students' academic self efficacy contribute to their reported likelihood of plagiarism controlling for their perceptions of the associated sanctions and benefits?

To address the second two research questions five Tobit Gaussian distribution models were estimated (Table 2), with intentions to engage in plagiarism as the DV in all models. Tobit models were employed due to the skewed distribution of the DV, to examine the effects of sanction perceptions on intentions to engage in plagiarism in an effort to retain the variance in responses (Osgood, Finken, & McMorris, 2002; Tobin, 1958). All Tobit regression models were estimated using the Survival package for R (Therneau & Lumley, 2008). To examine the role of situational factors in relation to plagiarism intentions, the first model included the variables of perceived sanctions, benefits and shame. The second model included academic self-efficacy. The third model included all demographic, individual-level, and situational-level variables. The final two models were estimated to examine the possible collinear relationship

between shame and sanction perceptions, as indicated by the high bivariate correlation between these two variables ($\rho = .58$). The fourth model included all variables except shame, while the fifth model included all variables except sanctions.

Insert Table 2 here

The first model provided a good fit to the data (Log Likelihood = -707.9) and accounted for a significant proportion of variance in intentions to engage in plagiarism, $\chi^2(3, N = 536) = 75.59, p < .0001$. The variables of perceived benefits and perceived shame were significant predictors of intentions to engage in plagiarism, while perceived sanctions approached significance ($p = .066$). These results indicated that individuals who perceived greater benefits of plagiarism, and reported lower levels of shame were more likely to report stronger intentions to engage in plagiarism. Inspection of the standardized regression coefficients indicated that perceptions of shame had the largest effect on intentions to engage in plagiarism, followed by perceptions of benefits.

The second model included academic self-efficacy without deterrence perceptions. The model fit was adequate (Log Likelihood = -727.8) and accounted for a significant proportion of variance in intentions to engage in plagiarism, $\chi^2(1, N = 536) = 35.93, p < .0001$. Academic self-efficacy emerged as a significant predictor of intentions to engage in plagiarism. This indicated that individuals who had lower levels of academic self-efficacy were more likely to report a higher probability of engaging plagiarism.

The third model included all demographic, individual- and situational-level variables. The model fit was improved over the first and second models (Log Likelihood = -677) and

accounted for a significant proportion of variance in intentions to engage in plagiarism, $\chi^2 (8, N = 536) = 137.75, p < .00$. The variables of GPA, previous involvement in plagiarism, academic self-efficacy, perceived benefits, and perceived shame emerged as significant predictors. This finding indicated that individuals were more likely to report greater intentions to engage in plagiarism if they self-reported a lower GPA, a higher level of past involvement in plagiarism, a lower academic self-efficacy, greater perceived benefits, and lower perceived shame.

Examination of the standardised coefficients indicated that self-reported involvement in past plagiarism had the largest effect, followed by perceived benefits and shame. Compared to the first model, perceived benefits and shame remained significant, while perceived sanctions failed to approach significance. Furthermore, both age and gender did not significantly predict plagiarism intentions, suggesting that the situational- and individual-level variables accounted for age and gender effects on plagiarism intentions.

The fourth and fifth models were both significant. The differences between these two models indicated that perceived shame accounted for most of the variance in intentions to engage in plagiarism that was accounted for by perceived sanctions. Therefore, the results suggested that perceived shame and sanctions were constructs that overlapped to a high degree, with shame being the most powerful predictor of plagiarism intentions.

Research Question Four: Do students' perceptions of sanctions and benefits vary across levels of academic self-efficacy?

To further examine academic self-efficacy as a potential moderator of deterrence perceptions on intentions to engage in plagiarism, a number of analyses were conducted. This

approach was taken to explore the interaction between individual- and situational-level determinants of decisions to engage in misconduct. As highlighted in the literature review, rational choice theories operate on the assumption that decision-making is predominately a utility maximisation exercise. On the other hand, self-efficacy theory assumes that decision-making is largely dependent on subjective judgements of abilities to complete tasks. In integrating the theories, we proposed that evaluation of costs and benefits of engaging in misconduct will vary between individuals based on self-efficacy beliefs.

Rather than create multiplicative terms to examine interactive effects of self-efficacy and deterrence perceptions, a number of models were estimated. This approach was taken to provide a clearer indication of how deterrence perceptions and intentions to engage in plagiarism may vary across distinct levels of self-efficacy. Three additional Tobit regression models were estimated: one for the 107 participants scoring below the 20th percentile on self-efficacy (an ASES score of 317.40 or lower); the second for the 113 participants scoring between the 40th and 60th percentile on self-efficacy (an ASES score between 371 and 432); and the third for the 107 participants scoring above the 80th percentile (an ASES score of 485.20 or higher). Thus, the first model was for low academic self-efficacy, the second for moderate academic self-efficacy, and the third for high self-efficacy. Analysis of variance results indicated that there was a significant difference between the three self-efficacy groups, $F(2, 324) = 12.20, p < .0005$, on the measure of self-reported intentions to engage in plagiarism. Specifically, the low-self-efficacy group self-reported significantly higher intentions to engage in plagiarism when compared to both the moderate (mean difference = .87, SE = .28, $p < .01$), and high (mean difference = 1.37, SE = .28, $p < .0005$) self-efficacy groups. There was no significant difference between the moderate and high self-efficacy groups on plagiarism intentions.

Self-reported intentions were the DVs in all Tobit models, with the variables of age, gender, GPA, previous plagiarism behaviour, perceived formal sanctions, perceived benefits, and perceived shame entered as predictors. Table 3 displays the results of the two models, including the Tobit coefficients, standard errors of the Tobit coefficients, the standardised coefficients, and Chi-squared statistics for both models.

Insert Table 3 here

The low academic self-efficacy Tobit model provided an adequate fit to the data (Log Likelihood = -190.6), with the variables as a set accounting for a significant amount of variance in intentions to engage in plagiarism, $\chi^2 (7, N = 107) = 22.10, p = .01$. Only previous plagiarism behaviour emerged as a significant predictor of intentions to engage in plagiarism for low self-efficacy participants. This indicated that among low-self efficacy participants, individuals who reported higher levels of previous involvement in plagiarism reported a higher likelihood of engaging in plagiarism. None of the remaining variables emerged as significant predictors of plagiarism intentions, indicating that deterrence perceptions had negligible effects on intentions to engage in plagiarism for low academic self-efficacy participants.

The moderate self-efficacy Tobit model provided an adequate fit to the data (Log Likelihood = -158.6). However, the moderate self-efficacy model did not provide as good a fit to the data as the low self-efficacy model. The variables as a set accounted for a significant amount of variance in intentions to engage in plagiarism, $\chi^2 (7, N = 113) = 16.25, p < .01$. The variable of perceived benefits emerged as a significant predictor of plagiarism intentions. Moderate self-efficacy participants who perceived greater benefits were more likely to report

higher intentions to engage in plagiarism. These results indicated that deterrence perceptions did have an impact on intentions to engage in plagiarism for moderate self-efficacy participants.

The high self-efficacy Tobit model provided an adequate fit to the data (Log Likelihood = -89.6), with the variables as a set accounting for a significant amount of variance in plagiarism intentions, $\chi^2 (7, N = 107) = 26.95, p < .0005$. Compared to the low and moderate self-efficacy Tobit models, the high self-efficacy model provided the best fit to the data. The only variable to emerge as a significant predictor was perceived shame, indicating that high self-efficacy participants with higher perceptions of shame were more likely to report lower intentions to engage in plagiarism.

Comparisons of the low, moderate and high academic self-efficacy Tobit models strongly suggest that academic self-efficacy did moderate the effects of deterrence perceptions on intentions to engage in plagiarism. Specifically, the findings indicated that deterrence perceptions impacted on plagiarism intentions only among students with moderate and high levels of academic self-efficacy. Deterrence perceptions did not have any significant effects on low self-efficacy participants' intentions to engage in plagiarism.

Discussion

The present study was the first to examine university student misconduct through the integrated frameworks of self-efficacy and perceptual deterrence in an effort to combine individual- and situational-levels of analysis. In accordance with a growing number of studies emphasising the integration of situational and individual difference perspectives (Nagin & Paternoster, 1993; Nagin & Pogarsky, 2001; Nagin & Pogarsky, 2003; Piquero & Tibbetts, 1996; Wright et al., 2004), the present study examined the effects of individual differences in academic self-efficacy and deterrence perceptions resulting from the manipulation of the certainty and severity of sanctions on intentions to engage in academic misconduct. The psychosocial individual-level construct of academic self-efficacy was utilised as an individual characteristic with proven predictive validity in academic settings of student outcomes, rather than relying on a generalised construct of individual differences (Pajares, 1996; Zimmerman, 2000).

In regards to the first research question, the objective manipulations of the certainty and severity of sanctions through the plagiarism scenarios were found to have no significant effects on intentions to engage in plagiarism. Participants' perceptions of the severity of sanctions did not differ across scenario groups, with perceptions of severity being high for all groups. This may have occurred as a result of levels of severity not being clearly differentiated across the scenarios. Alternatively, it was possible that participants had inaccurate or poorly informed perceptions of the consequences following academic misconduct. Most instances of academic misconduct remain undetected by university authorities, resulting in a situation where few students have direct contact with the formal consequences resulting from detection. Students' perceptions of the severity of sanctions for misconduct may be limited by the lack of

information available from which to construct such perceptions. The result of this limited information may be that students erroneously perceive the sanctions applied to those who engage in misconduct as highly punitive.

Similar to perceptions of severity, increased certainty of detection for plagiarism had no deterrent effect on participants' intentions to engage in plagiarism. The covariates of age and gender were found to be significantly associated with intentions and perceptions concerning plagiarism. It is possible that the null results concerning the situational hypotheses were due in part to the use of the scenario method, and will be explored further in regards to limitations. In summary, the objective manipulation of the certainty of detection had no discernable deterrent effect on participants' intentions to engage in plagiarism. Within the criminological deterrence literature, there is significant heterogeneity across studies in terms of the influence of sanction threats on behavioural intentions (Klepper & Nagin, 1989; Paternoster, 1987; Pogarsky, 2002).

However, in regards to the third research question, results indicated that subjective perceptions of formal sanctions, benefits and shame had significant effects on intentions to engage in plagiarism. Specifically, students who perceived greater formal sanctions and shame reported lower probabilities of engaging in plagiarism, while those who reported greater benefits reported higher probabilities of engaging in plagiarism. The effects of perceived shame and benefits on plagiarism intentions remained after the inclusion of individual-level variables, including academic self-efficacy, self-reported previous involvement in plagiarism and GPA. The significance of shame perceptions is supported by the findings of Cochran et al (1999), where higher levels of perceived shame among students were found to be associated with lower self-reported intentions to engage in academic misconduct.

The significant effects of the deterrence perceptions on plagiarism intentions supports

the argument that deterrence from engaging in deviant behaviour is more likely to be dependent on subjective perceptions of the certainty and severity of sanctions, rather than the objective or actual levels of certainty and severity in a given situation (Nagin & Paternoster, 1993; Paternoster, 1987; Pogarsky et al., 2004). To highlight an earlier point, Pogarsky et al (2004) argue that offender decision-making is a two stage process, with the first being perceptual and the second behavioural. This is to argue that the actual levels of certainty and severity affect individuals' perceptions of the risks and costs of sanctions, which in turn affect individuals' decisions to engage in certain behaviours. It is not the objective nature of the situation itself that influences decisions to engage in deviant behaviour, but rather it is the individuals' subjective perceptions of the costs and benefits associated with engaging in deviant behaviour in a given situation (Pogarsky et al., 2004). In summary, the present results support the existing evidence indicating that perceptions of the costs and benefits of engaging in deviant behaviour have significant effects on behavioural intentions. In addition, the results also highlight the utility of situational factors in explaining student misconduct.

In terms of the third research question, low academic self-efficacy was found to be a significant predictor of higher probabilities of engaging in plagiarism even in the presence of situational-level deterrence perceptions. This finding lends further support to the utility of self-efficacy as a predictor of student misconduct in university settings (Finn & Frone, 2004; Marsden et al., 2005). Addressing the fourth research question, academic self-efficacy was found to moderate the effects of deterrence perceptions on intentions to engage in plagiarism. That is, the effects of deterrence perceptions varied across levels of self-efficacy. Specifically, deterrence perceptions were found to have no effects on intentions to engage in plagiarism among low academic self-efficacy students, but were found to have significant effects on

intentions among moderate and high academic self-efficacy students. Interestingly, the only significant predictor of intentions to engage in plagiarism for low self-efficacy students was previous involvement in plagiarism. This variable did not emerge as a significant predictor of intentions among moderate and high self-efficacy students. This finding suggests that cost-benefit perceptions had limited effects on low academic self-efficacy students' decisions to engage in plagiarism. Furthermore, this finding suggests that low academic self-efficacy students are more likely to have a history of plagiarism that may influence their efficacy perceptions. It is possible that students who have successfully engaged in plagiarism without being caught in the past are more likely to employ plagiarism techniques in the future as a viable method to overcome perceived inefficacies and achieve set goals. Participants' previous experiences avoiding punishment for plagiarism were not examined in the study. It is possible that these experiences have a large impact on individuals' decisions to engage in plagiarism. This variable should be examined in future studies.

Theoretically, self-efficacy judgements are hypothesised to be dependent on and reciprocally interrelated with perceptions of possible outcomes resulting from behaviour (Pajares, 1996). It is possible that low efficacy beliefs in one's ability to perform an action to achieve a desired goal may reduce the deterrent effects of cost perceptions associated with misconduct. The desire to achieve a behavioural goal and its resultant rewards (e.g., complete an assignment and receive a high mark) may be viewed as substantial benefits that outweigh perceived costs, in turn increasing the likelihood an individual will engage in misconduct. However, the present results did not find perceived benefits to be significantly associated with plagiarism intentions among low self-efficacy students. It is likely that the interrelationships among academic self-efficacy, deterrence perceptions and academic misconduct are complex,

with relationships affected by other variables, such as gender. The present results represent an initial attempt to integrate self-efficacy and perceptual deterrence theories to examine academic misconduct, and thus should be viewed as exploratory.

Implications

The present findings have the potential to inform academic misconduct prevention and management initiatives within university settings. Based on these findings, management and prevention initiatives that take both situational- and individual-level factors into account are likely to be most effective. From a perceptual deterrence perspective, strategies aimed at preventing and reducing the incidence of misconduct may focus on the situational context of the university, including increasing the chances for detection of misconduct through such techniques as text-matching software to detect plagiarism (Culwin, 2006). However, such a strategy is only likely to be effective if it affects students' perceptions of the certainty of detection. As the results of the present study suggest, it is not the situational context itself that is important, but rather students' subjective perceptions of the situation that are vital in determining whether one will engage in a given behaviour. For such initiatives as text-matching software to be effective in deterring misconduct, its use would have to be widely advertised among students.

It must be emphasised that situational interventions to reduce or prevent academic misconduct should not be implemented in isolation. As the present results indicate, individual-level factors are also relevant in identifying students most likely to engage in misconduct even

after situational factors have been taken into account. For example, students most at risk for engaging in misconduct (e.g., students with low self-efficacy) may be less amenable to situational interventions and require more intensive individual-level interventions, such as efforts aimed at increasing their self-efficacy to perform academic tasks. Comprehensive prevention measures will necessarily have to address the multi-level causes of academic misconduct in order to be most effective.

Limitations

A number of limitations must be addressed. Most importantly, while the student sample was appropriate for the examination of academic misconduct, the participants were not a random sample of the university population. The present sample was likely to be more representative of female students completing arts-based degrees, since male and non arts-based degree students were under-sampled. The predominance of female participants was not necessarily a limitation, but was rather an approximate reflection of enrolments in the university. It was not possible to determine the response rate to the questionnaire, due to its distribution throughout a large number of students within the university. It is possible that there were systematic differences between those students who completed the questionnaire and those that did not. Despite these limitations, one of the strengths of the present study was its relatively large sample size.

Questionnaire length may have resulted in a degree of fatigue among participants, which may be partly responsible for the large number of participants who did not complete the entire questionnaire. The validity of the situational scenario manipulations may have been affected by

the presence of fatigue, since the scenarios were presented towards the end of the questionnaire.

It is possible that social-desirability may have influenced self-reports of plagiarism involvement and intentions to engage in plagiarism despite the anonymous nature of the questionnaire. Prior research indicates that self-report instruments generally under-report rates of deviant behaviour despite the assurance of anonymity (Johnson & Richter, 2004; Piquero, MacIntosh, & Hickman, 2002). Participants may have under-reported intentions to engage in plagiarism.

A further limitation with the questionnaire instrument may have been the use of the scenario method, which may have limited the ecological validity of the study. The scenario method of data collection has been used in both criminological and academic misconduct research to elicit participant perceptions and intentions to engage in behaviour (Nagin & Paternoster, 1993; Rettinger, Jordan, & Peschiera, 2004; Sierra & Hyman, 2006; Tibbetts, 1998, 1999). The primary criticism of the scenario approach is that expressed intentions to engage in misconduct are not equivalent to actual behaviours. However, it has been argued from the Theory of Planned Behaviour framework that there is a high correlation between an individuals' intention to perform a specific behaviour and actual performance of that behaviour given that intentions are measured in same context the behaviour is to be performed in (Ajzen, 2001, 2002). In measuring research constructs, the scenario method has the advantages of providing realistic and situationally specific contexts from which to elicit responses (Tibbetts, 1999). Furthermore, the scenario method allows researchers to examine the relatively instantaneous effects of independent variables on participants' intentions to engage in deviant behaviour, which is important given that perceptions of costs and benefits are highly variable across time (Grasmick & Bursik, 1990). The use of a scenario method allowed for the simultaneous

estimation of the relationships among objective manipulations of the certainty and severity of sanctions and intentions to engage in academic misconduct. It is possible that the manipulations of the certainty and severity of sanctions lacked ecological validity, which may have contributed to the null result in relation to the deterrent effects of the manipulations.

Finally, a strength of the present study was the use of Tobit analyses. This allowed for the examination of the highly left-censored dependent variable of plagiarism intentions without losing variance through its conversion to a dichotomous variable. Due to the exploratory nature of the present study, further research is needed to examine the interactive effects of both self-efficacy and perceptual deterrence variables on student misconduct.

Conclusion

Research examining the causes of deviant behaviour is placing an increasing emphasis on the integration of multiple theoretical perspectives from different levels of analysis to provide a more comprehensive understanding of the origins of problematic behaviour. The present study represents an initial attempt to integrate the frameworks of perceptual deterrence and self-efficacy theories to examine student misconduct in a university setting. The constructs derived from both theories were found to be effective in identifying individuals most likely to engage in plagiarism. Objective manipulations of the certainty and severity of sanctions were found to have no significant effects on intentions to engage in plagiarism. Supporting perceptual deterrence theory, perceptions of greater costs were associated with lower intentions to engage in plagiarism, while perceptions of greater benefits were associated with higher intentions to

engage in plagiarism. These associations were found to hold in the presence of the individual-level construct of self-efficacy. Self-efficacy was found to moderate the effects of deterrence perceptions on plagiarism intentions. These results highlight the utility of integrating individual- and situational-level perspectives to examine student misconduct.

References

Ajzen, I. (2001). Nature and Operation of Attitudes. *Annual Review of Psychology*, 52, 27-58.

Ajzen, I. (2002). Perceived Behavioral Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behavior. *Journal of Applied Social Psychology*, 32(4), 665-683.

Ariely, D., & Loewenstein, G. (2000). When Does Duration Matter in Judgment and Decision Making? *Journal of Experimental Psychology: General*, 129(4), 508-523.

Ariely, D., & Zakay, D. (2001). A Timely Account of the Role of Duration in Decision Making. *Acta Psychologica*, 108, 187-207.

Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs, New Jersey: Prentice-Hall.

Bandura, A. (1997). *Self-Efficacy: The Exercise of Control*. New York: W.H. Freeman and Company.

Bandura, A. (2006). Guide for Constructing Self-Efficacy Scales. In F. Pajares & T. Urdan (Eds.), *Self-Efficacy Beliefs of Adolescents* (pp. 307-337). Greenwich, Connecticut: IAP-Information Age Publishing

Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (1996). Multifaceted Impact of Self-Efficacy Beliefs on Academic Functioning. *Child Development*, 67, 1206-1222.

Becker, G. S. (1968). Crime and Punishment: An Economic Approach. *Journal of Political Economy*, 76, 169-217.

Bolin, A. U. (2004). Self-Control, Perceived Opportunity, and Attitudes as Predictors of Academic Dishonesty. *The Journal of Psychology*, 138(2), 101-114.

Bunn, D. N., Caudill, S. B., & Gropper, D. M. (1992). Crime in the Classroom: An Economic

- Analysis of Undergraduate Student Cheating Behavior. *The Journal of Economic Education*, 23(3), 197-207.
- Carmichael, S., & Piquero, A. R. (2004). Sanctions, Perceived Anger, and Criminal Offending. *Journal of Quantitative Criminology*, 20(4), 371-393.
- Clarke, R. V., & Felson, M. (1993). Introduction: Criminology, Routine Activity, and Rational Choice. In R. V. Clarke & M. Felson (Eds.), *Routine Activity and Rational Choice* (Vol. 5, pp. 1-14). New Brunswick, U.S.A.: Transaction Publishers.
- Cochran, J. K., Chamlin, M., Wood, P. B., & Sellers, C. S. (1999). Shame, Embarrassment, and Formal Sanction Threats: Extending the Deterrence/Rational Choice Model to Academic Dishonesty. *Sociological Inquiry*, 69(1), 91-105.
- Cornish, D., & Clarke, R. V. (1986). Introduction. In D. Cornish & R. V. Clarke (Eds.), *The Reasoning Criminal: Rational Choice Perspectives on Offending* (pp. 1-16). New York: Springer-Verlag.
- Covey, M. K., Saladin, S., & Killen, P. J. (2001). Self-Monitoring, Surveillance, and Incentive Effects on Cheating. *The Journal of Social Psychology*, 129(5), 673-679.
- Crown, D. F., & Spiller, M. S. (1998). Learning from the Literature on Collegiate Cheating: A Review of Empirical Research. *Journal of Business Ethics*, 17, 683-700.
- Culwin, F. (2006). An Active Introduction to Academic Misconduct and the Measured Demographics of Misconduct. *Assessment and Evaluation in Higher Education*, 31(2), 167-182.
- Devonport, T. J., & Lane, A. M. (2006). Relationships Between Self-Efficacy, Coping and Student Retention. *Social Behavior and Personality*, 34(2), 127-138.
- Finn, K. V., & Frone, M. R. (2004). Academic Performance and Cheating: Moderating Role of

- School Identification and Self-Efficacy. *The Journal of Educational Research*, 97(3), 115-122.
- Gore, P. A., Jr. (2006). Academic Self-Efficacy as a Predictor of College Outcomes: Two Incremental Validity Studies. *Journal of Career Assessment*, 14, 92-115.
- Gottfredson, M. R., & Hirschi, T. (1990). *A General Theory of Crime*. Stanford, California: Stanford University Press.
- Grasmick, H. G., & Bursik, R. J., Jr. (1990). Conscience, Significant Others, and Rational Choice: Extending the Deterrence Model. *Law & Society Review*, 24(3), 837-862.
- Harding, T. S., Passow, H. J., Carpenter, D. D., & Finelli, C. (2004). An Examination of the Relationship Between Academic Dishonesty and Professional Behavior. *IEEE Antennas and Propagation Magazine*, 46(5), 133-138.
- Haswell, S., Jubb, P., & Wearing, B. (1999). Accounting Students and Cheating: A Comparative Study for Australia, South Africa, and the U.K. *Teaching Business Ethics*, 3, 211-239.
- Johnson, P. B., & Richter, L. (2004). Research Note: What If We're Wrong? Some Possible Implications of Systematic Distortions in Adolescent's Self-Reports of Sensitive Behaviors. *Journal of Drug Issues*, 34(4), 951-970.
- Klepper, S., & Nagin, D. S. (1989). The Deterrent Effect of Perceived Certainty and Severity of Punishment Revisited. *Criminology*, 27(4), 721-746.
- Leming, J. S. (1980). Cheating Behavior, Subject variables, and Components of the Internal-External Scale Under High and Low Risk Conditions. *Journal of Educational Research*, 74(2), 83-87.
- Linnenbrink, E. A., & Pintrich, P. R. (2003). The Role of Self-Efficacy Beliefs in Student Engagement and Learning in the Classroom. *Reading & Writing Quarterly*, 19, 119-137.

- Marsden, H., Carroll, M., & Neill, J. T. (2005). Who Cheats at University? A Self-Report Study of Dishonest Academic Behaviours in a Sample of Australian University Students. *Australian Journal of Psychology, 57*(1), 1-10.
- McCabe, D. L., Butterfield, K. D., & Trevino, L. K. (2006). Academic Dishonesty in Graduate Business Programs: Prevalence, Causes, and Proposed Action. *Academy of Management Learning & Education, 5*(3), 294-305.
- McCabe, D. L., & Trevino, L. K. (1993). Academic Dishonesty: Honor Codes and Other Contextual Influences. *The Journal of Higher Education, 64*(5), 522-538.
- McCabe, D. L., & Trevino, L. K. (1997). Individual and Contextual Influences on Academic Dishonesty: A Multicampus Investigation. *Research in Higher Education, 38*(3), 379-396.
- McCabe, D. L., Trevino, L. K., & Butterfield, K. D. (2001). Cheating in Academic Institutions: A Decade of Research. *Ethics & Behavior, 11*(3), 219-232.
- Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of Self-Efficacy Beliefs to Academic Outcomes: A Meta-Analytic Investigation. *Journal of Counselling Psychology, 38*(1), 30-38.
- Murdock, T. B., & Anderman, E. M. (2006). Motivational Perspectives on Student Cheating: Toward an Integrated Model of Academic Dishonesty. *Educational Psychologist, 41*(3), 129-145.
- Murdock, T. B., Miller, A., & Kohlhardt, J. (2004). Effects of Classroom Context Variables on High School Students' Judgments of the Acceptability and Likelihood of Cheating. *Journal of Educational Psychology, 96*(4), 765-777.
- Nagin, D. S., & Paternoster, R. (1993). Enduring Individual Differences and Rational Choice Theories of Crime. *Law & Society Review, 27*(3), 467-496.

- Nagin, D. S., & Pogarsky, G. (2001). Integrating Celerity, Impulsivity, and Extralegal Sanction Threats Into A Model of General Deterrence: Theory and Evidence. *Criminology*, 39(4), 865-892.
- Nagin, D. S., & Pogarsky, G. (2003). An Experimental Investigation of Deterrence: Cheating, Self-Serving Bias, and Impulsivity. *Criminology*, 41(1), 167-193.
- Newstead, S. E., Franklyn-Stokes, A., & Armstead, P. (1996). Individual Differences in Student Cheating. *Journal of Educational Psychology*, 88(2), 229-241.
- Osgood, D. W., Finken, L. L., & McMorris, B. J. (2002). Analyzing Multiple-Item Measures of Crime and Deviance II: Tobit Regression Analysis of Transformed Scores. *Journal of Quantitative Criminology*, 18(4), 319-347.
- Pajares, F. (1996). Self-Efficacy Beliefs in Academic Settings. *Review of Educational Research*, 66(4), 543-578.
- Pajares, F. (2003). Self-Efficacy Beliefs, Motivation, and Achievement in Writing: A Review of the Literature. *Reading & Writing Quarterly*, 19, 139-158.
- Park, C. (2004). Rebels Without a Clause: Towards an Institutional Framework for Dealing with Plagiarism by Students. *Journal of Further and Higher Education*, 28(3), 291-306.
- Passow, H. J., Mayhew, M. J., Finelli, C. J., Harding, T. S., & Carpenter, D. D. (2006). Factors Influencing Engineering Students' Decisions to Cheat by Type of Assessment. *Research in Higher Education*, 47(6), 643-684.
- Paternoster, R. (1987). The Deterrent Effect of the Perceived Certainty and Severity of Punishment: A Review of the Evidence and Issues. *Justice Quarterly*, 4(2), 173-217.
- Piquero, A. R., MacIntosh, R., & Hickman, M. (2002). The Validity of a Self-Reported Delinquency Scale: Comparisons Across Gender, Age Race, and Place of Residence.

Sociological Methods & Research, 30(4), 492-529.

Piquero, A. R., & Pogarsky, G. (2002). Beyond Stafford and Warr's Reconceptualization of Deterrence: Personal and Vicarious Experiences, Impulsivity, and Offending Behavior. *Journal of Research in Crime and Delinquency* 39(2), 153-186.

Piquero, A. R., & Tibbetts, S. (1996). Specifying the Direct and Indirect Effects of Low Self-Control and Situational Factors in Offenders' Decision Making: Toward a More Complete Model of Rational Offending. *Justice Quarterly*, 13(3), 481-510.

Pogarsky, G. (2002). Identifying "Deterrable" Offenders: Implications for Research on Deterrence. *Justice Quarterly* 19(3), 431-452.

Pogarsky, G., Piquero, A. R., & Paternoster, R. (2004). Modeling Change in Perceptions about Sanction Threats: The Neglected Linkage in Deterrence Theory. *Journal of Quantitative Criminology*, 20(4), 343-369.

Pulvers, K., & Diekhoff, G. M. (1999). The Relationship Between Academic Dishonesty and College Classroom Environment. *Research in Higher Education*, 40(4), 487-498.

Rettinger, D. A., Jordan, A. E., & Peschiera, F. (2004). Evaluating the Motivation of Other Students to Cheat: A Vignette Experiment. *Research in Higher Education*, 45(8), 873-890.

Schunk, D. H. (1991). Self-Efficacy and Academic Motivation. *Educational Psychologist*, 26(3&4), 207-231.

Schunk, D. H. (2003). Self-Efficacy for Reading and Writing: Influence of Modeling, Goal Setting, and Self-Evaluation. *Reading & Writing Quarterly*, 19, 159-172.

Sierra, J. J., & Hyman, M. R. (2006). A Dual-Process Model of Cheating Intentions. *Journal of Marketing Education*, 28(3), 193-204.

Smith, K. J., Davy, J. A., Rosenberg, D. L., & Haight, G. T. (2002). A Structural Modeling

- Investigation of the Influence of Demographic and Attitudinal Factors and In-Class Deterrents on Cheating Behavior Among Accounting Majors. *Journal of Accounting Education*, 20, 45-65.
- Smith, T. R. (2004). Low Self-Control, Staged Opportunity, and Subsequent Fraudulent Behavior. *Criminal Justice and Behavior*, 31(5), 542-563.
- Stafford, M. C., & Warr, M. (1993). A Reconceptualization of General and Specific Deterrence. *Journal of Research in Crime and Delinquency*, 30(2), 123-135.
- Therneau, T., & Lumley, T. (2008). The Survival Package for R [Electronic Version], from <http://cran.r-project.org/web/packages/survival/survival.pdf>
- Tibbetts, S. G. (1998). Differences Between Criminal Justice Majors and Noncriminal Justice Majors in Determinants of Test Cheating Intentions. *Journal of Criminal Justice Education*, 9(1), 81-94.
- Tibbetts, S. G. (1999). Differences Between Women and Men Regarding Decisions to Commit Test Cheating. *Research in Higher Education*, 40(3), 323-342.
- Tobin, J. (1958). Estimation of Relationships for Limited Dependent Variables. *Econometrica*, 26(1), 24-36.
- Vowell, P. R., & Chen, J. (2004). Predicting Academic Misconduct: A Comparative Test of Four Sociological Explanations. *Sociological Inquiry*, 74(2), 226-249.
- Whitley, B. E., Jr. (1998). Factors Associated with Cheating Among College Students: A Review. *Research in Higher Education*, 39(3), 235-274.
- Wortley, R. (1996). Guilt, Shame and Situational Crime Prevention. In R. Homel (Ed.), *The Politics and Practice of Situational Crime Prevention* (Vol. 5). Monsey, NY: Criminal Justice Press.

- Wright, B. R. E., Caspi, A., Moffitt, T. E., & Paternoster, R. (2004). Does the Perceived Risk of Punishment Deter Criminally Prone Individuals? Rational Choice, Self-Control, and Crime. *Journal of Research in Crime and Delinquency*, 41(2), 180-213.
- Zimmerman, B. J. (2000). Self-Efficacy: An Essential Motive to Learn. *Contemporary Educational Psychology*, 25, 82-91.
- Zimmerman, B. J., & Bandura, A. (1994). Impact of Self-Regulatory Influences on Writing Course Attainment. *American Educational Research Journal*, 31(4), 845-862.
- Zimmerman, B. J., Bandura, A., & Martinez-Pons, M. (1992). Self-Motivation for Academic Attainment: The Role of Self-Efficacy Beliefs and Personal Goal Setting. *American Educational Research Journal*, 29(3), 663-676.

Appendix A. Calculation of the Sanctions Index

Participants were required to estimate the chance of detection both by formal (P_a) and informal means (P_e), making two discovery events of detection by a marker, and detection by exposure to others. Perceptions of the consequences of discovery by formal and informal means were obtained through participants' estimate of the conditional probability that discovery by each of the two detection mechanisms would result in: lost respect of close friends ($P_{fr/a}$, $P_{fr/e}$), lost respect of family ($P_{fa/a}$, $P_{fa/e}$), lost respect of academic staff ($P_{ac/a}$, $P_{ac/e}$), and diminished job prospects ($P_{j/a}$, $P_{j/e}$). Perceptions of the consequences of formal detection were further obtained through participants' estimates for the risk of: receiving a warning ($P_{w/a}$), receiving reduced marks ($P_{m/a}$), being required to resubmit assessment ($P_{r/a}$), receiving a fail for the assessment item ($P_{fla/a}$), receiving a fail for the course ($P_{flc/a}$), and dismissal from the university ($P_{d/a}$). The conditional probability of each sanction was multiplied by the risk of the appropriate discovery event (formal or informal) and then additively combining them. For example, the perceived certainty of close friend disapproval was calculated by $P_{fr/a} P_e + P_{fr/e} P_a$, where the first term represents the measure of friend disapproval resulting from formal detection, and the second term represents the measure of friend disapproval resulting from informal detection. To create an index that also captured the costs of sanctions, participants were required to estimate the severity of each sanction, with each sanction risk being multiplied by its severity component.

Calculation of Total Index of Perceived Sanctions Composite (Nagin & Paternoster, 1993).

$$\text{Total Sanctions} = P_a[(P_{fr/a})(S_{fr}) + (P_{fa/a})(S_{fa}) + (P_{ac/a})(S_{ac}) + (P_{j/a})(S_j) + (P_{w/a})(S_w) + (P_{m/a})(S_m) + (P_{r/a})(S_r) + (P_{fla/a})(S_{fla}) + (P_{flc/a})(S_{flc}) + (P_{d/a})(S_d)]$$

Table 1

Nonparametric Bivariate Correlations among Intention to engage in plagiarism and other variable included in the analyses

Variable	DV	1	2	3	7	8	9	10	11
Intention to engage in plagiarism (DV)									
1. Age	-.12**								
2. Gender	-.14**	.01							
3. GPA	-.21**	.18**	.11**						
7. Prior behaviour	.35**	-.22**	-.07	-.23**					
8. Academic self-efficacy	-.24**	.19**	.02	.39**	-.35**				
9. Perceived sanctions	-.27**	-.02	.30**	.02	-.18**	.12**			
10. Perceived Benefits	.23**	.06	-.14**	-.02	.17**	-.12**	-.29**		
11. Perceived Shame	-.35**	.12**	.34**	.15**	-.24**	.21**	.58**	-.21**	

* $p < .05$, ** $p < .01$ (two-tailed)

Table 2

Tobit Regression Models Predicting Intentions to Engage in Plagiarism

Variable	Model 1 (<i>N</i> = 536)			Model 2 (<i>N</i> = 536)			Model 3 (<i>N</i> = 536)			Model 4 (<i>N</i> = 536)			Model 5 (<i>N</i> = 536)		
	Tobit Coeff.	SE	z-score	Tobit Coeff.	SE	z-score	Tobit Coeff.	SE	z-score	Tobit Coeff.	SE	z-score	Tobit Coeff.	SE	z-score
Age							-.04	.03	-1.23	-.05	.03	-1.61	-.03	.03	-1.14
Gender							-.02	.45	-.06	-.31	.44	-.70	-.12	.44	-.27
GPA							-.48*	.21	-2.33	-.51*	.21	-2.46	-.44*	.21	-2.17
Prior behaviour							.10****	.02	4.87	.10****	.02	5.10	.10****	.02	5.02
Academic self-efficacy				-.01****	.00	-5.87	-.01**	.00	-2.71	-.01**	.00	-2.81	-.01**	.00	-2.81
Perceived sanctions	-.02 ^a	.01	-1.84				-.01	.01	-1.66	-.03****	.01	-3.96			
Perceived benefits	.08****	.02	3.62				.06***	.02	3.32				.07***	.02	3.66
Perceived shame	-.23****	.05	-4.61				-.16***	.05	-3.29	.06**	.02	3.20	-.20****	.04	-4.90
Intercept	2.05	.72	2.85	3.69	.86	4.31	5.71	1.44	3.97	4.85	1.42	3.41	5.39	1.43	3.78
χ^2	75.59****			35.93****			137.5****			126.66****			134.73****		

Note. SE = Standard Error

^a Approached Significance ($p < .05$)

* $p < .05$, ** $p < .01$, *** $p < .001$, **** $p < .0005$

Table 3

Tobit Regression Models Predicting Intentions to Engage in Plagiarism by Levels of Academic Self-Efficacy

Variable	Low self-efficacy (N = 107)			Moderate self-efficacy (N = 113)			High self-efficacy (N = 107)		
	Tobit Coeff.	SE	z-score	Tobit Coeff.	SE	z-score	Tobit Coeff.	SE	z-score
Age	.00	.06	.04	-.07	.08	-.91	-.02	.05	-.31
Gender	.60	.99	.61	.23	1.01	.23	.30	1.21	.25
GPA	-.61	.38	-1.60	-.35	.46	-.76	-.82	.68	-1.21
Prior behaviour	.10**	.03	3.06	.05	.06	.72	.08	.05	1.59
Perceived sanctions	-.00	.02	-.11	-.03	.02	-1.60	-.01	.02	-.70
Perceived benefits	.05	.04	1.05	.11**	.04	2.78	.05	.04	1.11
Perceived shame	-.16	.10	-1.59	.01	.12	.09	-.28*	.11	-2.51
Constant	3.31	2.78	1.19	1.94	3.19	.61	6.18	3.94	1.57
χ^2	22.1**			16.25**			26.95****		

Note. Tobit Coeff. = Tobit Coefficient; SE = Standard Error

* $p < .05$, ** $p < .01$, *** $p < .001$