Student Perceptions of Academic Honesty in UG Engineering

Andre Z Kyme[a]; Sandhya Clement[a]
School of Biomedical Engineering, The University of Sydney[a]
Corresponding Author Email: andre.kyme@sydney.edu.au

ABSTRACT

CONTEXT

Academic integrity is an increasingly complex area for tertiary teachers and students. The trend to online forms of learning and examination, the rise of paid third-party 'tutoring' and ghost-writing services for students, the emergence of mature generative AI technologies, internal administrative factors around monitoring and consistency, and external factors such as mental health and cost of living stress can all impact students' decision-making with respect to academic integrity.

PURPOSE OR GOAL

This study aims to understand the perceptions and experience of undergraduate (UG) engineering students with respect to: (i) behaviours they consider dishonest; (ii) prevalence of dishonest behaviour in assessments; and (iii) motivations for dishonest behaviour. The premise of the study is that developing robust and supportive strategies for academic integrity in UG engineering in our current context must start with understanding the student experience.

APPROACH OR METHODOLOGY/METHODS

1248 anonymous survey responses were collected from 1st-5th-year UG engineering students in 11 degree programs at the University of Sydney. Data included demographics (gender, years studying English, weighted average mark, weekly hours of paid work); qualitative and quantitative student experience with respect to 8 assessment activities; and ranked motivators of dishonest activities.

ACTUAL OR ANTICIPATED OUTCOMES

Student awareness of dishonest assessment activity tends to increase with year except for generative AI misuse, likely because the latter is an emerging technology. Students perceive clear differences in the honesty of activities/behaviours. Objectively more culpable activities (e.g. paying for assignment completion) exhibited the largest proportion of "sometimes/usually/always" dishonest. However, 22% considered paying a third party to complete part of an assignment as "never/rarely/sometimes" dishonest. Across all years/degrees, students estimated 37.5 ± 12.8% of the cohort had engaged in dishonest assessment activities. Time pressure, especially from multiple concurrent deadlines, was the strongest reported motivator of dishonest behaviour. This finding informs discussion around time expectations on students and assessment scheduling.

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

Student perceptions and experience with respect to academic honesty in assessment tasks highlights potential mitigation strategies and also potential educator 'blind-spots' that could be addressed to better support students. The findings will enable data-driven formulation of strategic recommendations for academic integrity in UG engineering.

KEYWORDS

Academic honesty; undergraduate engineering, Student perceptions

Introduction

Academic integrity in a tertiary context is an increasingly complex area for educators and students (McCabe et. al., 2012; Deranek & Parnther, 2015; Espiniera-Bellon et. al., 2020; Elsalem et. al., 2021). This is a consequence of the trend to online forms of learning and examination triggered by the COVID-19 pandemic, the rise of paid third-party services for students, the emergence of mature generative AI technologies, and internal administrative factors around monitoring and consistency. A 2024 systematic review indicates a statistically significant increase in self-reported cheating during online exams, rising from 29.9% before COVID-19 to 54.7% during the pandemic, although the sample groups were heterogeneous (Newton & Essex, 2024). Moreover, external factors such as mental health and cost of living stress bring further pressures that may impact students' decision-making around academic integrity (Eaton & Kristal, 2020).

In 2023, we initiated a study aiming to gain a better understanding of student experience of academic honesty in the undergraduate (UG) engineering context. This included factors such as:

- Student perception of what activities are dishonest, and to what degree (Greening et. al., 2004; Chirikov et. al., 2020);
- Prevalence of dishonest activity in assessment tasks within this cohort (Elliot et. al., 2005; Hongwei et. al., 2017; Reinhardt et. al., 2023);
- Student feedback on the motivations for dishonest behaviour in assessment tasks;
- Student perception of the impact of various deterrents of dishonest behaviours (Chirikov et. al., 2020).

The rationale for this study is the conviction that developing robust and supportive strategies for academic integrity in UG engineering must start with understanding the current state of play: students' own perceptions, understanding and insights around dishonest behaviours. Such data are vital data to inform academic integrity recommendations and strategies for the future.

This report provides a preliminary analysis of the survey data. By highlighting the key trends and insights from these data, it forms the basis for initial recommendations.

Methods

Data in this study were collected via a survey deployed to approximately 7000 UG students across all schools in the University of Sydney Faculty of Engineering in Semester 2 2023. The study and data collection were performed under the approved University of Sydney Human Ethics Protocol 2023/711.

We received over 2000 partial and complete responses to the student survey. Of these responses, 1248 responses remained after data cleaning. Data cleaning involved removing post-graduate responses, duplicates and suspected fraudulent/bot responses. None of the survey questions were mandatory, thus one of the criteria applied for data cleaning was to retain only those responses that were at least 67% complete. Each section of the survey is detailed below.

Demographics

The following demographic data were collected: gender, year of study, average WAM (weighted average mark), and the average number of hours of paid work per week (in-semester). Since 1st-year students do not yet have a calculated WAM, this cohort was asked to report their average grade from their first semester of studies (i.e. from Semester 1 2023).

Student awareness of various behaviours/activities

Students were asked to consider a list of 8 behaviours/activities and to indicate their awareness of students (themselves included) participating in each activity. Possible responses were: Yes (I've seen), Yes (I've heard), No (I'm not aware). The following list of activities was provided:

- Sharing all/part of an assignment with a friend
- Copying source material directly without a citation/reference
- Copying source material directly with a citation/reference
- Paying someone to complete an assessment task for you
- Using a paid service to get 'expert' answers to assessment questions
- Communicating with others during individual in-class assessments
- Using a content generator to generate all or part of an assignment
- Working together with others on the solutions to an assignment

Extent of dishonesty of various behaviours/activities

Students were asked to consider the same list of behaviours/activities and, for each one, indicate the extent to which they considered the activity to be dishonest. Possible responses were:

- Never dishonest
- Rarely dishonest
- Sometimes dishonest
- Usually dishonest
- Always Dishonest

Prevalence of dishonest behaviours/activities

Based on their personal experience, students were asked to estimate the percentage of engineering students in their current stage of degree they considered had engaged in one/more dishonest assessment behaviours/activities.

Motivating factors for dishonest behaviours/activities

Students were presented with a list of factors and asked to rank each one according to how significant they consider it to be in motivating dishonesty among their cohort. The list of factors presented was:

- Time pressure (paid work)
- Time pressure (multiple deadlines)
- Time pressure (time management)
- Family pressure
- Health pressure
- Language
- Good marks
- Unaware of what is dishonest
- Fear of failure
- Unachievable assessments

Students ranked each factor according to:

- Not a factor
- Slightly common factor
- Moderately common factor
- Very common factor

Results and Discussion

Demographics

Figure 1 shows a breakdown of the demographics. Although male-dominated as is typical of engineering faculties, the University of Sydney has a high proportion of students identifying as female (~30%) compared to many engineering faculties locally and internationally. The majority of

respondents (~40%) were 1st-year students, however all years were strongly represented (>150 in each of years 2-4). Year "5+" was lower since the majority of students do a four-year degree. The stream-based response was consistent with relative student enrolments (data not shown).
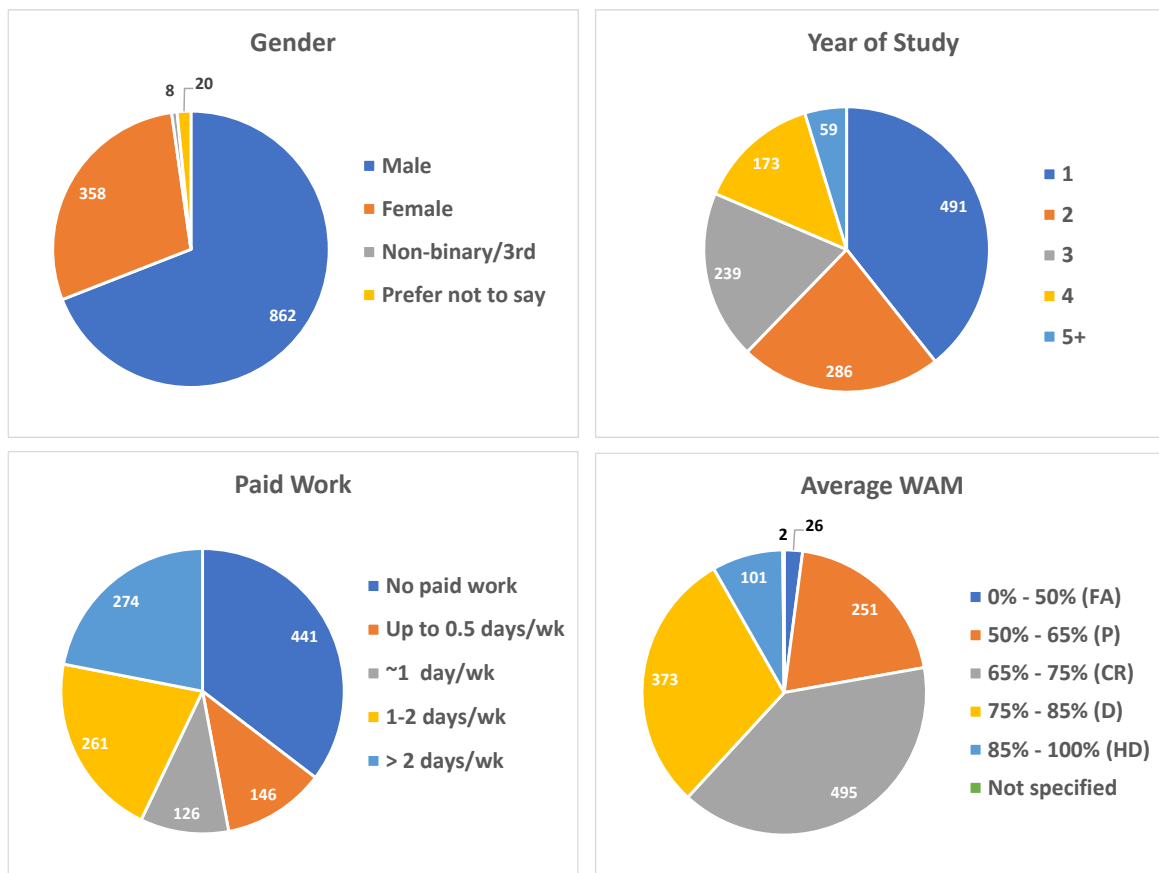

Figure 1: Demographic data from the 1248 survey responses. Students were asked to provide their gender, year of undergraduate study, average amount of paid work per week, and average WAM.

Student awareness of various behaviours/activities

Figure 2 shows overall response statistics for each activity. Collectively the respondents had personal experience of all activities and, for every activity, 32-77% of respondents had either first-hand or anecdotal awareness of each activity being undertaken within their cohort. Not surprisingly, "Working together on assignments" – perhaps the most ambiguous activity in terms of dishonesty – showed the highest rate of awareness (77%). Several of the more obviously culpable activities – copying source material with or without citation, contract cheating (whole assignment or individual questions), and communicating during live assessments that are meant to be done individually – showed first-hand awareness of 4.4%-18.6%, and either first-hand or anecdotal awareness of 32-54%.

Figure 3 shows the awareness data broken down by year of study and presents the response proportions to enable comparison across years. First-hand and anecdotal awareness (blue/orange) tends to increase with year, as expected. The exception to this was Generative AI, which may be explained by the fact that it is a much more recent development available to students. By Year 4, >40% of students had first-hand or anecdotal awareness of every activity.

The data broken down by degree (data not shown) revealed an awareness of these activities across all degree streams. Subtle differences between degree streams were apparent, potentially related to policy or practice differences between Schools. However, further analysis is needed to fully characterise these differences and their significance.
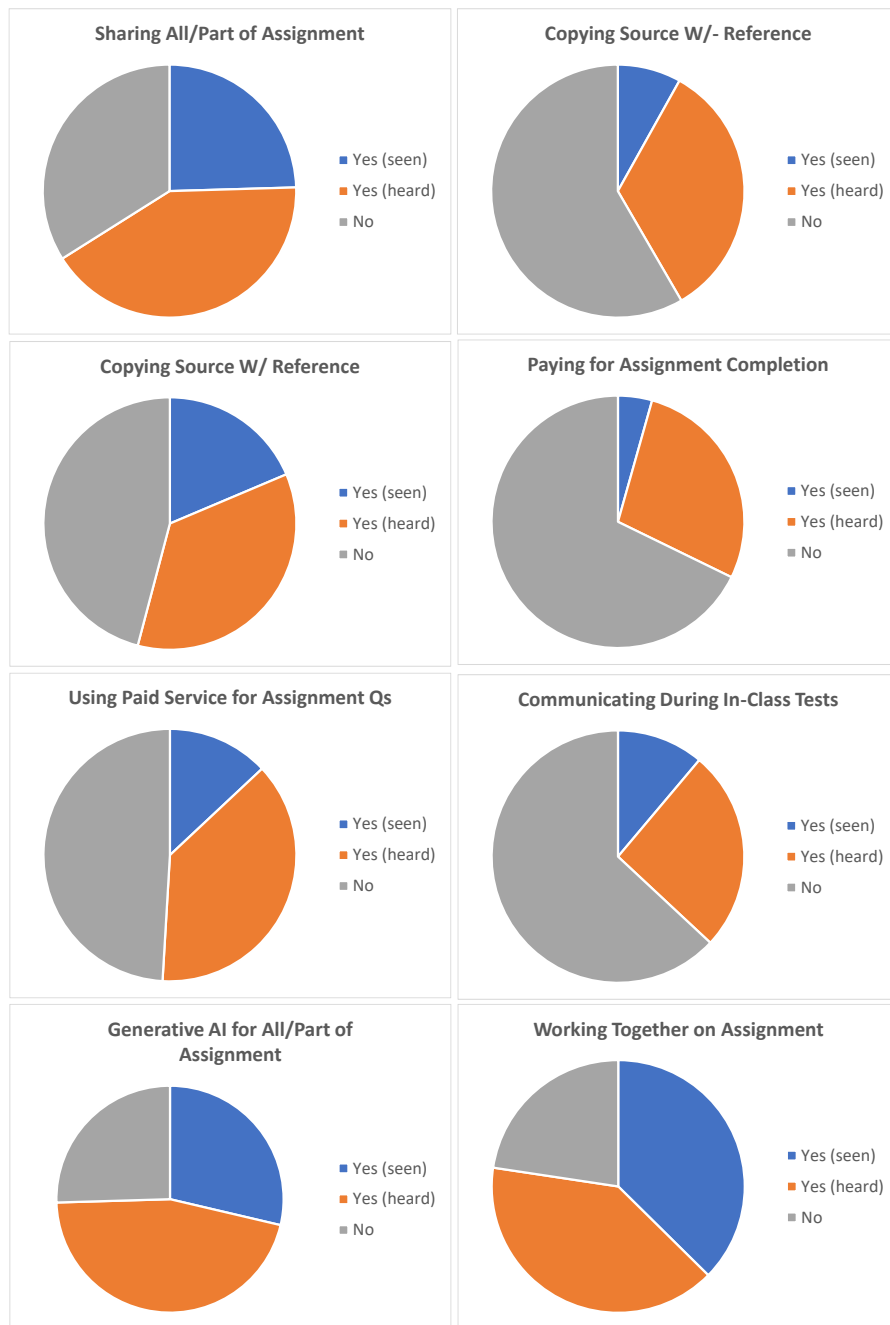
Figure 2: Student awareness of behaviours/activities.

Extent of dishonesty of various behaviours/activities

Figure 4 shows overall response statistics for each activity. It is clear that students perceive differences in the level of dishonesty of the various activities and, for example, that students understand the distinction between copying a source with and without citation (>60% think copying a source with citation is never/rarely/sometimes dishonest, compared with 20% who think copying a source without citing is never/rarely/sometimes dishonest).

As might be expected, the more obviously culpable activities – paying for all or some of an assignment to be completed, and communicating with others during a live test/exam that is meant to be done individually – exhibited the largest proportion of sometimes/usually/always dishonest. That students recognise certain practices as clearly unethical is consistent with Ferguson et al. (2022), who found students identified several common dishonest behaviours as definitely wrong,

including plagiarism (61%), bringing hidden notes to exams (90%), and contract cheating (89%) (Ferguson et al, 2022). However, it is still somewhat alarming that in our analysis 8.7% of students considered paying for an entire assignment to be completed as never/rarely/sometimes dishonest; 21.8% of students considered paying for part of an assignment to be completed as never/rarely/sometimes dishonest; and 20.7% of students considered communicating with others during an individual live test as never/rarely/sometimes dishonest. It may reflect a more widespread gap in students' discernment of dishonest behaviour. For example, in a 2023 study by Stoesz et al., introduction of an academic integrity module focusing on a scenario related to collusion highlighted that only 25% of students recognised collusion as academic misconduct (Steoesz et al., 2023). The source of such perceptions deserves further investigation.

Figure 3: Student awareness of behaviours/activities as a function of year-of-study. Blue = Yes (seen); Orange = Yes (heard); Grey = Not aware.

Students perceived copying a source without citation, paying for assignment question answers, and communicating with others in a test to share a similar degree of dishonesty. Out of all the behaviours/activities, 'working together on assignments' showed the largest proportion of

never/rarely/sometimes dishonest (~72%). Although this is not surprising given that peer-to-peer problem solving is often encouraged in units of study, it is notable that 28% of students considered this to be usually or always dishonest. Thus, there may be a need to help students understand how peer-to-peer problem solving can be a productive, rather than dishonest, activity.
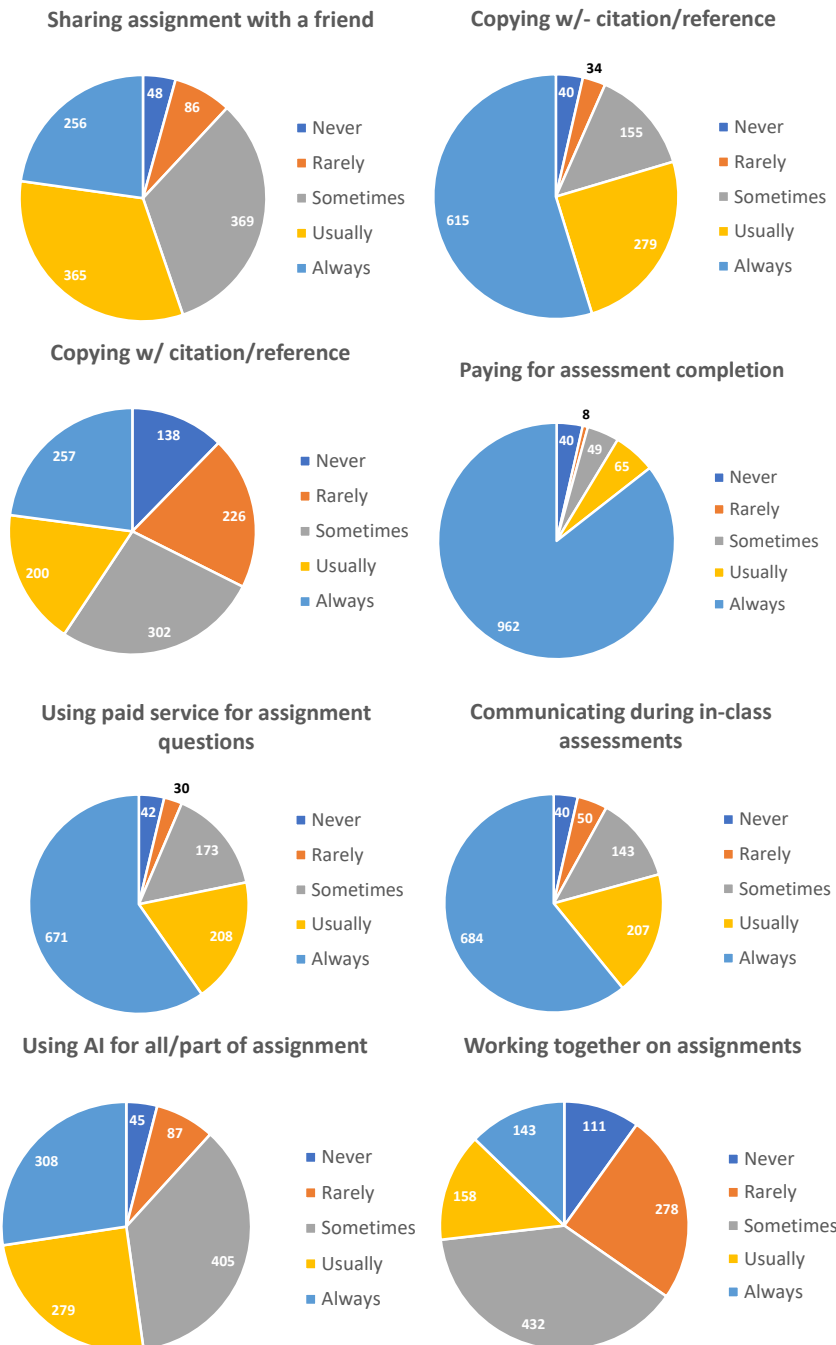

Figure 4: Student perception of the extent of dishonesty for each behaviour/activity.

Prevalence of dishonesty behaviours/activities

The average estimate of the prevalence of dishonest behaviour in assessment tasks was 37.5% ± 12.8% across all respondents. Prevalence ~40% is well within the range previously reported, which can be >80% (Chala, 2021). Nevertheless, it is a proportion that tertiary institutions would want to reduce. Despite moderate standard deviations in our prevalence data, estimates appeared to exhibit trends with degree stream, hours of paid work, and WAM. For example, those

who work >2 days per week estimated 10% higher than those working ≤1 day/week; those with a Pass (50-64%) WAM estimated 8-12% lower on average than students with other WAMs. Further analysis is required to unpack these and other potential trends, along with their statistical significance. Within year groups, average estimates of prevalence were all >32%.

Motivating factors for dishonest behaviours/activities

Figure 5 shows the proportion of each ranking for each motivating factor. It is apparent that some factors were considered of much higher relative importance in motivating dishonesty than others. For example, over 75% of students considered a lack of awareness of what constitutes dishonest behaviour to be either not a factor or only a slight factor; compare this to time management and multiple deadlines for which over 75% of students considered these to be either moderately or very common. With the exception of ignorance, family pressure and language difficulty, >50% of students thought all other factors were either moderately or very common in motivating dishonesty. Further analysis is required to determine if statistically significant associations exist between student response regarding motivations and demographic data such as paid work and language. Time pressure, especially from multiple concurrent deadlines, was the strongest motivating factor reported. It is of course possible that other factors not presented to students are significant motivators of dishonest assessment behaviour. Nevertheless, the prominence of time pressure in the responses may suggest a need for strategies to avoid unreasonable time expectations on students. It is also a factor that must be considered in discussions around shifting away from final exams to in-semester-only assessment. Students' sense of assessment tasks being unachievable also points to the need for a careful look at assessment difficulty relative to student skill/stage.

Similar research conducted in an African institution reveals that the primary motivations for academic dishonesty include the desire for good grades (31.01%), high academic workload (23.77%), and pressure not to disappoint family or guardians (21.45%) (Saana et al., 2016). For our students, these same factors were ranked "quite" or "very" significant by 70%, 86% and 39%, respectively, and as "very" significant" by 37%, 57% and 15%, respectively. It is reasonable to expect that differences may in part reflect differences in the cultural make-up of students and in the structure of curriculum and courses at different tertiary institutions.
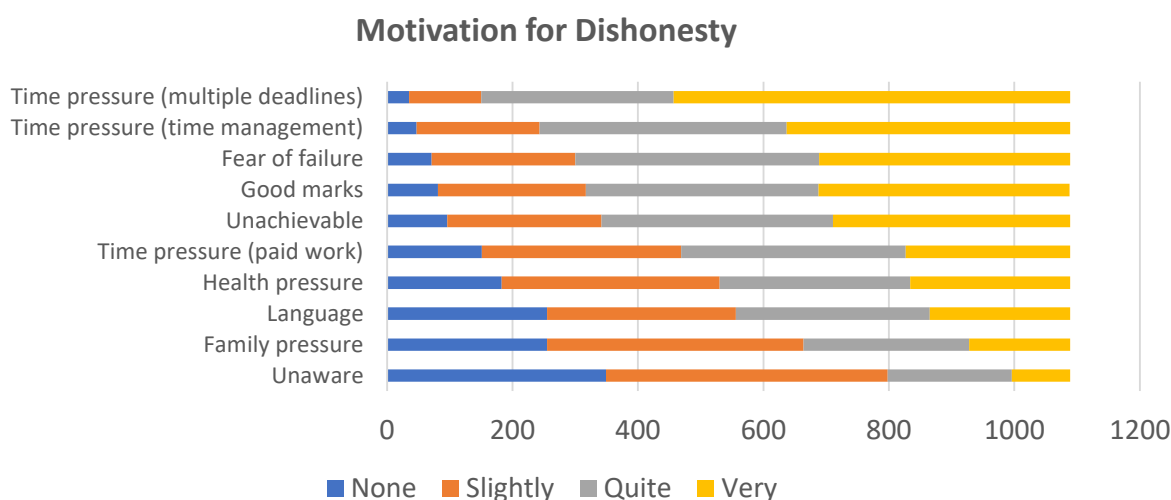
Motivation for Dishonesty

Figure 5: Student rankings of various potential motivating factors for dishonest behaviour.

Conclusion

Analysis of over 1200 responses from UG engineering students across 11 degree streams highlights important patterns with respect to student awareness and perception of dishonesty in completing assessment tasks, along with factors which motivate dishonesty. Data suggest dishonesty is likely much more common than we would like as educators. The range of student

perceptions, especially with respect to more culpable activities, also suggests education is vital at an early stage of the degree. Motivating factors for dishonesty need careful consideration, especially factors that faculties have control over such as assessment timetabling. Such an approach recognises that academic integrity is not simply an area to 'police', but one in which students require support. In summary, our analysis helps to inform our understanding of academic misconduct among students and how appropriate recommendations and strategies might be formulated to address this issue. Further analysis of the data is warranted. In particular, evaluating the strength of associations between student responses about academic honesty and their demographic data may reveal further insights that help guide strategies for supporting students and preventing or mitigating academic breaches in the multi-cultural, technologically disruptive, and multi-modal delivery context of engineering faculties locally and globally.

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