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Academic success and individual differences

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ACADEMIC SUCCESS AND INDIVIDUAL DIFFERENCES

Individual differences in students such as motivation, self-regulation and feedback orientation all have an impact on completing academic tasks. Additionally, motivation to study has been shown to impact course engagement. The aim of this research is to explore whether these individual differences can directly predict academic successes at university.

The responsibility of educators is to engage students with the subject material and provide the best opportunities for them to become academically successful. Academic success (AS) is often defined in terms of favourable learning outcomes with grades being the most common measure of AS in literature. However, AS has been evidenced as far more nuanced a concept. A literature review conducted by York, Gibson and Rankin (2015) found AS to be comprised of: achievements, meeting learning outcomes, satisfaction, acquiring skills and competencies, and career success. Furthermore, while the role of academic staff is to provide guidance, it is important to remember that students themselves are not passive in their own learning. Considering individual differences (IDs) that contribute to academic successes or failures may allow organisations of higher education to adapt their teaching methods to improve outcomes and reduce course attrition.

The aim of this study was to investigate the relationship between motivation, self-regulation, feedback orientation and academic success in order to identify those IDs that contribute to greater AS, as well as any correlates between the variables. In this way, educators can adapt their teaching to encourage beneficial academic IDs, ensuring that students are getting the most from their education and meeting their academic potential.

The aim of this study was to investigate the relationship between motivation, self-regulation, feedback orientation and academic success in order to identify the individual differences that contribute to academic success

Individual differences

One key individual difference is motivation. Vallerand, *et al.* (1992) found that intrinsic motivation, where an individual is motivated by an internal drive, is more closely linked to better academic outcomes than extrinsic motivation (an external drive) or a lack of drive entirely, known as amotivation. Students who are intrinsically motivated pursue their studies for enjoyment and to broaden their minds; these students are more likely to work diligently and maintain stability in their efforts over time than if they are extrinsically motivated (Vansteenkiste, Lens & Deci, 2006). Vansteenkiste, Lens and Deci also suggest that strategies which increase extrinsic motivation (such as payment or other rewards) may be associated with a decrease in intrinsic motivation. Encouraging the intrinsic motivation of students, over extrinsic motivation, could therefore be expected to positively impact their success. Ergo, the argument is made for the importance of task framing, how a task is presented can influence what motivations are developed to complete it. Framing a task to appeal to intrinsic motivations might be the best way for educators to foster sustained engagement and effort from their students.

Being motivated to complete tasks is important but also requires behaviours that facilitate their completion. It is in this way that self-efficacy and self-belief contribute to AS, and how a learner regulates their time and efforts can channel motivation into positive outcomes. Academic self-regulation (SR) pertains to why a student completes academic tasks (Kröner, *et al.*, 2017). Self-regulation can be driven by the desire for or avoidance of consequence, external factors such as a sense of duty or placing personal importance on completing tasks, or simply for enjoyment. Those with higher overall self-regulatory behaviours are shown to have higher self-efficacy and confidence in their abilities (Sebesta & Bray Speth, 2017). It could be hypothesised that those who are motivated by learning new things and regulated by the satisfaction of gaining knowledge or finishing assignments have the greatest potential for success. Sebesta and Bray Speth (2017) also show that self-regulation has a positive relationship with both motivation and receptivity to academic feedback.

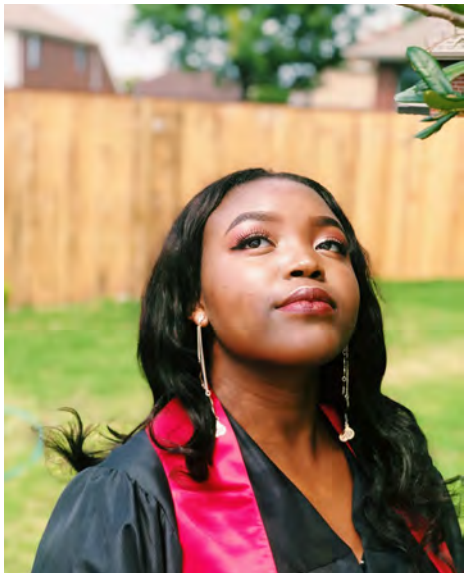
Feedback is an established and integral part of teaching in higher education and can be given to students formally through the marking of assessments and informally, for example during teaching sessions. However, research questions the usefulness of feedback and whether it relies on IDs, such as motivation, to be beneficial (Winstone *et al*., 2017). If feedback is indeed reliant on such variable IDs as motivation and self-regulation then this could mean the difference between feedback being a useful tool for students or an unutilised resource (Pitt & Norton, 2016). Due to feedback being so ingrained in higher education, exploring this relationship will help us determine how to optimise its use. The concept of Feedback Orientation (FO) as defined by Linderbaum and Levy (2010), denotes how feedback is perceived and utilised by the person receiving it. Their research goes on to explain that acting on feedback can have several drives. It could be that a student wishes to use it to improve performance, they feel an obligation to follow up on feedback or that they use it as a measure of how to perceive themselves or how they are perceived by others. In addition, those with higher overall FO – regardless of what drives it – are more receptive to feedback, more likely to engage with their educators and therefore more likely to continue to improve on their receptivity and use of feedback over time, a phenomenon referred to as their 'coachability'.

Motivation, self-regulation and feedback orientation run parallel with the concept of a 'growth mindset' (Ng, 2018), the belief that cognition – and therefore motivation – is malleable. Those who hold this mindset are more susceptible to positively developing their cognitions, skills and in turn, more positive IDs that have been outlined above. It is suggested that a somewhat symbiotic relationship occurs between these concepts, whereby they foster the development of one another. Therefore, those with higher positive IDs are more likely to be able to improve their ability to learn over time, and this can be encouraged by those working in higher education, furthering this mindset and improving students' overall success.

Methodology

Convenience sampling was used to recruit participants who completed online questionnaires. The quantitative data were analysed using SPSS software. Multiple regression was used to assess the contribution of five predictors (extrinsic motivation, intrinsic motivation, amotivation, self-regulation and feedback orientation) to the outcome of academic grade. Students who had completed one full year of study were recruited from the University of West London. Recruitment took place online, and by directly approaching students in communal areas of the university and before lectures. There was a total of 142 participants, of which 68 were male (47.9 %) and 74 were female (52.1 %). Participants were aged from 18 to 54 years, with a mean age of 24.35. Two participants did not disclose their age. Demographic data was collected on whether they were a first generation student, their level of study, academic school or college, age, ethnicity and gender. Self-reported average grade for the last academic year was also collected.

The Academic Motivation Scale produced by Vallerand, *et al*. (1992) was used as the measure of motivation for this study. This scale identified three subscales of motivation: intrinsic, extrinsic and amotivation. Intrinsic motivation included the subscales of 'to know', 'towards accomplishment' and 'to experience stimulation'. Extrinsic motivation contained 'identified', 'introjected' and 'external regulation'. Amotivation contained no subscales. This scale had twenty-eight items (four in each subscale) and used a 7-point Likert scale with answers ranging from 'corresponds exactly' to 'does not correspond at all'.



The Academic Self-Regulation Questionnaire (SRQ-A) from Kröner, *et al*. (2017) was used to measure self-regulation and the autonomous reasoning for study-related behaviours and task completion. Due to being devised for school children, some language in this scale was adapted to fit a Higher Education setting. There were 32 items evenly distributed over four subscales. Participants answered using a 5-point Likert scale from 'very true' to 'not true at all'. The subscales were external 'regulation' (being motivated by external factors), 'introjected regulation' (motivated by opinion – of others and of the self), 'identified regulation' (personal importance placed on one's academic achievement and progress), and 'intrinsic regulation' (for the enjoyment felt from learning and progressing). High scores in this subscale indicate students can more easily motivate themselves and have better study-related behaviours.

The Feedback Orientation Scale (FOS), devised by Linderbaum and Levy (2010), measures receptivity and reaction to academic feedback. There were twenty items evenly distributed over four subscales. The first subscale 'utility' referred to an individual's inclination to act on feedback to reach goals, the second 'accountability' was where an obligation is felt to act on it. The next subscale 'social awareness' was the individual using feedback to assess how they are perceived by others and perceive themselves. Lastly 'feedback self-efficacy' involved confidence in interpreting and acting upon feedback appropriately.

Approval for this study was obtained from the University of West London's ethics panel. An online questionnaire combining the aforementioned measures with demographic questions was constructed using Qualtrics software. An information sheet and consent form preceded the questionnaires, and a debrief sheet followed. Information provided to participants included information on the study, their rights to anonymity and to withdraw at any time, and the contact information of the researchers. The consent form included qualifiers: these were that the participant was eighteen or older, had completed a full year at the University of West London, and that they understood and wished to take part in the study. Paper copies of the information and debrief sheets were available upon request. Participation was voluntary and without extrinsic reward apart from those studying psychology who could gain SONA points. SONA is a credit system that allows those who have accrued enough points to gift SONA points of their own to incentivise participation for their third-year dissertation projects. Participants were thanked once they had completed the survey and SPSS software was used in the analysis of the completed dataset.

Measure	1	2	3	4	5
1. Grade	_				
2. Amotivation	-.30**	_			
3. Intrinsic motivation	-.03	.05	_		
4. Extrinsic motivation	-.06	-.02	.20*	_	
5. Self-Regulation	.21*	-.15	.04	.18*	_
6. Feedback Orientation	.04	-.05	.04	.24**	.39***

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

TABLE 1 Correlations between student grades, self-regulation, feedback orientation and all motivation subscales

Measure	*Beta*	*t*
Amotivation	-.27	-2.65**
Intrinsic motivation	-.04	-.34
Extrinsic motivation	-.05	.42

Regression model: $F(5,85) = 2.33$, $p < .05$, $R^2_{adj} = .07$ ** $p < .01$

TABLE 2 Summary of multiple linear regression

Results

Data on feedback orientation (FO), self-regulation (SR), motivation and self-reported academic grade were tested for associations.

Table 1 shows correlational data between students' grades and overall feedback orientation (FO), self-regulation (SR), and motivation scale scores. The following significant correlations were found. FO was positively correlated with extrinsic motivation, $r(89) = .24$, $p < .01$ and SR, $r(89) = .39$, $p < .001$. Self-regulation also showed positive correlations with academic grade $r(89) = .21$, $p < .05$ and extrinsic motivation $r(89) = .18$, $p < .05$. Amotivation showed a positive correlation between Extrinsic motivation $r(89) = .20$, $p < .05$ and a negative correlation with Grade $r(89) = -.30$, $p < .01$.

Multiple linear regression showed that all predictors combined accounted for 12% of variance in grade in the sample. Using R squared adjusted, to account for the small sample size, just 7% can be accounted for in the target population. This was a significant model, $F(5,85) = 2.33$, $p < .05$. When examining individual predictors, only amotivation remains significant, as a negative predictor of grade.

In order to examine the relationship between extrinsic motivation and feedback orientation in more detail, Pearson's correlations were conducted between extrinsic motivation and each of the subscales of FO. The only significant correlation found was with the social awareness subscale, $r(140) = .25$, $p < .001$

Discussion

This was an exploratory study which aimed to examine the relationships between the concepts of motivation, self-regulation and feedback orientation in relation to academic grade. It was found that these measures did significantly predict academic grade, with amotivation being the strongest predictor. As anticipated, and in line with previous research (Vallerand *et al.*, 1992), amotivation negatively predicted grades, indicating that those lacking motivation are less likely to achieve high grades. While self-regulation positively correlated with academic grades (high grades being associated with high self-regulation), it was not a significant predictor when other variables were accounted for, indicating that self-regulation is not the most influential of the variables in predicting success. It is also notable that the strongest relationship found between any of the measures was the positive correlation between self-regulation and feedback orientation, supporting the theory that students with high feedback orientation – who feel most willing and able to use their feedback – are those with high self-regulation.

The Importance of Motivation

A notable finding of this study is the positive relationship between extrinsic motivation and feedback orientation; inviting the possibility that feedback from others (in this case academic staff) can be viewed as an external reward. Previous research (Vansteenkiste, *et al.*, 2006) highlights the relationship between increases in extrinsic motivation and decreases in intrinsic motivation. However, this was not the case in the current sample, with the two facets of motivation actually showing a weak but significant positive relationship – 'weak but significant' here indicating that while the correlation is not strong, the finding is very likely to exist in the wider student population. Therefore, it should be considered that the two can both be present, and an increase of one may not necessarily lead to a decrease in the other. As such, intrinsic and extrinsic motivation may not be the 'zero sum game' that had previously been assumed. However, this assertion should be interpreted with caution as evidence from the literature suggests educators can still serve students best through intrinsic task framing.

The Utility of Feedback

When feedback orientation was examined in more detail it was found that extrinsic motivation only significantly correlated with the feedback orientation subscale of social awareness. Those who were externally motivated were more likely to view feedback as a tool for assessing how they and their work were viewed by others. As extrinsically motivated individuals are motivated by reward and the avoidance of punishment, it should not be surprising that feedback may be perceived as useful in this way. Extrinsically motivated individuals perceive feedback as useful in directing academic efforts towards reward and approval from others. As Vansteenkiste, Lens and

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Deci (2006) suggest, this type of feedback orientation and motivation is effective in completing academic work but is shorter lived than intrinsic motivation and other forms of feedback orientation. Therefore, having this type of approach to academic work may not produce long-term success and could go so far as to help us to understand course attrition figures.

Self-regulation: The 'Make or Break'

Even though extrinsically motivated people perceive feedback as useful in judging how others view them, this does not necessarily translate into behaviour. It was found that self-regulation and feedback orientation were highly and positively correlated. Those with higher self-efficacy and confidence in their academic abilities were more likely to respond to feedback. This supports the assertion that those with high self-regulation are better able to organise their time and efforts and utilise pertinent sources of support, such as feedback. Further analysis showed that being regulated by external factors had little significance in this relationship. Consequently, external regulation does not contribute to usage of academic feedback. This means that regardless of an individual's feedback orientation, self-regulation appears to be important individual difference insofar as the behaviour to act upon feedback and improve performance. This finding is interesting as framing such as 'please read this so that you can get better grades next time' might have little effect on encouraging students, whereas 'please read this so that you understand how to improve on X' may better encourage students to act. It is important therefore to be mindful of wording when delivering academic feedback to students if educators wish students to use feedback effectively.

Conclusion

It was found that higher intrinsic motivation does not necessarily coincide with lower feedback orientation. Therefore, framing tasks in a way that promotes extrinsic motivations may not need to be avoided completely. It may be beneficial to frame tasks both intrinsically and extrinsically to aid motivation. More research needs to be done to support or refute this finding. It may be beneficial to study this over time in order to test the longevity of extrinsic motivation's usefulness for academic work.

Academic success is a complex concept that cannot be wholly explained by grades. As found by York, Gibson and Rankin (2015), academic success consists of many varied and less quantifiable concepts and grades may not accurately reflect success in terms of deep learning. Therefore, a student may achieve high grades as the result of efforts geared towards passing assessments rather than in retaining information and skills which would better benefit them in future educational and career endeavours. Further studies need to be conducted to find measurements that include the less quantifiable features of academic success, such as satisfaction and career success. In this way, the concepts in this study can be explored with a more comprehensive view of academic success in mind. It is also worth mentioning that participants were recruited from one university and were a small sample size for this study design. Therefore, there is no way to know if this research can be applied to a general student population as it does not account for a wide range of differential factors such as culture and socio-economic status.

Having higher self-regulation coincides with higher motivation and feedback orientation. Being able to organise, plan and effectively carry out study are integral to a student's success regardless of feedback or motivational style. It is important for educators to recognise this, as an effective teacher who excels in motivating students may not see this reflected in outcomes. Developing skills that encourage self-regulation are vitally important for the application of a student's motivation and use of resources, such as feedback. It would seem that integrating ways to improve self-efficacy and self-confidence into the curriculum may be the most beneficial way to improve student outcomes. In this way, students will be better equipped to apply themselves to academic tasks, particularly when coupled with high motivation and feedback orientation, in order to achieve greater success.

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