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The Impact of Kiasu Mindset on Students' Achievement Goal Orientations and Learning Strategies in Singapore

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Abstract

Kiasuism, defined as the fear of losing out, has been a well-known and widespread phenomenon in Singapore. Despite the long history of Kiasuism in Singaporeans, there has been a dearth of research in this topic. The current research investigated the influence of the Kiasu mindset on Singaporean students' achievement goal orientation and learning strategy, and also explored the impact of social comparison as a moderator. Study 1 showed initial evidence of a positive relationship between Kiasu mindset and performance goal orientations (i.e., approach and avoidance). Study 2 replicated this finding and further revealed a positive association of Kiasu mindset with surface learning. The moderated mediation model was also shown to be significant: performance goal orientations mediated the relationship between Kiasu mindset and surface learning, and this mediating relationship was moderated by social comparison. Specifically, Kiasu mindset was related to high performance-avoidance goal orientation, and the performance-avoidance goal orientation was associated with higher surface learning only under downward social comparison. In addition, Kiasu mindset was also associated with high performance-approach goal orientation, and this goal orientation was negatively associated with surface learning only under upward social comparison. Taken together, the paper yields multiple theoretical and practical implications.

Keywords: Kiasuism, Singapore, goal orientation, learning strategy

Introduction

Singaporean students are well-known for their academic performance throughout the world. According to the results from the Performance for International Student Assessment (PISA), Singaporean students performed far above average on reading literacy, mathematics and science (OECD, 2018). Similarly, the Trends in International Mathematics and Science Study, also found Singaporean students in the top rank for their performance (Ang, 2019b; Teng, 2016). Explaining these high scores of Singaporean students, the Singaporean education system has primarily highlighted the importance of meritocracy and examination in students. In light of these observations, Singapore has undoubtedly succeeded in nurturing their young generations to perform well on examinations.

However, this academic excellence of Singaporean students seems to come with a price. Recently, the Institute of Mental Health has reported an increasing number of students, between the ages of six to eighteen, seeking help for school-related stress, anxiety or depressive disorder (Ang, 2019a; Cheow, 2019). As a disclaimer, this rising trend does not necessarily denote increasing anxiety in students. Rather, it may imply that students are more willing to ask for help (Cheow, 2019). But regardless, the escalating number of students seeking for help paints a clearer picture of the pressure that the Singaporean youths are under. Furthermore, a 2019 international study by the Organisation for Economic Cooperation and Development (OECD) found that Singaporean youths possessed the highest level of anxiety in failure compared to other nations (Wong, 2019). This could be attributed to the students' exam-orientation, the tendency to focus only on the end grades or scores (Wong, 2019).

Although the Singapore government has made continuous efforts to mitigate the problem, this exam-orientation is deeply entrenched within the society (Wong, 2019). In fact, such excessive exam-orientation of the Singaporean youths has been pointed out since the

1980s. In the Report by the Singapore Advisory Council on Youth (1989), Singaporean youths were criticized for their high examination-orientation and low interest in intellectual pursuit. Therefore, previous observations and studies consistently reaffirm Singaporean students' tendency to focus on the outcome rather than the learning process. For a deeper understanding of this phenomenon, the current paper investigated this unique tendency through the Goal Orientation Theory.

The Goal Orientation Theory proposes that even when doing the same task, individuals can be motivated by different achievement goal orientations (Dweck, 1986). Largely, individuals pursue two different types of achievement goals: mastery and performance goals (Dweck, 1986). When studying the same material, one with a mastery goal orientation is compelled to learn the content for self-development. His or her goals are aimed at truly understanding and learning the materials (Dweck, 1986). In contrast, one with a performance goal orientation is motivated to study the content for the end-result, be it examination scores or class grades (Dweck, 1986). In other words, he or she is driven by getting a good end-result, such as grades or judgements by others, more so than learning and understanding the materials in the long term. Thus, this construct of performance goal orientation highly resembles the previous example of Singaporean students' examination-orientation.

With the aforementioned notoriety of the exam-orientation in the Singaporean youths, one might question why this is the case. What unique factor explains the performance goal orientation in the Singaporean students? Looking back at the Report by the Singapore Advisory Council on Youth (1989), a deeply rooted Kiasuism, defined as the fear of losing out (Ho et al., 1998), has been suggested as the main cause. Kiasu individuals, with the desire

to avoid losing out to others, will naturally limit their focus on the end-result and ensure that their results are higher than or equivalent to those of their peers.

One further implication of Kiasuism and performance goal orientation should be surface learning, a learning strategy that is characterized by rote learning without true comprehension. With a calculative approach, Kiasu individuals tend to minimize their effort in reaching the end goal (Ho et al., 1998). Accordingly, Kiasu individuals who only seek for good performance (i.e., performance goal orientation) will endorse surface, rather than deep learning. Evidently, Singaporean students have been constantly accused of merely "memoriz[ing] 'correct' answers" (Liew, 2019, para. 10). And, this rote learning does not prepare students for the real world as it does not allow them to apply and utilize their learnings when faced with a practical problem, especially in the long term (Liew, 2019).

Overall, the current paper strives to expand on the niche literature on Kiasuism by investigating the impact of the Kiasu mindset on students' learning outcomes. Kiasuism, with its narrow scope on the end-results should lead to performance goal orientations, thereby leading to high surface learning and low deep learning. Furthermore, we contend that Kiasuism involves social comparison as its core element, and the relationship between Kiasuism and the learning outcomes should be moderated by social comparison. The theoretical development and hypotheses will be introduced in the ensuing sections.

Uncovering the Concept of Kiasu

The Kiasu Singaporeans

'Kiasu' is a Hokkien term, which can be literally translated as the 'fear of losing out'(Ho et al., 1998). Derived from this term, 'Kiasuism' refers to a trait and mindset that arises from the fear of losing out. According to Hwang and colleagues (2002), Kiasuism can also be defined as an "obsessive concern with getting the most out of every transaction and a desire to get ahead of others" (p. 75). Taken together, Kiasuism involves a constant apprehension of securing one's share from a limited resource. According to this Kiasu mindset, there would not be any resources left for them if they do not take action.

Kiasuism has been considered to be a cultural norm of Singapore. In a 2018 national survey, Singaporeans ranked Kiasu as the top characteristic of the Singapore society (Devadas, 2018). In fact, Kiasuism has long been identified as a widespread societal tendency, which can be shown through all the past National Values Assessments revealing Kiasu as the top ranked Singaporean characteristic (Devadas, 2018; Tan, 2015; Tay, 2012). This long grounded Kiasuism is described as inescapable and in the blood of Singaporeans (Pierson, 2019). With very limited resources and land, Singaporeans had to make extra effort to protect and sustain themselves from neighbouring larger countries, such as Malaysia and Indonesia (Pierson, 2019). Therefore, as a small nation in a large world, Singaporeans have inevitably had to put on the Kiasu mindset to survive (Pierson, 2019).

Looking at a commonly cited Kiasu behavior in Singapore, "chope-ing" refers to the reserving of seats in public places by placing tissue packets or personal belongings (M. Lin, 2017). This behavior, while maximizing personal benefit, can be seen as "cold" and "selfish", as was pointed out by a German exchange student at a local Singaporean university in shock of the Singaporean "chope" culture (How, 2019). When asked why individuals engaged in

this ungracious behavior of "chope-ing", many expressed fear that there will be nothing left for them if they do not take action (M. Lin, 2017). Despite that their behavior of "chope-ing" results in the overall lack of available seats, people continued to engage in this extreme behavior from the concern that others will take up all the vacancies if they do not safeguard their place.

Focusing on the academic scene, Kiasuism is also commonly seen in both parents and students. With the emphasis on elitism, the societal margin of success is narrow in Singapore (Ho et al., 1998). In other words, success is only deemed to be achievable through high academic performance. With this, high examination scores (i.e., resource for future success) are limited, which leads to a very intense competition for this resource. As a result, parents often engage in Kiasu behaviors to ensure their children's 'success' (Ho et al., 1998). Portraying this Kiasu behavior, tuition industries have been continuously thriving over the years. Tuition, a term that refers to the supplementary lessons that students undertake aside from school, is highly popular in Singapore despite its cost. According to the Household Expenditure Survey conducted from 2017 to 2018, S$1.4 billion have been spent on tuition alone compared to S$650 million at 2003 (K. S. K. Cheng, 2019). Even after considering the increase in the average household real income, it is evident that the Singapore households are spending a substantial amount of their earnings on tuition (K. S. K. Cheng, 2019). An interview with one of these parents revealed that they "feared that their children will lose out if they do not receive private tuitions" (J. T. Ho et al., 1998, p. 360). In addition, youths of Singapore are found to be highly Kiasu with regards to their academics. This can be shown through extreme behaviors such as, sourcing supplementary study materials, receiving tuition and sandbagging (e.g., "pretending to do worse than you are to fool others"; Bedford & Chua, 2018, p. 11).

Overall, Kiasuism is undoubtedly widespread in Singapore. This can partly be illustrated through the considerable amount of media coverage and government debates in Singapore on this issue. Especially in the 1990s, selfish and Kiasu behaviors were constantly reported on mass media, creating the phrase "ugly Singaporean" (Hodkinson & Poropat, 2014, p. 434). The severity of this social phenomenon can be shown by large scale governmental campaigns, such as the 1993 National Courtesy Campaign, initiated to mitigate this problem (Ministry of Information and Arts, 1996). Additionally, "Mr. Kiasu" was a nationally loved comic strip in Singapore, marked by exaggerated and humorous depictions of Kiasu behaviors (Ho et al., 1998). Perhaps, the secret behind the success of the comic might have been the reflective and satirical portrayal of Kiasuism in Singaporeans (Ho et al., 1998).

Kiasu as a Psychological Construct

Despite the prevalence of Kiasuism in Singapore, there has not been an agreed upon operationalization or measure of the psychological construct. This section provides a review of the past literature on the operationalization and measurement methods of Kiasuism.

As a pioneer in the study of Kiasuism, Ho and his colleagues (1998) regarded Kiasuism as a behavioural tendency. In their study, Kiasuism was measured through the frequency of the ten commonly cited Kiasu behaviors (e.g., "Rushing for train/bus seat" and "Bringing back hotel toiletries", p. 365) and hypothetical situational questionnaires (e.g., asking participants to choose an alternative under a given situation; (Ho et al., 1998). The behaviors typically depicted extreme scenarios which stem from the fear of losing out, selfishness, calculative nature, greed and kiasi-ism (literally translated as the fear of death; J. T. Ho et al., 1998). Hwang and colleagues (2002) followed the footstep of Ho et al. (1998), defining and measuring Kiasuism as a behavioural tendency (e.g., "piling up food"; p.360).

Thenceforth, Kiasuism as a behavioural tendency has been widely accepted in the field (Hwang et al., 2002; Kirby et al., 2010; Kirby & Ross, 2007).

More recent investigations adopted a different operationalization: Kiasuism as a mindset or mentality. Although Kiasuism is often understood as a behavioural construct, Goh (2013) pointed out that the identified Kiasu behaviors may not capture all instances of Kiasuism. For example, the Kiasu behaviors that are yet to be observed are not taken into consideration in the behavioral measurement. Also, the author further added that the underlying mechanism and mindset that drive the Kiasu behaviors are unknown from the measure (Goh, 2013). Similarly, Bedford & Chua (2018) also delineated Kiasu as a mentality, acknowledging that the same 'Kiasu behavior' can be identified as both a Kiasu and a non-Kiasu behavior depending on one's motivation that underlies the action. In short, capturing individual levels of Kiasuism through the behavioural measure does not seem to be adequate.

In the current paper, we follow the more recent definition of Kiasuism as a mindset. As previous papers highlighted (Bedford & Chua, 2018; Goh, 2013), behaviors alone are insufficient to accurately assess individual differences in Kiasuism. The same behavior may have different underlying motivations, depicting totally different constructs. Considering the behavior of doing school work way ahead of time, this behavior can be deemed as Kiasu only when it is accompanied by a fear of losing out (e.g., concern that one will fall behind one's peers in school). However, without this underlying fear of losing out mindset, this behavior might simply be a portrayal of one's diligence or conscientiousness. Therefore, the present studies will operationalize Kiasuism as a mindset, rather than a set of behaviors.

Kiasuism Outcomes

Previous research have suggested that Kiasuism is often associated with negative behaviors and life outcomes. Higher levels of Kiasuism in students were associated with less satisfaction in their academic grades, regardless of their actual performance (Ho et al., 1998), and lower level of creativity, an important factor in success as an individual and as a society (C.-Y. Cheng & Hong, 2017; Goh, 2013). In addition, Kirby and colleagues (2010) found a positive association between Kiasuism and Maximization, which is a decision-making propensity to maximize successful outcomes (Schwartz et al., 2002). While there are pros and cons of Maximization, studies have found that Maximizers generally possess lower life satisfaction and happiness due to their constant concern for optimal results (Schwartz et al., 2002).

Despite its infamy, research show that Kiasuism might actually be beneficial in some aspects. Ong and Cheng (2017) found that individuals with high Kiasu tendencies were more likely to be high in perseverance, an important trait for academic success. Adding on, Kirby and Ross (2007) found that higher general Kiasu tendencies in American college students were significantly associated with higher examination scores. This is also evident from the Singaporean students' PISA scores that is well above the global average (OECD, 2018). In sum, Kiasuism has far-reaching influences on various important life outcomes, generally having a negative impact on personal well-being and creativity while having a positive impact on performance.

Impact of Kiasu Mindset on Achievement Goal Orientation

Achievement Goal Orientation

Achievement goal orientations can be divided into mastery and performance goals. Individuals with a mastery goal tend to focus on growth, development, learning throughout

the process and gaining personal insight from the experience (Dweck, 1986). Contrarily, individuals with a performance goal focus on the end-results (Dweck, 1986). Therefore, these individuals care less about personal growth throughout the task and more about one's performance (Dweck, 1986). While findings on the mastery goal orientation have consistently predicted better educational outcomes (e.g., interest in material, deep learning, persistence and help-seeking; (Elliot et al., 1999; Meece & Holt, 1993; Ryan & Pintrich, 1997; Wolters, 2004), findings on the performance goal orientations have been mixed. Some studies showed negative impact of performance goal orientations on educational outcomes (e.g., likelihood to cheat, surface learning; Ames & Archer, 1988; Anderman et al., 1998; Elliot et al., 1999; Nolen, 1988; Skaalvik, 1997). However, others found positive links of performance goal with task achievement and motivation (Harackiewicz et al., 2000; Skaalvik, 1997).

To these equivocal findings, Elliot (1999) argued that it may be attributable to the fusion of the two different aspects within the performance goal orientation and further divided performance goal into performance-approach and performance-avoidance goals. Performance-approach goal orientation reflects the desire to prove one's ability and competence to others and perform better than others (Elliot, 1999). Performance-avoidance goal orientation reflects the desire to hide one's incompetence or low ability from others (Elliot, 1999). Although there is also a further protracted framework with mastery-approach and mastery-avoidance goals, previous research have suggested that these two types of mastery goals cannot be as easily differentiated empirically (Madjar et al., 2011). Therefore, the present paper utilized the trichotomous achievement goal orientation framework with mastery, performance-approach and performance-avoidance goal orientations.

With differing underlying motives, these goal orientations lead to disparate learning outcomes. In regards to mastery goal orientations, previous research have constantly revealed a positive link with healthy learning characteristics, such as help seeking (Roussel et al., 2011). Mastery goal has also been found to be positively linked to higher creativity through heightened intrinsic motivation, especially when intellectual stimulation is high (K. Leung et al., 2014). Other studies have found positive relationships of mastery goal orientation with consistency of interest, self-efficacy and intrinsic motivation for learning (Alhadabi & Karpinski, 2019; C.-C. Lin, 1997; Runhaar et al., 2019). Despite these healthy learning characteristics, research suggest that mastery goal generally does not necessarily lead to higher performance, presumably because achievement measures usually assess the mere memorization of the content (Harackiewicz et al., 2000). Individuals with a mastery goal often engage in tangential studying, or learning materials that are not covered in the examination for the sake of self-interest (Harackiewicz et al., 2000; Hidi & Harackiewicz, 2000).

Similarly, performance-approach goal orientation has also been found to be associated with various positive learning behaviors. Previous research have identified performance-approach goal as a significant predictor of persistence, effort, self-efficacy and academic performance (Alhadabi & Karpinski, 2019; Elliot et al., 1999; Harackiewicz et al., 2002). However, performance-approach goal also tends to result in high surface learning and low interest (Elliot et al., 1999; Harackiewicz et al., 2002). In contrast, performance-avoidance goal orientation has mainly been linked to negative learning outcomes, such as lower self-efficacy, consistency of interest and perseverance (Alhadabi & Karpinski, 2019). In addition, past research have shown that it is predictive of lower academic performance and higher disorganisation (i.e., difficulty in establishing or maintaining a structured, organized approach to studying"; (Alhadabi & Karpinski, 2019; Elliot et al., 1999).

With goal orientations leading to important learning outcomes, Singaporean students have been portraying signs of high performance goal orientations. Compared to their international counterparts, Singaporean students have reported lower levels of intrinsic motivation, a characteristic of performance goal orientations (Chue & Nie, 2016). In addition, Singaporean students have displayed high levels of test anxiety (Davie, 2017). Given that previous studies show that performance goals incur high levels of anxiety due to the constant concern in the end-results, the test anxiety of the Singaporean students highly resembles performance goal orientations (Elliot & McGregor, 1999). Thus, an application of the past literature in the Singaporean context suggests high levels of performance goal orientations in Singaporean youths.

Looking at the specific performance goal orientations, Singaporean students have been displaying both performance-avoidance and -approach goal orientations simultaneously. In the 2018 PISA, majority of the Singaporean students indicated a fear of failure (Wong, 2019). Specifically, 78 percent of the students agreed to the statement, "[w]hen I am failing, this makes me doubt my plans for the future", and 72 percent expressed worries about what others will think of them in the face of failure (Wong, 2019, para. 1). The extremity of these numbers can be highlighted by comparing them to the OECD average: 54 percent and 56 percent respectively (Wong, 2019). The latter statement about the concern on how one's incompetence will appear to others highly parallels performance-avoidance goal orientation. Furthermore, given the high examination scores that Singaporean students achieve, students also portray signs of performance-approach goal orientation.

Kiasuism and Achievement Goal Orientation

The current paper proposes that Kiasuism predicts high performance goal orientations in the Singaporean students. As evidence, we examined a ubiquitous example of a Kiasu

behavior, parents sending their children to tuitions. Observing the intentions of this behavior, two most prevalent reasons were identified: “to improve [their] grades” and “to keep up with others” (Davie, 2015, para. 6). These results show that the fear of losing out (e.g., fear that their children would not keep up with their peers) and performance goal orientation (e.g., the desire or goal of improving grades) coexist in the parents. Thus, the results from the survey highlight potential association between Kiasuism and performance goal orientations.

In an academic or task environment, the only way to resolve the fear of losing out will be to ensure that one has better or at least equivalent competence compared to others. In a typical academic setting, students are evaluated and ranked by their end-results, such as examination scores and school grades, rather than more intrinsic factors, such as interest or exploratory studying. In other words, in order not to lose out, individuals would have to attain good end-results, while intrinsic motivation or personal interest would not be necessary. As the end-result determines one’s success and failure in the academic setting, individuals who fear that one will ‘lose’ to others should naturally limit one’s focus on their superficial performance (i.e., performance goal orientations). In sum, Kiasuism should lead to higher performance goal orientations in the students.

Specifically, hiding one’s incompetence from others (i.e., performance-avoidance goal) should be important in order not to lose out. Revealing one’s shortcomings to others is definitely detrimental in the competition against peers. For example, when one’s ineptitudes are revealed, such as saying “stupid” comments or questions and making mistakes, to one’s teachers and peers, the threat of receiving a poorer grade than their peers will be magnified. Therefore, the fear of losing out should lead to a heavier emphasis on in masking one’s incompetence. In fact, Kiasuism has been found to lead to a similar avoidance-related tendency, a higher prevention regulatory focus (C.-Y. Cheng & Hong, 2017). However, in

order not to lose out, merely hiding one's incompetence will not be enough. To ensure one's standing, one needs to spend as much time and effort as one's peers. As others' progress and performance are often ambiguous, the minimum effort one needs in order not to lose out is also unclear. With this uncertainty, individuals should try to reduce the chance of them losing out by enhancing their competence and doing extra learning beyond what is necessary (i.e., performance-approach goal).

Contrarily, we predict that there will not be a significant relation between Kiasuism and mastery goal orientation. While mastery goal orientation is healthy and leads to positive learning process, it might not be ideal for a Kiasu individual. In a school and examination situation, mastery goals do not guarantee academic success. Because one's success is primarily determined by grades and scores rather than the long-term intellect, fully understanding and absorbing the study materials do not help individuals succeed. Instead, mastery goal orientation may even lead to 'failure' in the school context. These individuals strive to fully master their interest area. Thus, if this interest area does not overlap with the materials tested, they probably will not be better off than their peers in terms of performance. Therefore, Kiasu individual have no reason to either endorse or refuse mastery goal orientation.

Hypothesis 1: Kiasu mindset will be positively related to performance goal orientations.

Hypothesis 1a: Kiasu mindset will be positively related to performance-avoidance goal orientation.

Hypothesis 1b: Kiasu mindset will be positively related to performance-approach goal orientation.

Further Impact on Learning Strategy

With Kiasuism limiting individuals to a performance-approach goal orientation, it should further influence students' learning strategy. Learning strategy largely involves surface and deep learning. Surface learning (or 'shallow processing') refers to rote learning of isolated facts without true understanding of the content at hand (Marton & Saljo, 1976). In reverse, deep learning (or 'deep processing') is characterized by active learning, such as relating the information to one's own experience, thereby leading to a genuine comprehension of the content and proper application of the information (Marton & Saljo, 1976). Simply put, surface learning involves the mere transference of knowledge from the medium to the individual while deep learning involves one's discovery and exploration in the content, ultimately promoting personal growth (Platow et al., 2013).

Considering the learning strategy in a Singaporean context, plethora of testimonials suggest that Singaporean students employ high levels of surface learning in school. School work in the Singaporean education system places heavy emphasis on the memorization of contents in a short amount of time ("Is Rote Learning Outdated in Today's Internet Age," 2015; Jelita, 2017). Especially at the junior college level, students are required to memorize a heavy amount of information in only two years ("Is Rote Learning Outdated in Today's Internet Age," 2015). In addition, the "ability to memorise information" is suggested to be one of the most acknowledged and valued talent in the Singaporean educational system ("Voices of Youth," 2021, para. 1). As a current secondary school student, Jordan shared that students go through a decade of memorizing the content for the sake of the examinations and forgetting these information afterwards ("Voices of Youth," 2021).

Furthermore, the antecedent of surface learning resembles important characteristics of Kiasuism. Relating the learning strategies to individual motives, the motive to avoid failure

was positively related to surface learning and negatively related to deep learning (Diseth & Kobbeltvedt, 2010). With this, both the motive to avoid failure and Kiasu Mindset appear to be driven by a preventative focus. The motive to avoid failure can be logically considered as a form of prevention focus as it involves avoiding and minimizing loss, specifically failure. Similarly, prevention focus has been found to underlie Kiasuism, showing that the fear of losing out was strongly associated with the desire to prevent loss (C.-Y. Cheng & Hong, 2017). Therefore, an important antecedent of the surface learning, or the motive to avoid failure, highly corresponds to Kiasuism.

With this preliminary evidence, Kiasu mindset should lead to higher levels of surface learning. According to Ho et al. (1998), "calculating" has been identified as an important factor underlying the Kiasu mindset (p. 363). In order not to lose out to others, Kiasu individuals tend to constantly weigh one's gains and losses when undertaking actions. Through this calculative nature, Kiasu individuals tend to choose actions that leads to maximal benefits with low cost. Applying this to the learning strategies, deep learning is an inefficient strategy for Kiasu individuals as it requires very much time and effort while not guaranteeing high performance or scores (Tooth et al., 1989). In contrast, surface learning meets the desire of Kiasu individuals through minimal effort. Notably, surface approach to learning involves an instrumental motivation, a motive to make minimal expenditure to avoid failure (Figueira & Duarte, 2011). Therefore, Kiasu Mindset will lead to a higher use of surface learning and a lower use of deep learning.

Hypothesis 2: Kiasu mindset will be related to learning strategies.

Hypothesis 2a: Kiasu mindset will be positively associated with surface learning.

Hypothesis 2b: Kiasu mindset will be negatively associated with deep learning.

Given the link between Kiasu mindset and surface learning, performance goal orientations should serve as mediators that underlie this relationship. Again, Kiasuism narrows one's focus on the end-result (i.e., performance goal orientations). Both performance-avoidance and -approach goal orientations should in turn lead to higher use of surface learning. With low intrinsic motivation and interest in the content, performance-avoidance goal orientation should merely strive to avoid failure so that one's incompetence is not shown to one's parents, peers and teachers. Therefore, for these individuals, surface learning should be a sufficient strategy that enables one to avoid failure. Supporting this proposition, plethora of past studies have shown that the performance-avoidance goal orientation is positively related to surface learning (DeBacker & Crowson, 2006; Diseth & Kobbeltvedt, 2010; Liem et al., 2008). Therefore, the performance-avoidance goal orientation should mediate the positive relationship between Kiasu mindset and surface learning.

While individuals with a performance-approach goal orientation also have their focus on the end-results, these individuals should strive to achieve better result than others and show their ability. As aforementioned, surface learning is an attractive and economical strategy in achieving sufficient outcomes. Therefore, performance-approach goal should also lead to higher use of surface learning, in order to fulfil their goal towards a better end-result. Notably, past papers have found that performance-approach goal is predictive of higher level of surface learning (Al-Emadi, 2001; Guo & Leung, 2021; Matos et al., 2017). Therefore, performance-approach goal orientation should mediate the positive relationship between Kiasu mindset and surface learning.

Hypothesis 3: Performance goal orientations will mediate the relationship between Kiasu mindset and surface learning.

Hypothesis 3a: Performance-avoidance goal orientation will mediate the positive relationship between Kiasu mindset and surface learning strategy.

Hypothesis 3b: Performance-approach goal orientation will mediate the positive relationship between Kiasu mindset and surface learning strategy.

On the negative relationship between Kiasu mindset and deep learning, performance-avoidance goal orientation should serve as a mediator. As performance-avoidance goal largely involves a prevention-focus (i.e., hiding one's incompetence), these individuals will not be interested in the content. Instead, they would be interested only in the prevention or avoidance of revealing one's incompetence to others. With deep learning being closely related to interest and personal meaning in the content (Tyler & Entwistle, 2013), performance-avoidance goal orientation will likely not endorse this strategy. Supporting the above, past literature sheds light on the negative association between performance-avoidance goal and deep learning (Elliot & McGregor, 2001; Fenollar et al., 2007; Lau et al., 2008). Thus, performance-avoidance goal should serve as a mediator between Kiasu mindset and deep learning.

In contrast, the impact of performance-approach goal orientation on deep learning is less clear. While some studies show a null relationship between performance-approach goal orientation and deep learning (Elliot & McGregor, 1999; Fenollar et al., 2007; Guo & Leung, 2021), others show a significant positive association (Lau et al., 2008; Liem et al., 2008; Matos et al., 2017). With the motive to outperform and show one's competence to others, individuals with performance-approach goal orientation seems to generally engage in both surface and deep learning. Therefore, the negative link between Kiasu mindset and deep learning should not be explained by performance-approach goal orientation.

Hypothesis 4: Performance-avoidance goal orientation will mediate the negative relationship between Kiasu mindset and deep learning strategy.

Role of Social Comparison

Conceptually, Kiasuism is the fear of losing out *to others*, and this is evident from the behaviors identified by Bedford and Chua (2018). Students have identified studying ahead as Kiasu only if this behavior is accompanied by explicit and implicit comparison with their peers (Bedford & Chua, 2018). In addition, non-academic behaviors, such as queuing for freebies, were also deemed as Kiasu only if it involved a fear of losing out, menial care for the item queuing for and is done at the expense of others (Bedford & Chua, 2018). With the importance put on others in Kiasuism, the present paper suggests that the type of social comparison one engages in should play a moderating role on the impact of Kiasu mindset.

In the literature, social comparison is defined as thinking about one or more people in comparison to oneself (Festinger, 1954; Wills, 1981). In other words, it is the process of paying attention to the similarities and differences of oneself to others. This comparison process can be distinguished into two types: downward and upward social comparison. As the names imply, downward social comparison involves comparing oneself to an inferior other while upward social comparison involves comparing oneself to a superior other (Thornton & Arrowood, 1966; Wheeler & Suls, 2020). The two types of social comparison generally lead to different types of emotions and self-evaluations, eventually impacting individual's behaviors and responses (Mussweiler & Strack, 2000). Particularly in a task environment, individual's performance is shown to improve or diminish depending on the social comparison one engages in (Mussweiler & Strack, 2000; Suls et al., 2002). Therefore, the current research proposes that social comparison will moderate the mediating relationship of Kiasu mindset, performance goal orientation and learning strategy, and investigated two

potential alternative hypotheses: the moderation of social comparison on the link between Kiasu mindset and performance goal orientation and the moderation of social comparison on the link between performance goal orientation and learning strategy.

First, social comparison may play a moderating role on the link between Kiasu mindset and performance goal orientation. For Kiasu individuals, upward social comparison will lead to heightened fear and anxiety as it is a cue that one is not keeping up with others. This elevated concern should in turn further narrow one's focus on the end-results. In order to escape from this threatening situation, individuals would have to achieve better end-results. Therefore, under upward social comparison, Kiasu mindset should lead to higher performance goal orientations, thereby leading to higher surface learning and lower deep learning. In contrast, downward social comparison indicates that one's performance is sufficient. This self-assurance may lower the need to enhance one's effort. As such, downward social comparison will decrease the impact of Kiasuism on performance goal orientations, thereby diminishing its effect on performance goal orientations and learning strategies. See Figure 1 for a visual representation of the hypotheses.

Hypothesis 5: Kiasu Mindset –Performance Goal Orientation – Learning Strategy relationship will be moderated by the social comparison on *the link between Kiasu mindset and performance goal orientations*.

Hypothesis 5A: Under upward social comparison, Kiasu mindset will lead to higher performance-avoidance goal, thereby leading to higher surface learning and lower deep learning, than when under downward social comparison.

Hypothesis 5B: Under upward social comparison, Kiasu mindset will lead to higher performance-approach goal, thereby leading to higher surface learning, than when under downward social comparison.

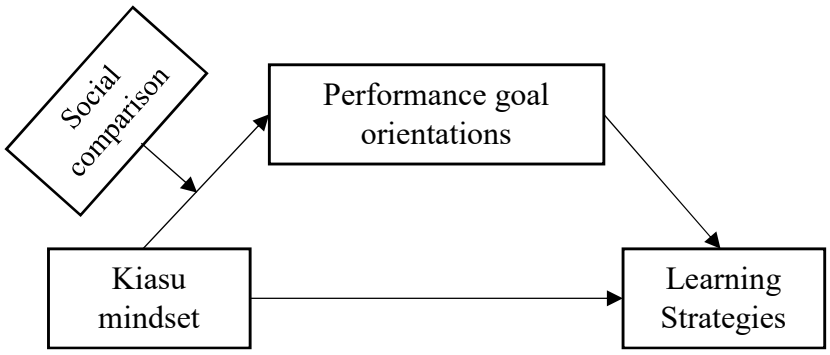

Figure 1. Moderated Mediation Model with first stage moderation

Second, the moderation of social comparison may take place on the link between performance goal orientation and learning strategy. Given that individuals with a performance-approach goal orientation focus on their superficial competence, these individuals should be highly concerned about the progress of others in relation to their own. Specifically, as these individuals strive to outperform and exhibit their abilities to others, upward social comparison, or information of higher performing others, should serve as an important cue on where improvement is needed. In contrast, downward social comparison will not provide helpful information for the performance-approach goal orientation. Instead, the affirmation that the downward social comparison provides may decrease the salience of the goal. For instance, when one is performing better than one's peer, the performance-approach goal, or the motive to outperform others and show one's competence, should be fulfilled, thereby decreasing the salience of the goal. Therefore, individuals with a performance-approach goal orientation may be more sensitive to upward social comparison than downward social comparison. With this, the effect of the performance-approach goal orientation should only be observed under upward social comparison. However, under downward social comparison, this relationship should no longer persist.

In contrast, performance-avoidance goal orientation focuses on the avoidance of looking incompetent. For this goal orientation, comparing oneself with a lower performing

and incompetent others will provide helpful information about what not to do. In other words, downward social comparison should enable individuals to learn from others' mistakes and refrain from looking incompetent (i.e., performance-avoidance goal). Contrarily, upward social comparison should not be applicable in achieving the performance-avoidance goal. As performance-avoidance goal orientation is not interested in the improvement and development of the self, upward social comparison should not be a helpful cue for this orientation. Thus, performance-avoidance goal orientation should be more sensitive to downward social comparison, impacting individual's learning strategy only under downward social comparison. Under upward social comparison, the association between performance-avoidance goal orientation and learning strategies should diminish. See Figure 2 for a visual representation of the hypotheses.

Supporting the arguments above, a past study has found that individuals with a performance-approach goal orientation were more likely to engage in upward social comparison (Tian et al., 2017). In contrast, individuals with a performance-avoidance goal orientation reported higher use of downward social comparison (Tian et al., 2017). These results bolster the proposition that the different directions of social comparison should be more attractive and helpful to individuals with different performance goal orientations. The importance and applicability of the information provided by the social comparisons should depend on one's performance goal orientations.

Hypothesis 6: Kiasu Mindset –Performance Goal Orientation – Learning Strategy relationship will be moderated by the social comparison on *the link between performance goal orientations and learning strategies*.

Hypothesis 6A: The effect of performance-approach goal orientation will be stronger under upward social comparison than downward social comparison, diminishing the indirect effect under downward social comparison.

Hypothesis 6B: The effect of performance-avoidance goal orientation will be stronger under downward social comparison than upward social comparison, diminishing the indirect effect under upward social comparison.

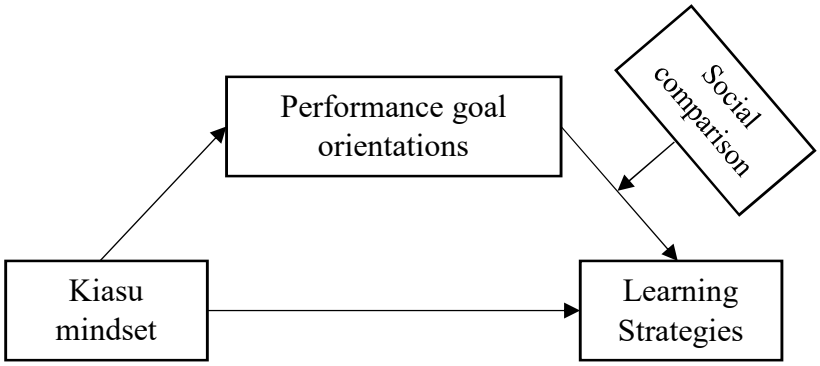

Figure 2. Moderated Mediation Model with second stage moderation

Study 1

Study 1 aimed to gather initial evidence for Hypothesis 1 and test the construct validity of the Kiasuism scale. In addition, the current study explored several variables that are similar to the construct of Kiasu Mindset. In particular, competitiveness and Fear of Missing Out (FoMO) was examined. First, competitiveness is considered to be a highly similar construct to Kiasuism, because both variables involve a strong desire for success compared to others. In fact, prior research have conceptualized Kiasuism as an extreme form of competitiveness (Hwang et al., 2002; Kirby & Ross, 2007). However, Kiasuism can be differentiated from the conventional competitiveness as a "defensive type of competitiveness", striving towards no losses rather than aiming for gains (C.-Y. Cheng & Hong, 2017, p. 16). Therefore, despite their similarities, competitiveness and Kiasuim are theoretically unique and distinct constructs.

Second, as widely known, FoMO is the apprehension of missing out on rewarding experiences that others are having and is regarded as a form of anxiety (Przybylski et al., 2013b). FoMO involves the constant need to stay connected with others, increasing the likelihood of social media and internet addictions (Przybylski et al., 2013b). The conceptualization of FoMO largely overlaps with Kiasuism as they both can be classified as a form of anxiety that stems from comparison. However, an important differentiation is that FoMO involves a desire to be a part of the in-group and arises from one's desire to be included. In contrast, Kiasuism does not concern over inclusiveness, but rather involves a lack of consideration for others. Also, the fear of losing out arises from the desire to keep up with others. With the theoretical distinctiveness of the Kiasu mindset, one of the aims of the current paper is to provide empirical evidence for this uniqueness.

Participants

Based on an a priori power analyses of .80 power to detect a small effect size (f^2 = .15) through G*Power (Faul et al., 2007, 2009), a sample size of 75 was sufficient. One hundred and fourteen undergraduates from Singapore Management University participated in the study in exchange for course credit. Fourteen individuals who failed to answer the attention check items correctly were excluded, and the final sample size was 101 (75 females; M_{age} = 21.44, *SD* = 1.98).

Procedure

The current study was conducted online, and a survey link was sent to the participants' school email address upon sign up. The survey included two measures of Kiasu mindset to ensure that the scale actually measured individuals' Kiasu mindset. Participants were then given measures of achievement goal orientation, competitiveness and FoMO. Lastly, participants were asked to complete a brief demographic questionnaire and were automatically led to a separate survey link. This separate survey asked for participants' personal identifiers (e.g., name, email) for the sake of remuneration. Attention check items (e.g., "Please choose 4: Agree to this statement") were included in between measures to ensure that participants were paying full attention to the items.

Measures

Kiasu mindset. A 4-item fear of losing out scale was adapted from Goh's (2013) Kiasu Endorsement Scale. The items include: "I am concerned if I miss an opportunity while others get it", "I am worried that there will be nothing left for me if others go first", "I am concerned that I will come off second best to others" and "I am concerned that I have to forgo certain benefits if I do not go first". Responses were made on a 7-point Likert scale (*1: Strongly Disagree; 7: Strongly Agree*).

To investigate the convergent validity of the scale, Cheng and Hong's (2017) 1-item measure of Kiasuism was also adopted. Participants rated on a 5-point Likert scale (*1: Not at all; 5: Very much*) to the question "To what extent do you think the tendency of "Kiasu" describes you?" In addition, participants were asked to rate their understanding of this cultural tendency of "Kiasu" and to what extent "Kiasu" describes a typical Singaporean (see Appendix A).

Achievement Goal Orientation. Participants were given a 18-item Goal Orientation Scale (Midgley et al., 1998) on a 5-point Likert scale (*1: Not at All; 5: Very Much*). Sample items include "I like school work that I'll learn from, even if I make a lot of mistakes" (mastery), "I would feel really good if I were the only one who could answer the teachers' questions in class." (performance-approach) and "It's very important to me that I don't look stupid in my classes" (performance-avoidance; see Appendix B).

Competitiveness. Participants were tasked to respond to a 14-item Competitiveness Scale (Harris & Houston, 2010) on a 5-point Likert scale (*1: Not at All; 5: Very Much*). The measure assessed two components of competitiveness: enjoyment of competition and contentiousness. Items included "I like competition" (enjoyment of competition) and "I will do almost anything to avoid an argument (reverse coded)" (contentiousness; see Appendix C for the full scale).

Fear of Missing Out (FoMO). Participants were asked to complete a 10-item FoMO scale (Przybylski et al., 2013) on a 5-point Likert scale (*1: Not at all true of me; 5: Extremely true of me*). Sample items are "I fear others have more rewarding experiences than me" and "I fear my friends have more rewarding experiences than me" (see Appendix D for the full scale).

Demographics. Participants were asked to answer brief demographic questions, including their age, gender and ethnicity. In addition, participants were asked to self-appraise themselves on how they performed in comparison to their peers during the past year. Participants were also measured on their cultural exposure and language proficiencies.

Results

According to the descriptive statistics, all variables were normally distributed (skewness < 1.0). Reliability analysis of the scales for all the interest variables revealed a high Cronbach's alpha above .70. See Table 1 for the correlations matrix.

Table 1

Means, standard deviations, correlation matrix and reliability statistics

	M	*SD*	1	2	3	4	5	6
1. Kiasu mindset	4.61	1.10	(.82)					
2. Performance-avoidance	4.60	1.55	**.43**	(.89)				
3. Performance-approach	5.09	1.26	**.46**	**.57**	(.85)			
4. Mastery	5.35	1.08	-.05	.05	.06	(.83)		
5. Competitive	2.90	0.71	.15	-.02	.16	.14	(.88)	
6. FoMO	2.58	1.00	**.26**	**.44**	**.27**	.11	-.05	(.92)

Note. Cronbach's alphas are presented in parentheses in the diagonal. Significant results are marked in boldface, $p < .01$.

Kiasu measures

The fear of losing out measure and 1-item self-report Kiasu scale were significantly positively correlated ($r = .470$, $p < .001$), suggesting high convergent validity between these scales. In other words, individuals who rated themselves as more "Kiasu" in general scored higher on the fear of losing out scale. Therefore, the fear of losing out scale successfully measured the individual differences in the Kiasu mindset, establishing construct validity.

Hereafter, the fear of losing out subscale was used as the measure of Kiasuism in all further analyses.

Kiasu Mindset and Achievement Goal Orientation

To test for the relationship between Kiasu Mindset and achievement goal orientation, a linear regression analysis was conducted with Kiasu Mindset as the independent variable and performance-avoidance goal orientation as the dependent variable. Higher Kiasu Mindset was significantly associated with higher performance-avoidance goal orientation (β = .61, $t(99) = 4.78$, SE = .13, $p < .001$). When performance-approach goal orientation was entered as the dependent variable, Kiasu Mindset and performance-approach goal showed a significant positive relationship (β = .53, $t(99) = 5.18$, SE = .10, $p < .001$). The relationship was not significant with mastery goal orientation (β = -.04, $t(99) = -0.44$, SE = .10, $p = .658$). In sum, the results supported Hypothesis 1.

Kiasu Mindset, Competitiveness and FoMO

From a correlational analysis, Kiasu Mindset was not significantly correlated to competitiveness ($r = .148$; $p = .140$). However, Kiasu Mindset and FoMO showed a significant correlation ($r = .260$; $p = .009$).

To further investigate the relationship between Kiasu Mindset and achievement goal orientations after accounting for competitiveness and FoMO, a hierarchical regression was carried out. Competitiveness and FoMO predicted 19.3% of the variation in performance-avoidance goal ($F(2, 98) = 11.70$, $p < .001$). When Kiasu Mindset was added to the model, there was a significant R^2 change of 11.2% ($F(1, 97) = 15.69$, $p < .001$) on top of competitiveness and FoMO. Controlling for competitiveness and FoMO, Kiasu Mindset significantly predicted performance-avoidance goal orientation (β =.496, SE = .13, $t(97)$ =

3.96, $p < .001$). The whole model, including Kiasu Mindset, competitiveness and FoMO, showed significant relationship with performance-avoidance goal ($R^2 = .305$, $F(3, 97) = 14.20$, $p < .001$). H1a was supported.

This pattern also held for performance-approach goal orientation. Competitiveness and FoMO predicted 10.6% of the variation in performance-approach goal ($F(2, 98) = 5.80$, $p = .004$). When Kiasu Mindset was added to the model, there was a significant R^2 change of 14.5% ($F(1, 97) = 18.77$, $p < .001$). Controlling for competitiveness and FoMO, Kiasu Mindset significantly predicted performance-approach goal orientation ($\beta = .457$, $SE = .11$, $t(97) = 4.33$, $p < .001$). The whole model, including Kiasu Mindset, competitiveness and FoMO, showed a significant relationship with performance-approach goal ($R^2 = .251$, $F(3, 97) = 10.82$, $p < .001$). H1b was supported.

Discussion

Study 1 provided an initial support for Hypothesis 1. Consistent with the hypothesis, higher endorsement of Kiasu mindset was associated with higher levels of performance-avoidance and -approach goals while it was not significantly associated with mastery goals. In other words, Kiasu individuals reported a higher motive to avoid looking incompetent. At the same time, they also showed stronger desire to outperform others and show one's competence to others. These results echo the previous speculations of the result-driven Singaporean students and lend support to the assertion that Kiasuism would facilitate this score-driven learning motives.

In addition, the current study established convergent validity of the Kiasu endorsement scale with individual's self-assessed Kiasuism. Therefore, this further bolstered construct validity of the fear of losing out scale, indicating that the scale adequately and accurately measured the Singaporean conceptualization of Kiasuism.

Furthermore, the results from the study highlighted the distinct nature of Kiasu mindset compared to competitiveness and FoMO. Kiasu mindset and competitiveness was not significantly related, establishing discriminant validity. Although Kiasu mindset and FoMO was significantly correlated, the correlation is considered to be weak in strength (r = .260) Also, further analysis showed that these two constructs had different predictive validity on achievement goal orientations. Results from the hierarchical regression analyses showed that Kiasu mindset predicted changes in both performance-avoidance and -approach goal orientations even when accounting for competitiveness and FoMO, establishing incremental validity. Therefore, these findings suggest that Kiasu mindset is a separate construct from competitiveness and FoMO.

Despite the significant findings of Study 1, it did not investigate the further impact of performance goal orientations on students' learning strategies. With Kiasu mindset predicting higher performance goal orientations, it should indirectly predict learning strategy through the performance goal orientations. In addition, as social comparison is an important factor in both Kiasu mindset and performance goal orientations, social comparison may strengthen or buffer the relationships between Kiasu mindset, performance goal orientations and learning strategy. In Study 2, the mediation of performance goal orientations on the link between Kiasu mindset and learning strategies, and the moderating role of social comparison were further examined.

Study 2

With the initial evidence for the relationship between Kiasu mindset and performance goal orientations, Study 2 strives to test the moderated mediation model.

Participants

Based on an a priori power analyses of .80 power to detect a small effect size (f^2 = .15) through G*Power (Faul et al., 2007, 2009), a sample size of 129 was sufficient. A total of 135 undergraduate students from Singapore Management University were recruited to complete this study. Subjects were compensated with either one course credit or SGD 5 for participation.

Following suggestions by Meade and Craig (2012) on filtering out careless responders, participants were asked if they had responded to the survey items in a careful and honest manner, such that the data will be reasonably valid. Participants who indicated that their response was not valid were omitted from the analysis (n = 3). On top of this, participants who spent less than 3 SDs below the mean time spent completing the study were removed (n = 4; Meade & Craig, 2012). There were no participants who spent more than 3 SDs above the mean. The final sample size was 128 (94 females; M_{age} = 22.12, SD = 2.08), which was close to the sample size indicated by G*Power (Faul et al., 2007, 2009).

Procedure

Participants were instructed to take a seat once they arrived at the venue and were asked to use their own laptop to do the survey. In the survey, participants were first given a Kiasu mindset scale. Then, a short reading comprehension task was given as a dummy task in order to manipulate social comparison (Appendix E). After completion of the reading comprehension, participants were randomly assigned into two conditions: Upward Social

Comparison (USC) and Downward Social Comparison (DSC) condition. Depending on the conditions, participants were given a feedback about their reading comprehension score as the manipulation of social comparison. Manipulation check, asking participants how they scored on the reading task, was included to ensure that the participants read and understood the manipulation. Then, participants completed scales of goal orientation and learning strategy. Learning strategy was also measured through a task, specifically a reading comprehension task on biopsychology. Lastly, participants completed demographics survey, including gender, age, major, academic year, ethnicity, academic performance and socioeconomic status, and completed validity check question. After, participants were informed that they have come to the end of the survey and debriefed about the deception and true purpose of the study.

Materials

Kiasu mindset. The 4-item fear of losing out scale that was used in Study 1 was employed in this study.

Achievement goal orientation. The Goal Orientation Scale (Midgley et al., 1998) used in the current study was identical to the one in Study 1.

Learning Strategy. Learning strategy was measured by the Approaches and Study Skills Inventory for Students (ASSIST; Tait & Entwistle, 1996; Tyler & Entwistle, 2013). The surface approach to learning included factors such as lack of purpose, unrelated memorizing, fear of failure and syllabus-boundedness. For the deep approach to learning, seeking meaning, relating ideas, use of evidence, interest in ideas and monitoring effectiveness were assessed. The total inventory included 52 items, and participants were told to rate their agreement on each statement on a 5-point scale (*1: Strongly Disagree; 5: Strongly Agree*). Sample items include “I find I have to concentrate on just memorising a

good deal of what I have to learn" and "I try to relate ideas I come across to those in other topics or other courses whenever possible" (Appendix F).

Apart from the self-report scale, I also attempted to measure the depth of learning through a task. In the task assessment, participants were told to read an excerpt about biopsychology and answer questions about it. I expected that individuals using surface learning will score worse in short answer questions as these individuals should have a hard time retrieving the information that was input through unrelated memorising. In contrast, individuals with deep learning were expected to score better on short answer questions. As the human biology is a commonly taught course prior to university, the topic was chosen such that it is a familiar but challenging topic. Therefore, high scores in this task should indicate student's depth of learning throughout their school years. For instance, if the student have utilized a deep learning strategy, he or she should be better able to remember the concepts and terms in detail. In contrast, individuals who engaged in surface learning in their academic years should not be able to remember the content in detail as surface learning involves rote learning and syllabus boundedness (Appendix G).

Social Comparison. First, participants were first given information about the reading comprehension task: "The reading comprehension task was taken from a portion of the SAT (Scholastic Assessment Test) practice test (Khan Academy, n.d.), which is a well-established standardized examination that has been shown to predict future career success." Next, participants were given feedback about their reading comprehension task according to their conditions. The USC condition was given the feedback that their score on the reading comprehension test was 60% while the average score of SMU students was 90%. They were further told that on a curve, they were on the 24th percentile. In order to ensure that participants understood, a figure with a red bar indicating where the participant stood on the

curve was given. The DSC condition was given the feedback that their score on the reading comprehension test was 60% while the average score of SMU students was 40%. They were further told that on a curve, they were on the 76th percentile. The supplementary figure was also shown, which illustrated where they are on the curve (Appendix H).

Control Variable. Students' majors was included as the control variable. Double majoring should indicate students' academic motivation and academic achievement, because only those who are motivated enough to take the additional effort will undertake the second major. Specifically, students who double major may be more intrinsically motivated, focusing on the true intellectual pursuit. Notably, a study found that the top motivation for choosing a second major was interest in the field (Pitt & Tepper, 2012). Also, students who completed their degree with a double major reported improvement in creative thinking and fulfilment in their intellectual curiosity (Pitt & Tepper, 2012). Therefore, double majoring can be a proxy of students' motivation and also influence students' intellectual performance and achievement as well. In order to account for these potential biases, students' majors were coded and controlled for. The coding was simply the number of majors that students undertook (e.g., double major: 2). Students who were yet to declare their majors were coded as 1.

Manipulation Check. To ensure that participants read the social comparison manipulation, participants were asked what feedback they have received on the reading comprehension task. Specifically, participants were asked to identify if they were above average, average or below average. All participants successfully identified where they stood, and therefore, no one was removed from the manipulation check.

Validity Check. At the end of the survey, participants were asked if they had responded to the survey items in a reasonably careful and honest manner such that the data

will be reasonably valid. Participants were further told that their answer on this question will not impact their compensation and an honest answer will help improve the validity of the research (Appendix I).

Results

Preliminary Analysis

According to the descriptive statistics, all the studied variables were normally distributed (skewness < 1.0). Inter-item reliability test was carried out for the scales. The results showed that all the scales had a Cronbach's alpha above .8, indicating high reliability. See Table 2 for the correlation matrix among the variables. Note that major (single vs. double or more) was controlled for, and this variable will be controlled for all further analyses.

Table 2

Means, standard deviations, correlation matrix and reliability statistics

	M	*SD*	1	2	3	4	5	6
1. Kiasu mindset	4.58	1.25	(.82)					
2. Performance-avoidance	3.06	0.89	**.37**	(.85)				
3. Performance-approach	3.34	0.87	**.45**	**.54**	(.86)			
4. Mastery	3.53	0.79	-.00	-.00	.10	(.87)		
5. Surface Learning	3.45	0.60	**.42**	**.20**	.10	**-.35**	(.82)	
6. Deep Learning	4.50	0.66	.05	.09	**.18**	**.61**	**-.19**	(.88)

Note. Cronbach's alphas are presented in parentheses in the diagonal. Significant results are marked in boldface, $p < .05$.

Learning Strategy Task

As aforementioned, learning strategy was not only measured by a self-report scale, but also by a reading comprehension task. For the latter, scores on fill-in-the-blank questions

(FIB) and short answer questions (SA) were computed. First, FIB questions were either coded as 1 for correct answers or 0 for incorrect answers. SA questions were rated in terms of the answer's comprehensive understanding in the topic by two raters. A rating of 1 indicated no answer or completely wrong answer, while a rating of 5 indicated a correct answer with demonstrable understanding in the topic and relating concepts to other concepts in the reading or to one's personal experiences. The inter-rater reliability for the items were high with the ICCs above .70 ($p < .001$).

From a correlation analysis, both FIB and SA scores were only significantly related to deep learning positively ($r = .247$, $p = .007$ and $r = .200$, $p = .030$ respectively). However, both were not significantly related to surface learning ($r = .031$, $p = .736$ and $r = -.026$, $p = .782$ respectively). This indicates that the task was useful in assessing participants' deep learning, but failed to capture the variance in surface learning.

Hypothesis Testing

Kiasu Mindset and Achievement Goal Orientation. Linear regression analysis was conducted to test the relationship between Kiasu mindset and achievement goal orientation. The relationship between Kiasu mindset and performance-avoidance goal orientation was significant and positive ($\beta = .262$, $SE = .059$, $t(125) = 4.16$, $p < .001$) supporting Hypothesis 1a. Kiasu mindset also had a significant positive relationship with performance-approach goal orientation ($\beta = .313$, $SE = .055$, $t(125) = 5.65$, $p < .001$), supporting Hypothesis 1b. Lastly, Kiasu mindset was not significantly related to mastery goal orientation ($\beta = -.001$, $SE = .056$, $t(125) = -0.02$, $p = .986$), which was in line with our prediction. Overall, these findings replicated those of Study 1.

Kiasu Mindset and Learning Strategy. Results from the linear regression analysis showed a significant positive association between Kiasu mindset and surface learning (β

= .200, *SE* = .039, *t*(125) = 5.15 , $p < .001$), confirming Hypothesis 2a. However, the association between Kiasu mindset and deep learning was not significant (β = .028, *SE* = .047, *t*(125) = 0.61, *p* = .546), and Hypothesis 2b was not supported.

When examining the FIB and SA scores of participants, Kiasu mindset did not have a significant association with both FIB (β = -.028, *SE* = .034, *t*(125) = -0.77, *p* = .442) and SA (β = -.009, *SE* = .049, *t*(125) = -0.18, *p* = .859). As previous analysis showed that the task only captured student's deep learning, this result further demonstrates that Kiasu mindset did not have a significant association with deep learning.

Moderated Mediation Model (path a)

In order to test the proposed mediated moderation model on *path a*, a regression analysis using Hayes (2017) PROCESS Model 7 was used with bootstrapping of 10000. First, the independent variable was input as Kiasu mindset, dependent variable as surface learning, mediator as performance-avoidance goal orientation and moderator as social comparison. The two-way interaction between Kiasu mindset and social comparison on performance-avoidance goal orientation was non-significant (β = .108, *SE* = .119, *t*(123) = 0.88, p = .369). The mediation of performance-approach goal orientation was non-significant under both USC ($\beta_{indirect}$ = .007, SE_{Boot} = .014, 95%CI_{Boot} [-.025, .036]) and DSC ($\beta_{indirect}$ = .010, SE_{Boot} = .021, 95%CI_{Boot} [-.030, .053]). Therefore, the overall moderated mediation was non-significant (*Index* = .004, SE_{Boot} = .011, 95%CI_{Boot} [-.013, .033]), failing to support Hypothesis 5a.

When we repeated the same procedure with the mediator of performance-approach goal orientation, the two-way interaction between Kiasu mindset and social comparison on performance-approach goal was non-significant as well (β = .150, *SE* = .111, *t*(123) = 1.35, p = .179). The mediation of performance-approach goal orientation was non-significant under both USC ($\beta_{indirect}$ = -.018, SE_{Boot} = .021, 95%CI_{Boot} [-.068, .013]) and DSC ($\beta_{indirect}$ = -.029,

SE_{Boot} = .027, 95%CI_{Boot} [-.081, .028]). The overall moderated mediation was also non-significant (*Index* = -.011, SE_{Boot} = .016, 95%CI_{Boot} [-.045, .021]). Therefore, Hypothesis 5b was not supported.

When performance-avoidance goal orientation was input as the mediator and deep learning as the dependent variable, the interaction between Kiasu mindset and social comparison on performance-avoidance goal orientation was non-significant (β = .108, *SE* = .119, $t(123) = 0.90$, p = .369). The mediation of performance-approach goal orientation was non-significant under both USC ($\beta_{indirect}$ = .012, SE_{Boot} = .018, 95%CI_{Boot} [-.022, .054]) and DSC ($\beta_{indirect}$ = .019, SE_{Boot} = .025, 95%CI_{Boot} [-.030, .070]). The overall moderated mediation was non-significant (*Index* = .007, SE_{Boot} = .014, 95%CI_{Boot} [-.017, .042]). Therefore, the Hypothesis 5a was not supported.

As there was no significant moderated mediation on the indirect effect, we did not further test for the moderation on the direct effect (PROCESS Model 8). Overall, the moderated mediation model was non-significant when the moderation of social comparison was on the link between Kiasu mindset and performance goal orientations. Therefore, the results generally failed to support Hypothesis 5.

Moderated Mediation Model (path b)

Next, the moderated mediation model with the moderator on *path b* was tested. To test this, Hayes (2017) PROCESS Model 14 was run with bootstrapping of 10000. With the independent variable as Kiasu mindset, dependent variable as surface learning, mediator as performance-approach goal orientation and moderator as social comparison, the 2-way interaction of performance-approach and social comparison on surface learning was significant (β = .256, *SE* = .112, $t(122) = 2.29$, p = .024), such that performance-approach and surface learning were negatively associated under USC (β = -.190, *SE* = .080, $t(122) = -2.37$,

p = .019) and the relationship no longer significant under DSC (β = .066, *SE* =.087, *t*(122) = 0.76, p = .447). The results supported Hypothesis 6a, with USC leading to stronger association between performance-approach goal orientation and surface learning. However, the prediction on the positive direction of this association was not confirmed. The indirect effect was only significant under USC ($\beta_{indirect}$ = -.059, SE_{Boot} = .031, 95%CI_{Boot} [-.122, -.000]) but not under DSC ($\beta_{indirect}$ = .021, SE_{Boot} = .031, 95%CI_{Boot} [-.038, .084]). This supported Hypothesis 3b with performance-approach goal as a mediator between Kiasu mindset and surface learning. The moderated mediation model was also significant (*Index* = .080, SE_{Boot} = .044, 95%CI_{Boot} [.001, .171]), further supporting Hypothesis 6a.

The same procedure was repeated with the mediator of performance-avoidance goal orientation. The interaction of performance-avoidance goal orientation and social comparison on surface learning was significant (β =.272, *SE* = .109, *t*(122) = 2.50, p = .014): performance-avoidance goal orientation was significantly positively associated with surface learning only under DSC (β = .176, *SE* = .080, *t*(122) = 2.192, p = .030), and this relationship was not significant under USC (β = -.096, *SE* = .079, *t*(122) = -1.224, p = .224). The results confirmed Hypothesis 6b. The indirect effect was only significant under DSC ($\beta_{indirect}$ = .046, SE_{Boot} = .025, 95%CI_{Boot} [.001, .098]) and not significant under USC ($\beta_{indirect}$ = -.025, SE_{Boot} = .026, 95%CI_{Boot} [-.079, .022]). Thus, Hypothesis 3a was also supported. The overall moderate mediation model was also significant (*Index* = .071, SE_{Boot} = .038, 95%CI_{Boot} [.005, .151]), partially supporting Hypothesis 6b.

When deep learning was input as the dependent variable, the interaction between the performance-avoidance goal orientation and social comparison was non-significant (β =-.152, *SE* = .132, *t*(122) = -1.15, p = .252). The indirect effect was non-significant under both USC ($\beta_{indirect}$ = .039, SE_{Boot} = .033, 95%CI_{Boot} [-.023, .109]) and DSC ($\beta_{indirect}$ = -.001, SE_{Boot} = .026,

95%CI_{Boot} [-.053, .052]). Therefore, the whole moderated mediation model was also non-significant when considering all three types of achievement goal orientations (*Index* = -.040, SE_{Boot} = .043, 95%CI_{Boot} [-.131, .042]). Therefore, Hypothesis 4, which predicts a mediation of performance-avoidance goal orientation on deep learning, was not supported. Also, Hypothesis 6b was not supported for deep learning strategy.

With significant moderation of social comparison on the mediational relationship of Kiasu mindset, performance goal orientations and surface learning, the moderation of social comparison on the direct effect was further tested. Hayes (2017) PROCESS Model 15 was run as this analysis tests for both the moderation on the indirect effect and the direct effect simultaneously. Taking the moderation of social comparison on the direct effect into consideration, the moderated mediation index was non-significant across both performance goal orientations and surface learning. This suggests that Kiasu mindset and surface learning is moderated indirectly through performance goal orientations. In other words, performance goal orientations explain the moderating effect of social comparison in the link between Kiasu mindset and surface learning.

Discussion

The results from the current study again confirmed Hypothesis 1, showing that higher Kiasu mindset is associated with higher performance-approach and performance-avoidance goal orientations. There was partial support for Hypothesis 2. Hypothesis 2a was supported, with Kiasu mindset being significantly and positively associated with surface learning. However, the non-significant relationship between Kiasu mindset and deep learning failed to support Hypothesis 2b. There was also conditional support for Hypothesis 3, with performance-avoidance goal orientation mediating the Kiasu mindset and surface learning relationship only under downward social comparison. In contrast, performance-approach goal

orientation significantly mediated the Kiasu mindset and surface learning relationship only under upward social comparison. There was no mediating effect of performance-avoidance goal orientation on deep learning, failing to support Hypothesis 4. Hypothesis 5 was not supported, showing that the moderation of social comparison was not significant on the relationship between Kiasu mindset and performance goal orientations. However, Hypothesis 6 was supported for surface learning strategy. Therefore, social comparison moderated the relationship between performance goal orientations and surface learning, ultimately moderating the entire indirect effect. This moderating effect was not found for deep learning strategy.

With social comparison failing to moderate the relationship between Kiasu mindset and performance goal orientations, Kiasu mindset seems to inevitably entail performance goal orientations. As Kiasu mindset involves a heavy focus on keeping up with others, a focus on the end-result seems to be a natural response. The performance goal orientations, then, was related to different levels of surface learning. The performance-avoidance goal orientation was positively associated with surface learning under downward social comparison, and this relationship was curtailed when under upward social comparison. This result is in line with the argument that performance-avoidance goal orientation should be more sensitive to downward social comparison as it provides helpful cues in achieving performance-avoidance goal. The performance-approach goal orientation was significantly associated with surface learning only under upward social comparison, and this relationship was not found when under downward social comparison. This confirms our assertion of the moderating relationships. However, contrary to the prediction, performance-approach goal orientation was related to lower levels of surface learning. As a whole, Kiasu mindset, simultaneously leading to both performance-avoidance and -approach goals, was generally

associated with higher surface learning when under downward social comparison and lower surface learning when under upward social comparison.

Regarding the negative direction of the performance-approach goal and surface learning, the results suggest that individuals with a performance-approach goal may re-evaluate their study strategies when given upward social comparison. With upward social comparison furnishing essential information on where one should improve, these individuals may respond to the upward social comparison cues by higher efforts to change and improve their ways of learning. Considering that previous studies mainly show a positive relationship between performance-approach goal orientation and surface learning, the current results also imply that while performance-approach goal orientation leads to higher surface learning in a normal setting, the trend may change under upward social comparison.

Finally, results from PROCESS Model 15 was non-significant. This indicated that when accounting for the moderation of social comparison on the indirect effect, the moderation was not significant on the direct effect of Kiasu mindset on surface learning. With performance goal orientation being an important factor entailed by the Kiasu mindset, the link between Kiasu mindset and surface learning may be moderated by social comparison indirectly via the mediation of performance goal orientations. In other words, social comparison moderates the relationship between Kiasu mindset and surface learning through the performance goal orientations. With the absence of performance goal orientations, the moderation of social comparison would no longer be significant. This finding further highlights the importance of performance goal orientations in the Kiasu mindset and surface learning link.

General Discussion

The present paper investigated the influence of Kiasu mindset in the academic setting. First, the paper established and differentiated Kiasu mindset from other seemingly similar constructs, such as FoMO and competitiveness. In addition, the findings shed light on the impact of Kiasu mindset on students' achievement goal orientation and learning strategy, contributing towards a better understanding in the influences of Kiasu mindset. Particularly, Kiasu individuals were more likely to focus on the end-results (i.e., performance goal orientations) instead of growth and understanding (i.e., mastery goal orientation). Kiasu individuals were also more likely to engage in surface, rather than deep learning, showing higher memorization without relating the content to oneself and only focusing on the required materials in the syllabus. Furthermore, the moderated mediation model demonstrated that Kiasu mindset was associated with higher performance-approach and -avoidance goals. These performance goal orientations, in turn, was related to higher surface learning under downward social comparison and lower surface learning under upward social comparison.

There are several theoretical contributions of the paper. First, the present paper extends the understudied literature of Kiasu mindset by examining its impact on one's learning and the underlying motivations. It sheds light on the motivations and behaviors of the Kiasu students, which may further lead to important outcomes, such as academic performance (Kirby & Ross, 2007) and creativity (C.-Y. Cheng & Hong, 2017). Second, social comparison was identified as a moderator. Specifically, the results reveal that Kiasu mindset leads to higher surface learning when comparing oneself to someone who is worse off. Furthermore, this moderating effect happened via the moderation on the indirect effect, with performance goal orientations as the mediator. Therefore, this indicates the essentiality

of performance goal orientations in the relationship between Kiasu mindset and surface learning.

Also, the moderation of social comparison on the relationship between performance goal orientations and learning strategy adds new insight in the field of achievement goal orientation. The present results reveal different levels of sensitivity towards social comparison, depending on individual's performance goal orientations. Particularly, performance-approach goal orientation was more sensitive to upward social comparison while performance-avoidance goal orientation was more sensitive to downward social comparison. Given this differences in sensitivity, future research should further examine the moderating role of social comparison on the impact of performance goal orientations.

In addition, majority of the achievement goal orientation literature endorses a variable-centred approach, in which the impact of a single goal orientation is examined. However, Linnenbrink-Garcia et al. (2012) acknowledged that the co-variance of the goal orientations differs across studies and highlighted the possibility of different patterns in the endorsement of multiple goals, depending on students' characteristics. Therefore, Linnenbrink-Garcia and colleagues (2012) emphasized the need for a person-centred approach: identifying the different goal profiles according to the characteristics of students. In line with this suggestion, the current study sheds light on the goal profile for students with a Kiasu mindset. Specifically, the current findings suggest that students high in Kiasu mindset will simultaneously endorse performance-avoidance and -approach goal orientations.

Practically, the paper can provide meaningful insights for Singaporean students. The results highlight the negative influence of the Kiasu mindset on student's learning, being associated with higher surface learning. As aforementioned, surface learning involves memorizing information without understanding, resulting in fragmentation in knowledge and

inability to apply the knowledge in a practical setting. Therefore, higher surface learning that Kiasu students engage in is not useful nor adaptive in the long-term. Although the findings do not reveal a significant relationship between Kiasu mindset with deep learning, Kiasu mindset may have an indirect impact on deep learning through the use of surface learning in real life. As time is limited, the endorsement of surface learning should reduce the time available for deep learning. Thus, the higher use of surface learning in Kiasu individuals may translate onto a lower use of deep learning in reality. For instance, if a student spends the study week using a surface learning strategy, he or she will not have the time and resources to use deep learning at this period of time. And, as students typically have multiple course-works in a semester, this trade-off between surface and deep learning should be especially strong. With these implications, it would be crucial for educational institutions, parents and governments to monitor and intervene students' Kiasu tendencies.

In addition, given that social comparison serves as a moderator between Kiasu mindset and surface learning relationship, the current results suggest that the negative impact of Kiasu mindset can be mitigated. Particularly, using a downward social comparison seems to accentuate the detrimental effect of Kiasu mindset through strengthening its positive relationship with surface learning. In contrast, when using upward social comparison, the relationship between Kiasu mindset and surface learning becomes non-significant (with performance-avoidance goal) or even negative (with performance-approach goal). Therefore, for Kiasu individuals who fear of losing out to others, upward social comparison would be an indicator of oneself falling behind, leading the individuals to change their learning strategies.

Beyond Singaporean students, the current results may apply to other East Asian students as well. Generally, the educational system in East Asian countries are influenced by the Confucian teaching from ancient China and therefore show similar characteristics. For

instance, East Asian countries that are influenced by the Confucian teaching (e.g., Japan, Korea, China, Hong Kong, Taiwan, Singapore and Vietnam) tend to have strong policy and supervision in the educational agendas and show rapid growth in tertiary education (Marginson, 2011). Also, these countries are characterized by a "one chance" national examination, in which students are tested on their overall learning with an examination at the end of schooling (Marginson, 2011). Perhaps due to the similarities in educational systems, East Asian students tend to show similar types of motivation and behaviors in academic settings. For example, East Asians students have consistently shown high academic performance and low intellectual interest (F. K. S. Leung, 2002; Yee, 1989).

With East Asians typically experiencing high pressure and competition from a young age (Yee, 1989), the East Asian environment seems to push students towards constant concern and stress over performing as well as others, or Kiasuism. This fear of losing out can be reflected by a study showing that more than 40 percent of the 200,000 Chinese parents felt that additional tutoring is necessary for their children due to the intense competition (Zuo, 2019). Explaining this necessity in tuition for Chinese students, researchers added that this phenomenon demonstrates a wide-spread anxiety over securing a place at top schools (Zuo, 2019). In sum, given the similarities in the extreme competition and high concern over keeping up in East Asian countries, the current research of Kiasu mindset could also apply to these countries as well.

Limitations and Future Directions

A limitation of the current research is a lack of direct evidence for the causal inferences about the mediation relationship. Study 1 was a correlational study, and Study 2 only manipulated the moderator of social comparison. While the findings are promising and major hypotheses were replicated in both studies, different methods should be used in future

research to establish this causal link. Specifically, a causal chain experimental design will make insightful contributions of the causality (Spencer et al., 2005). Future research can manipulate FoLO to investigate the change of performance goal orientations and surface learning. Furthermore, researchers can manipulate performance goal orientation to examine its impact on participants' surface learning.

Another limitation is the use of self-report measures to assess Kiasu mindset, achievement goal orientation and learning strategies in our studies. Although Study 2 did attempt to capture students' depth of learning through a behavioural measure (i.e., reading task), the task failed to capture the variance in students' surface learning. Therefore, there is a possibility that these self-reported measures do not reflect participants' actual motivations and performance. Participants may interpret statements differently, have different tendencies in rating (e.g., towards the middle or the extreme in the scale) or may lack self-awareness to accurately assess themselves. Therefore, future studies should use new and creative methods that allow for more objective measurements of the variables.

Although the current study examined Singaporean students, the highlighted influences of Kiasu mindset on learning and goal outcomes may not be limited to Singapore. Upon investigating the difference between Singaporean and Australian samples, Ho and his colleagues (1998) found that there was no significant difference in their Kiasu endorsement. Furthermore, Kirby and Ross (2007) also revealed that Kiasuism can also be found in American college students. Notably, both the Australian and American samples showed familiarity with the Kiasu behaviors in spite of having no prior knowledge about the term, 'Kiasuism' (Ho et al., 1998; Kirby & Ross, 2007). With evidence in the universality of Kiasuism, it would be interesting to investigate the influence of Kiasuism in other cultures as well. Given the commonalities of the environment and student characteristics in East Asian

countries, empirical investigations of Kiasu mindset in other East Asian countries may be highly promising.

Lastly, prior research have shown that achievement goal orientation is not only an important factor in academic settings, but also significant in workplace settings. Largely, achievement goal orientations have been shown to make a significant impact on several workplace outcomes, in terms of sales performance, negative and positive emotions, managerial effectiveness and psychological empowerment (Fisher et al., 2013; Park, 2011; VandeWalle et al., 1999). Given these findings, it would be interesting to extend the current research in the organizational environment and investigate the impact of Kiasuism in adult workers.

Conclusion

In sum, the present paper investigated the role of Kiasuism, or the fear of losing out, in an academic context. Study 1 supported the paper's prediction, revealing that Kiasu Mindset was positively associated with performance goal orientations. Study 2 tested the comprehensive model and showed that performance goal orientations mediated the link between Kiasu mindset and surface learning strategy, depending on social comparison. Overall, shaped by cultural norms and influences, the individual differences in Kiasuism predict important learning outcomes.

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Appendix A

Goh (2013) Kiasu Endorsement measure

Please rate your agreement on each of the following statement.

1. I am concerned that I will come off second best to others
2. I am concerned if I miss an opportunity while others get it
3. I am worried that there will be nothing left for me if others go first
4. I am concerned that I have to forgo certain benefits if I do not go first

Cheng & Hong (2017) 1-item measure

"Kiasu" is a popular cultural tendency in Singapore. We would like to ask your opinion about this cultural tendency.

1. How much do you understand this cultural tendency, "Kiasu"?
2. To what extent do you think the tendency of "Kiasu" describes a typical Singaporean?
3. To what extent do you think the tendency of "Kiasu" describes you?

Appendix B

Midgley et al. (1998) Goal Orientation Scale

Please indicate the extent to which you feel that the statements describes you.

1. I like school work that I'll learn from, even if I make a lot of mistakes.
2. An important reason why I do my school work is because I like to learn new things.
3. I like school work best when it really makes me think.
4. An important reason why I do my work in school is because I want to get better at it.
5. I do my school work because I'm interested in it.
6. An important reason I do my school work is because I enjoy it.
7. I would feel really good if I were the only one who could answer the teachers' questions in class.
8. It's important to me that the other students in my classes think that I am good at my work.
9. I want to do better than other students in my classes.
10. I would feel successful in school if I did better than most of the other students.
11. I'd like to show my teachers that I'm smarter than the other students in my classes.
12. Doing better than other students in school is important to me.
13. It's very important to me that I don't look stupid in my classes.
14. An important reason I do my school work is so that I don't embarrass myself.
15. The reason I do my school work is so my teachers don't think I know less than others.

16. The reason I do my work is so others won't think I'm dumb.

17. One reason I would not participate in class is to avoid looking stupid.

18. One of my main goals is to avoid looking like I can't do my work.

Appendix C

Harris and Houston (2010) Competitiveness Scale

Please indicate the extent to which you feel that the statements describes you.

1. I like competition.

2. I am a competitive individual.

3. I enjoy competing against an opponent.

4. I don't like competing against other people.*

5. I get satisfaction from competing with others.

6. I find competitive situations unpleasant.*

7. I dread competing against other people.*

8. I try to avoid competing with others.*

9. I often try to outperform others.

10. I try to avoid arguments.*

11. I will do almost anything to avoid an argument.*

12. I often remain quiet rather than risk hurting another person.*

13. I don't enjoy challenging others even when I think they are wrong.*

14. In general, I will go along with the group rather than create conflict.*

Appendix D

Przybylski et al. (2013) Fear of Missing Out Scale

Below is a collection of statements about your everyday experience. Using the scale provided, please indicate how true each statement is of your general experiences. Please answer according to what really reflects your experiences rather than what you think your experiences should be. Please treat each item separately from every other item.

1. I fear others have more rewarding experiences than me.
2. I fear my friends have more rewarding experiences than me.
3. I get worried when I find out my friends are having fun without me.
4. I get anxious when I don't know what my friends are up to.
5. It is important that I understand my friends "in jokes".
6. Sometimes, I wonder if I spend too much time keeping up with what is going on.
7. It bothers me when I miss an opportunity to meet up with friends.
8. When I have a good time, it is important for me to share the details online (e.g. updating status).
9. When I miss out on a planned get-together, it bothers me.
10. When I go on vacation, I continue to keep tabs on what my friends are doing.

Appendix E

Instruction

In this section, you will be tested in your reading comprehension.

You will be asked to read a passage adapted from Edith Wharton's "Ethan Frome" and answer relevant questions.

Upon finishing, your reading comprehension score will be computed.

Reading

This passage is adapted from Edith Wharton, *Ethan Frome*, originally published in 1911. Mattie Silver is Ethan's household employee.

Line Mattie Silver had lived under Ethan's roof for a year, and from early morning till they met at supper he had frequent chances of seeing her; but no moments in her company were comparable to those when, her arm in his, and her light step flying to keep time with his long stride, they walked back through the night to the farm. He had
5 taken to the girl from the first day, when he had driven over to the Flats to meet her, and she had smiled and waved to him from the train, crying out, "You must be Ethan!" as she jumped down with her bundles, while he reflected, looking over her slight person: "She don't look much on housework, but she ain't a fretter, anyhow." But it was not only that the coming to his house of a bit of hopeful young life was like the
10 lighting of a fire on a cold hearth. The girl was more than the bright serviceable creature he had thought her. She had an eye to see and an ear to hear: he could show her things and tell her things, and taste the bliss of feeling that all he imparted left long reverberations and echoes he could wake at will.

It was during their night walks back to the farm that he felt most intensely the
15 sweetness of this communion. He had always been more sensitive than the people about him to the appeal of natural beauty. His unfinished studies had given form to this sensibility and even in his unhappiest moments field and sky spoke to him with a deep and powerful persuasion. But hitherto the emotion had remained in him as a silent ache, veiling with sadness the beauty that evoked it. He did not even know

whether any one else in the world felt as he did, or whether he was the sole victim of this mournful privilege. Then he learned that one other spirit had trembled with the same touch of wonder: that at his side, living under his roof and eating his bread, was a creature to whom he could say: "That's Orion down yonder; the big fellow to the right is Aldebaran, and the bunch of little ones—like bees swarming—they're the Pleiades..." or whom he could hold entranced before a ledge of granite thrusting up through the fern while he unrolled the huge panorama of the ice age, and the long dim stretches of succeeding time. The fact that admiration for his learning mingled with Mattie's wonder at what he taught was not the least part of his pleasure. And there were other sensations, less definable but more exquisite, which drew them together with a shock of silent joy: the cold red of sunset behind winter hills, the flight of cloud-flocks over slopes of golden stubble, or the intensely blue shadows of hemlocks on sunlit snow. When she said to him once: "It looks just as if it was painted!" it seemed to Ethan that the art of definition could go no farther, and that words had at last been found to utter his secret soul....

As he stood in the darkness outside the church these memories came back with the poignancy of vanished things. Watching Mattie whirl down the floor from hand to hand he wondered how he could ever have thought that his dull talk interested her. To him, who was never gay but in her presence, her gaiety seemed plain proof of indifference. The face she lifted to her dancers was the same which, when she saw him, always looked like a window that has caught the sunset. He even noticed two or three gestures which, in his fatuity, he had thought she kept for him: a way of throwing her head back when she was amused, as if to taste her laugh before she let it out, and a trick of sinking her lids slowly when anything charmed or moved her.

1. Over the course of the passage, the main focus of the narrative shifts from the
    a. reservations a character has about a person he has just met to a growing appreciation that character has of the person's worth.
    b. ambivalence a character feels about his sensitive nature to the character's recognition of the advantages of having profound emotions.
    c. intensity of feeling a character has for another person to the character's concern that that intensity is not reciprocated.
    d. value a character attaches to the wonders of the natural world to a rejection of that sort of beauty in favor of human artistry.
2. In the context of the passage, the author's use of the phrase "her light step flying to keep time with his long stride" (line 5) is primarily meant to convey the idea that
    a. Ethan and Mattie share a powerful enthusiasm.
    b. Mattie strives to match the speed at which Ethan works.
    c. Mattie and Ethan playfully compete with each other.

d. Ethan walks at a pace that frustrates Mattie.

3. The description in the first paragraph indicates that what Ethan values most about Mattie is her

    a. fitness for farm labor.

    b. vivacious youth.

    c. receptive nature.

    d. freedom from worry.

4. Which choice provides the best evidence for the answer to the previous question?

    a. Lines 1–7 (“Mattie...farm”)

    b. Lines 7–14 (“He had...anyhow”)

    c. Lines 14–16 (“But it...hearth”)

    d. Lines 18–22 (“She had...will”)

5. The author includes the descriptions of the sunset, the clouds, and the hemlock shadows (lines 51–54) primarily to

    a. suggest the peacefulness of the natural world.

    b. emphasize the acuteness of two characters’ sensations.

    c. foreshadow the declining fortunes of two characters.

    d. offer a sense of how fleeting time can be.

Appendix F

Approaches and Study Skills Inventory for Students

Surface Learning

This dimension has also been called ‘surface apathetic’ or instrumental’ in some publications

Lack of purpose *(Sometimes separates out as a distinct aspect)*

3. Often I find myself wondering whether the work I am doing here is really worthwhile.

16. There’s not much of the work here that I find interesting or relevant.

28. When I look back, I sometimes wonder why I ever decided to come here.

42. I’m not really interested in this course, but I have to take it for other reasons.

Unrelated memorising

6. I find I have to concentrate on just memorising a good deal of what I have to learn.

19. Much of what I’m studying makes little sense: it's like unrelated bits and pieces.

32. I'm not really sure what's important in lectures, so I try to get down all I can.

45. I often have trouble in making sense of the things I have to remember.

Fear of failure (Motivational aspect)

8. Often I feel I'm drowning in the sheer amount of material we're having to cope with.

22. I often worry about whether I'll ever be able to cope with the work properly.

35. I often seem to panic if I get behind with my work.

47. Often I lie awake worrying about work I think I won't be able to do.

Syllabus-boundness *(Does not contribute to the overall score effectively in all subject areas)*

12. I tend to read very little beyond what is actually required to pass.

24. I concentrate on learning just those bits of information I have to know to pass.

38. I gear my studying closely to just what seems to be required for assignments and exams.

51. I like to be told precisely what to do in essays or other assignments.

Deep approach to learning

Seeking meaning

4. I usually set out to understand for myself the meaning of what we have to learn.

17. When I'm reading an article or book, I try to find out for myself exactly what the author means.

29. When I am reading I stop from time to time to reflect on what I am trying to learn from it.

43. Before tackling a problem or assignment, I first try to work out what lies behind it.

Relating ideas

11. I try to relate ideas I come across to those in other topics or other courses whenever possible.

21. When I'm working on a new topic, I try to see in my own mind how all the ideas fit together.

33 Ideas in course books or articles often set me off on long chains of thought of my own.

46. I like to play around with ideas of my own even if they don't get me very far.

Use of evidence

9 I look at the evidence carefully and try to reach my own conclusion about what I'm studying.

23. Often I find myself questioning things I hear in lectures or readth in books.

36. When I read, I examine the details carefully to see how they fit in with what's being said.

49. It's important for me to be able to follow the argument, or to see the reason behind things.

Interest in ideas (Motivational aspect)

13. Regularly I find myself thinking about ideas from lectures when I'm doing other things.

25. I find that studying academic topics can be quite exciting at times.

39. Some of the ideas I come across on the course I find really gripping.

52. I sometimes get 'hooked' on academic topics and feel I would like to keep on studying them.

Monitoring effectiveness ***(Originally included in strategic, but now seen as more closely related to deep)***

7. I go over the work I've done carefully to check the reasoning and that it makes sense.

20 I think about what I want to get out of this course to keep my studying well focused.

34. Before starting work on an assignment or exam question, I think first how best to tackle it.

48. When I have finished a piece of work, I check it through to see if it really meets the requirements.

Appendix G

Depth of Learning Task

Page 1

In the following section, you will be tasked to read an excerpt from an article. After reading, you will be required to answer related questions in a short quiz. Please note that you may **not** go back to the article when answering the questions. There is no time limit to this task, so you may take as much time as you need.

Page 2

Assigned Article Reference: https://courses.lumenlearning.com/wmopen-psychology/chapter/outcome-neurons/
Ever wonder how your brain actually works? What exactly is going on inside of your small, wrinkly mass while you read this text? In this section, you'll learn about the basics of neural communication in the brain, which is the brain's way of sending messages to and from different regions in order to relay critical information about your body and its surroundings. Glia and neurons are the two cell types that make up the nervous system. While glia generally play supporting roles, the communication between neurons is fundamental to all of the functions associated with the nervous system. Neuronal communication is made possible by the neuron's specialized structures, like the soma, dendrites, axons, terminal buttons, and synaptic vesicles.

Neuronal communication is an electrochemical event. The dendrites contain receptors for neurotransmitters released by nearby neurons. If the signals received from other neurons are sufficiently strong, an action potential will travel down the length of the axon to the terminal buttons, resulting in the release of neurotransmitters into the synapse.

Different neurotransmitters are associated with different functions. Often, psychological disorders involve imbalances in a given neurotransmitter system. Therefore, psychotropic drugs are prescribed in an attempt to bring the neurotransmitters back into balance. Drugs can act either as agonists or as antagonists for a given neurotransmitter system.

Psychologists striving to understand the human mind may study the **nervous system**. Learning how the cells and organs (like the brain) function, help us understand the biological basis behind human psychology. The nervous system is composed of two basic cell types: glial cells (also known as glia) and neurons. **Glial cells**, which outnumber neurons ten to one, are traditionally thought to play a supportive role to neurons, both physically and metabolically. Glial cells provide scaffolding on which the nervous system is built, help neurons line up closely with each other to allow neuronal communication, provide insulation to neurons, transport nutrients and waste products, and mediate immune responses. **Neurons**, on the other hand, serve as interconnected information processors that are essential for all of the tasks of the nervous system. This section briefly describes the structure and function of neurons.

Neurons are the central building blocks of the nervous system, 100 billion strong at birth. Like all cells, neurons consist of several different parts, each serving a specialized function. A neuron's outer surface is made up of a **semipermeable membrane**. This membrane

allows smaller molecules and molecules without an electrical charge to pass through it, while stopping larger or highly charged molecules.

The nucleus of the neuron is located in the soma, or cell body. The **soma** has branching extensions known as **dendrites**. The neuron is a small information processor, and dendrites serve as input sites where signals are received from other neurons. These signals are transmitted electrically across the soma and down a major extension from the soma known as the **axon**, which ends at multiple **terminal buttons**. The terminal buttons contain **synaptic vesicles** that house **neurotransmitters**, the chemical messengers of the nervous system.

Axons range in length from a fraction of an inch to several feet. In some axons, glial cells form a fatty substance known as the **myelin sheath**, which coats the axon and acts as an insulator, increasing the speed at which the signal travels. The myelin sheath is crucial for the normal operation of the neurons within the nervous system: the loss of the insulation it provides can be detrimental to normal function. To understand how this works, let's consider an example. Multiple sclerosis (MS), an autoimmune disorder, involves a large-scale loss of the myelin sheath on axons throughout the nervous system. The resulting interference in the electrical signal prevents the quick transmittal of information by neurons and can lead to a number of symptoms, such as dizziness, fatigue, loss of motor control, and sexual dysfunction. While some treatments may help to modify the course of the disease and manage certain symptoms, there is currently no known cure for multiple sclerosis.

In healthy individuals, the neuronal signal moves rapidly down the axon to the terminal buttons, where synaptic vesicles release neurotransmitters into the synapse. The **synapse** is

a very small space between two neurons and is an important site where communication between neurons occurs. Once neurotransmitters are released into the synapse, they travel across the small space and bind with corresponding receptors on the dendrite of an adjacent neuron. **Receptors**, proteins on the cell surface where neurotransmitters attach, vary in shape, with different shapes "matching" different neurotransmitters.

Page 3

Fill in the blanks. For questions with more than one blank, please answer both blanks chronologically with a comma in between (e.g. ANSWER A, ANSWER B).

1. Multiple sclerosis involves a breakdown of the _____.

2. The _____ receive(s) incoming signals from other neurons.

3. This information is then processed in the _____, and if the signal is strong enough, the message is pushed through and travels down the _____.

4. The signal travels to the end of the axon to the _____ where another signal triggers neurotransmitters to be released, passing through the synaptic cleft onto the _____ of another neuron.

5. The space between a sending and receiving neuron is called a _____.

6. If the signal exceeds threshold, it is pushed out of the cell body and down the _____ toward the _____ between this neuron and the next one.

7. The signal travels to the end of the axon, called _____, where the signal travels across the synapse to the next neuron.

Page 4

Short Answer. Please answer the following questions.

1. Multiple sclerosis (MS), an autoimmune disorder, involves a large-scale loss of the myelin sheath on axons throughout the nervous system. What is the implication of this disorder for neural communications?

2. What happens when neurotransmitters are released into the synapse by the terminal button?

3. What is the role of semipermeable membrane of neurons?

4. How does axons function in the neuron?

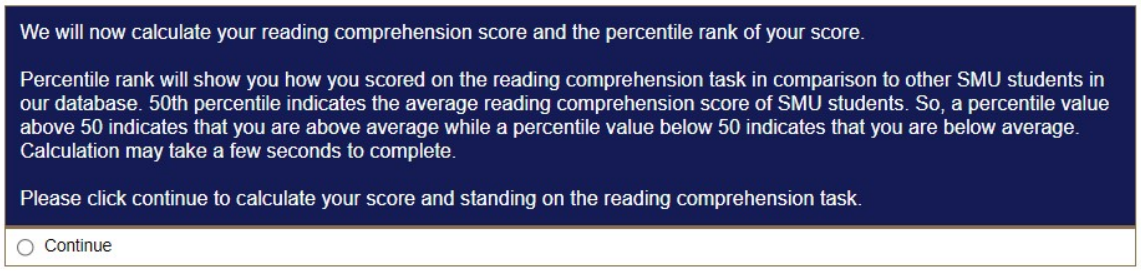
5. What is the function of glial cells?

6. What are the three main takeaways from the reading?

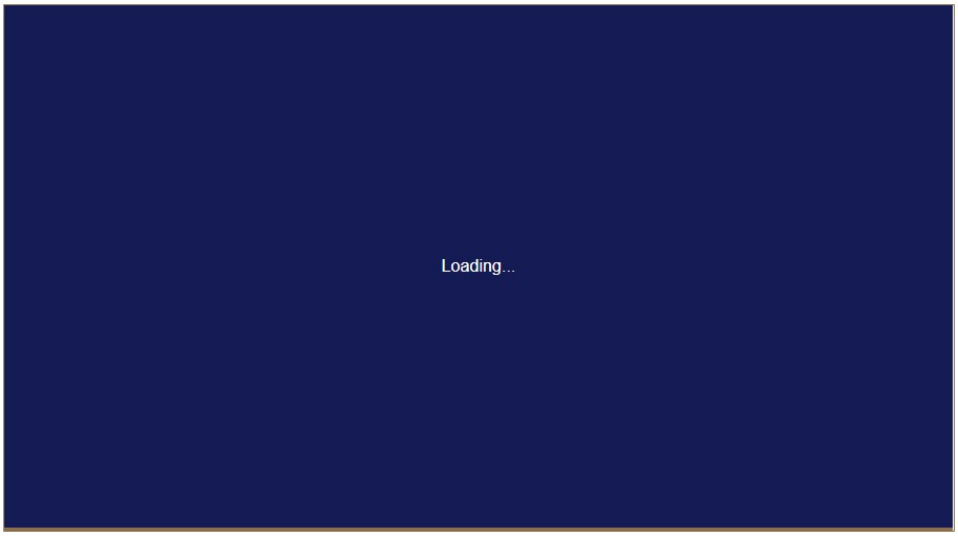
Appendix H

Social Comparison Manipulation Procedure

Page 1

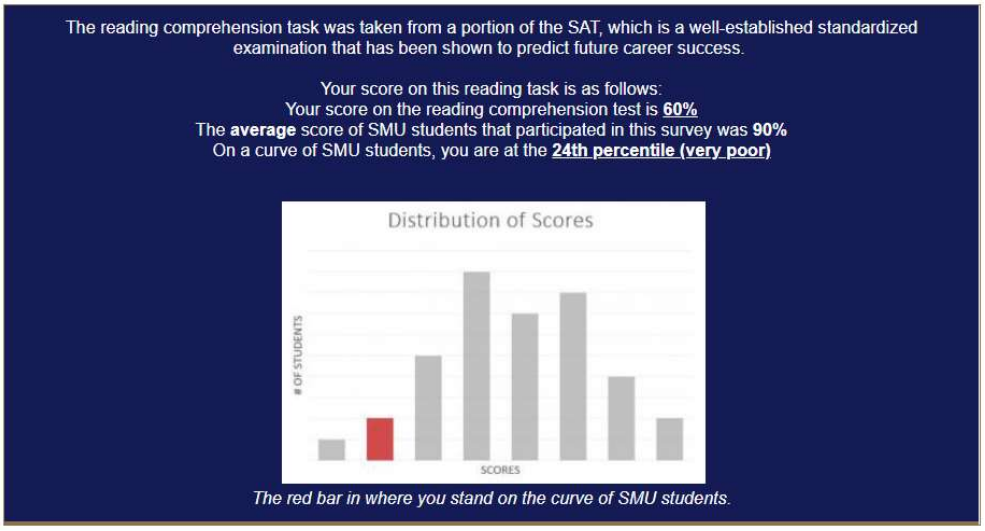


Page 2



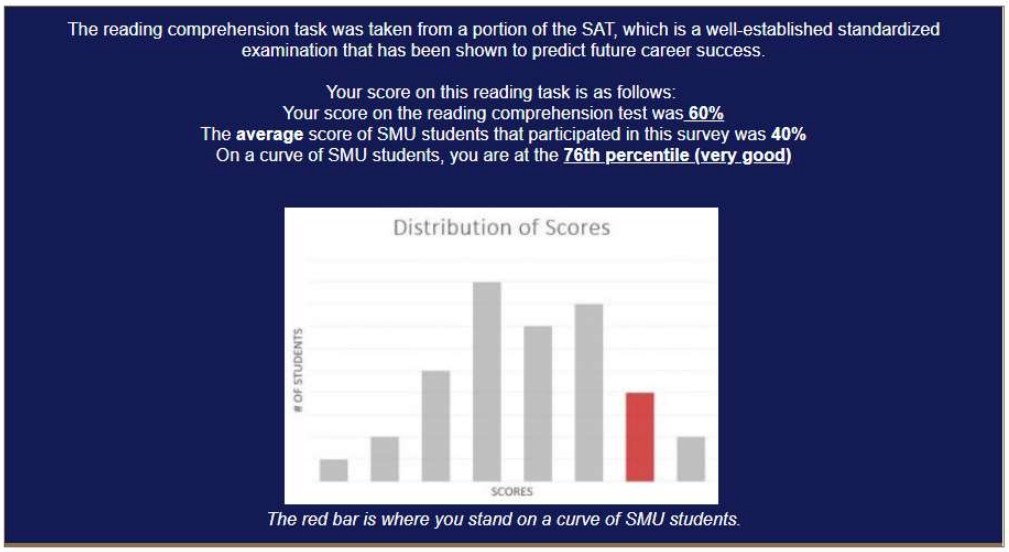
Page 3

Upward Social Comparison Condition



OR

Downward Social Comparison Condition



Appendix I

Validity Check

Have you responded to the survey in a reasonably careful and honest manner such that your data will be reasonably valid?

Your honest answer to this question can help improve the validity of our data and conclusions. Please be assured that your responses are anonymous, and your answer to this question will not affect your research participation compensation.

- Yes
- No