Competitiveness is not that bad. . .at least in the East: Testing the hierarchical model of achievement motivation in the Asian setting

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Competitiveness is not that bad . . . at least in the East: Testing the hierarchical model of achievement motivation in the Asian setting

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1. Introduction

Competitiveness has usually been viewed as a negative trait as it leads to suboptimal outcomes. However, research in cross-cultural psychology has indicated that competitiveness may hold different meanings for people from individualist and collectivist cultures. The current study investigates the effects of competitiveness on different educational outcomes in the collectivistic Chinese cultural context. Utilizing the hierarchical model of achievement motivation, this study aims to examine the relationships among individual differences (trait mastery and trait competitiveness), achievement goals (mastery and performance goals), and learning strategies (deep and surface learning strategies). Six hundred ninety-seven secondary school students from Hong Kong answered questionnaires assessing the relevant variables. Path models indicated that there were important differences in the pattern of relationships among the variables in our study compared to previous findings in the West. First, contrary to Western studies, trait competitiveness was predictive of mastery goals and not only of performance goals. Second, performance goals positively predicted the adoption of deep learning strategies but were not significantly related to surface learning strategies. Results are discussed in light of current findings in cross-cultural psychology. The findings hold substantive theoretical and practical implications for researchers and practitioners seeking to understand achievement motivation of students from more collectivist cultures.

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competitiveness given that recent research in cross-cultural psychology has indicated that competition is a culture-bound construct. It holds a different meaning for peoples from different cultures (Grum & Kolenc, 2008; Houston, Harris, Moore, Brummett, & Kametani, 2005; Stapel & Koomen, 2001). More specifically, within the educational domain it has been found that students from individualistic countries are more likely to perceive competition as negative leading to a zero-sum situation while students from collectivist societies, on the other hand, are more likely to perceive competition as positive, leading to the improvement of themselves and society (Fulop, 1999, 2005; Watkins, 2007, 2009). These divergent views on competition may lead to differences in how competitiveness influences various outcomes.

Given these cross-cultural differences, it might be possible that the effects of competitiveness in a collectivistic culture like China would be different from those found in Western settings. To test this proposition, we used the hierarchical model of achievement motivation (Elliot, 2005; Elliot & Church, 1997) which posited that trait variables/individual differences predicted achievement goals which in turn predicted various outcomes. The utility of this model lay in the fact that it included two key constructs that are closely associated with competition in the educational psychology literature: trait competitiveness and performance goals (Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Harackiewicz, Barron, Pintrich, et al., 2002; Harackiewicz, Barron, Tauer, et al., 2002). This allowed us to test whether the pattern of relationships found among these constructs in the West was also applicable to the collectivistic Chinese setting. Studies in the West have unanimously hailed trait mastery and mastery goals as beneficial while casting a more negative light on competitiveness and performance goals (Midgley, Kaplan, & Middleton, 2001a, 2001b). However, because of cross-cultural differences in the meaning of competition, the relationships among these constructs in the Chinese setting may be different from what previous research has found in the West.

2. Literature review

The hierarchical model of achievement motivation has become the dominant paradigm for examining students’ motivation (Elliot, 2005). The basic proposition is that individual differences predict achievement goals which in turn predict various educational outcomes. Studies utilizing this framework have focused on a variety of individual difference variables such as trait mastery and trait competitiveness as antecedents of achievement goals (e.g. Harackiewicz et al., 1997; Harackiewicz, Barron, & Elliot, 1998; Harackiewicz, Barron, Pintrich, et al., 2002; Harackiewicz, Barron, Tauer, et al., 2002). With regard to outcome measures, learning strategies, exam performance, intrinsic motivation, interest, and others have all been explored in previous studies (e.g. Wolters, 2004). Each of the components of this model will be discussed in greater detail below (see Fig. 1).

2.1. Achievement goals

Achievement goals have been conceptualized as the purpose of task engagement (Maehr, 1989). This theory was originally grounded in a distinction between mastery goals and performance goals (Elliot, 2005). Students who pursue mastery goals are focused on the development of task mastery and competence, while those who pursue performance goals emphasize the demonstration of competence relative to others. This dichotomous conceptualization was later replaced with the trichotomous goal theory (Elliot & Church, 1997). In this framework, the conventional performance goal was bifurcated into conceptually distinct approach and avoidance goals. Three goals were posited: a mastery goal focused on the development of self-referenced competence, a performance-approach goal focused on the attainment of normative competence, and a performance-avoidance goal focused on the avoidance of normative incompetence. The 2 × 2 achievement goal framework is the most recent modification of the achievement goal theory, where the approach-avoidance distinction is made for both mastery and performance goals (see Elliot, 2005 for a review). In this study, however, we only focus on the mastery-approach and performance-approach goals which we shall subsequently refer to as mastery and performance goals.

2.2. Individual differences as antecedents of achievement goals

Individual differences have been implicated as important antecedents of achievement goals (Elliot & Murayama, 2008). Recent research has given special attention to how individual differences in the preference to master the task (which we call trait mastery) and the desire to compete with others (which we call trait competitiveness) predicted the adoption of mastery and performance goals. Harackiewicz et al. (1997, 1998), Harackiewicz, Barron, Pintrich, et al. (2002) and Harackiewicz, Barron, Tauer, et al. (2002) studies have consistently shown that mastery goals were predicted by trait mastery only. Performance goals, on the other hand, were predicted by trait competitiveness. More recent research on the relationships of...
trait mastery and trait competitiveness to achievement goals has basically supported this model (Durik, Lovejoy, & Johnson, 2009) and some studies have even found a negative relationship between trait competitiveness and mastery goals (e.g. Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008).

In sum, studies from the West indicate that trait competitiveness does not have a significant relationship to mastery goals, which are only predicted by trait mastery. However, among the Chinese trait competitiveness may also have a significant relationship to mastery goals given that they are more likely to perceive competition as positive, leading to the improvement of themselves and society (Fulop, 1999, 2004; Watkins, 2007, 2009).

An important concern that arises in the hierarchical model of achievement motivation is the possible confound between trait competitiveness and performance goals on one hand and between trait mastery and mastery goals on the other. Trait competitiveness is defined as “the enjoyment of interpersonal competition and the desire to win and be better than others” (Spence & Helmreich, 1983, p. 41). Trait competitiveness as an individual difference that varies across people has received much research attention (for reviews see Houston, McIntire, Kinnie, & Terry, 2002; Ryckman, Libby, Borne, Gold, & Lindner, 1997; Spence & Helmreich, 1983). The items used to measure trait competitiveness are not bound to the specific classroom context since they are assumed to be stable across different situations. Here are some examples of items used to measure trait competitiveness:

- “Failure or loss in competition makes me feel less worthy as a person” (Ryckman, Hammer, Kaczor, & Gold, 1990).
- “I am a competitive person” (Gill & Deeter, 1988).

Performance goals, on the other hand, refer to the desire to demonstrate competence in the classroom setting (Elliot, 2005). Items used to measure this have usually been tied to the specific classroom context. Sample items that measure performance goals include:

- “It’s important to me that I do better or, like, I’m in the top of the class” (Urdan & Mestas, 2006).
- “My goal in this class is to do better than others” (Elliot & McGregor, 2001).

The same applies with regard to trait mastery and mastery goals. Mastery goals are usually measured with items that are tied to the specific classroom contexts such as:

- In math classes, I like to solve problems by working hard (Skaalvik, 1997).
- I want to learn as much as possible from this class (Elliot & McGregor, 2001).

On the other hand, the measurement of trait mastery is usually not tied to a specific context. A sample of an item from Spence and Helmreich (1983) would be, “If I am not good at something, I would rather keep struggling to master it than move on to something I may be good at.”

Although performance goals and trait competitiveness on the one hand and mastery goals and trait mastery on the other seem to bear a lot of resemblance to each other, previous studies have identified them as distinct constructs (see Table 1). Trait mastery and trait competitiveness can be conceptualized as “personality predictors of achievement goals” (Harackiewicz et al., 1997, p. 1285). Achievement goals, on the other hand, are more suited for “the situation-specific level” (Elliot, 2005, p. 66). In this study, we posited traits as antecedents of achievement goals. Achievement goals, on the other hand, represented intermediate variables between traits and outcomes (Elliot & Church, 1997).

Table 1

<table>
<thead>
<tr>
<th>Individual differences</th>
<th>Achievement goals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conceptual definition</strong></td>
<td><em>“purpose of achievement behaviour in a particular setting” (Harackiewicz, Barron, Tauer, &amp; Elliot, 2002, p. 562)</em></td>
</tr>
<tr>
<td><strong>Constructs investigated</strong></td>
<td><em>“situationally specific measures of motivational orientation” (Harackiewicz, Barron, Tauer, &amp; Elliot, 2002, p. 562)</em></td>
</tr>
<tr>
<td>Trait mastery</td>
<td><em>“represents a desire to develop competence and increase knowledge and understanding through effortful learning” (Murphy &amp; Alexander, 2000, p. 28)</em></td>
</tr>
<tr>
<td>Trait competitiveness</td>
<td><em>“focus on the attainment of competence relative to others” (McGregor &amp; Elliot, 2002, p. 381)</em></td>
</tr>
</tbody>
</table>

- “dimensions of individual differences in tendencies to show consistent patterns of thoughts, feelings, and actions” (McCrae & Costa, 1990, p. 23)
- “Enduring dispositions” (McCrae, 2000, p. 13)
- Preference for difficult challenging tasks and for meeting internally prescribed standards of excellence” (Harackiewicz et al., 1997, p. 1285)
- “the enjoyment of interpersonal competition and the desire to win and be better than others” (Harackiewicz et al., 1997, p. 1285)
2.3. Consequences of achievement goals

In this study, we focused on learning strategies as consequences of achievement goals. The link between learning strategies and achievement goals has been extensively researched (e.g. Pintrich, 2000; Wolters, 2004). The consensus is that the pursuit of mastery goals leads to adaptive learning strategies such as deep learning, meta-cognitive, and self-regulatory strategies. Researchers have found this link both among college students (Elliot & McGregor, 2001; Greene & Miller, 1996) and secondary school students (Middleton & Midgley, 1997; Wolters, 2004). The link between performance goals and learning strategies is less clear, however, with some studies demonstrating that it is predictive of the use of surface learning strategies only (Elliot & McGregor, 2001) and others that it is related to both deep and surface learning strategies (e.g. Wolters, 2004). Some studies even failed to document a relationship between performance goals and learning strategies (e.g. Elliot, 1999; Greene, Miller, Crowson, Duke, & Akey, 2004). There is still no clear consensus as to the effects of performance goals on various educational outcomes (Midgley et al., 2001a, 2001b).

2.4. Cultural variations in meanings of competition

In the West, trait competitiveness has usually been associated with the adoption of performance goals but not mastery goals (e.g. Harackiewicz, Barron, Pintrich et al., 2002; Harackiewicz, Barron, Tauer et al., 2002). These findings, however, may not transfer well to more collectivist cultures (e.g. Fulop, 2005). Research in cross cultural psychology has indicated that “the pattern of competition (for collectivist societies) is different from the competition characterizing individualistic societies” (Fulop, 2004, p. 239). For example, collectivist Japanese appear more able to combine cooperation with competition and blend cooperative, competitive, and individualistic behavioural patterns (Shwalb, Shwalb, & Nakazawa, 1995). In other words, they are able to compete under the umbrella of cooperation (Fulop, Ross, Kuscer, & Pucko, 2007). Research among the Chinese has also shown that they view competition not only as something destructive but also as something that can lead to self-improvement and personal growth (Watkins, 2007, 2009). This poses a contrast to the more negative view of more individualistic Westerners (Fulop, 2004). These differences in the meaning of competitiveness may hold implications for the relationship between competitiveness and achievement goals. If students see competition as a catalyst for self-improvement and the development of competence, then trait competitiveness may also function as a predictor of mastery goals.

Performance goals may also have more positive consequences in a collectivist setting given that performance goals are closely associated with notions of competition albeit in a more specific classroom context. As indicated above, research in the West on performance goals has been mostly inconclusive. However, studies conducted in collectivist countries seem to provide a more positive picture of performance goals. For example, performance goals have almost always been positively associated with mastery goals in studies among collectivist cultures but not in Western samples. Earlier studies in the West have found a negative relationship between mastery and performance goals (e.g. Rhodewalt, 1994; Nicholls, Cobb, Wood, Yackel, & Patashnick, 1990). The relationship between mastery and performance goals is not clear. Some studies in the West found that they were not correlated with each other (e.g. Elliot & McGregor, 2001; Pekrun, Elliot, & Maier, 2006), while others found that they were weakly positively correlated (e.g. Elliot & Murayama, 2008; Gonida, Voulala, & Kiosseoglou, 2008). However, what is surprising is that in the collectivist Chinese context, performance goals and mastery goals have almost always been positively related (e.g. Chang & Wong, 2008; Lau, Liem, & Nie, 2008; Liem, Lau, & Nie, 2008; Tao & Hong, 2000). Similar findings have been found in other collectivist contexts (e.g. Bernardo, 2008). In addition, performance goals have also been related to positive outcomes such as academic achievement, future engagement, group participation, and deep learning (e.g. Chan & Lai, 2006; Chang & Wong, 2008; Lau et al., 2008). The more positive meaning of competition in a collectivist culture may have implications for the relationships among trait competitiveness, performance goals, and valued educational outcomes.

2.5. The present study

The purpose of this study was to investigate the relationships among individual differences (trait competitiveness and trait mastery), achievement goals (mastery goals and performance goals) and learning strategies (deep strategies and surface strategies) in the Chinese context.

We propose the following hypotheses:

H1. Trait competitiveness will positively predict both performance and mastery goals.

H2. Trait mastery will positively predict mastery goals.

H3. Mastery goals will be positively related to deep learning strategies and negatively related to surface learning strategies.

H4. Performance goals will be positively related to both deep learning strategies and surface learning strategies.
3. Methods

3.1. Participants

The respondents were 697 Hong Kong secondary school children. Of these 356 were males and 341 were females; 354 and 343 were in Forms 1 and 3 respectively; and 241, 230, and 226 were in high ability, medium ability, and low ability schools. The mean age was 13.43 years (SD = 1.37 years) and the median age was 14 years old.

3.2. Measures

Students were given three instruments: the Chinese versions of the Inventory of School Motivation (ISM, Watkins, McInerney, & Lee, 2002), the General Achievement Goal Orientation Questionnaire (GAGOS, McInerney, Yeung, & McInerney, 2001), and the Learning Process Questionnaire (Biggs, 1991). All these instruments have been validated in the Chinese setting in previous studies (McInerney & Ali, 2006; Sachs & Gao, 2000).

3.2.1. Individual differences in trait competitiveness and trait mastery

We drew items from the ISM and GAGOS to operationalize trait competitiveness (α = .65) and trait mastery (α = .76). Notably, the items we used to measure these constructs were not tied to the classroom context, because traits are assumed to be relatively stable across different situations. Three items each were used to measure trait competitiveness (e.g. “I am most motivated when I am competing with others”) and trait mastery (e.g. “I am most motivated when I am becoming better at my work”).

3.2.2. Achievement goals

Achievement goals were measured using items drawn from the ISM. Because achievement goals were usually tied to the classroom context, items used to operationalize this mentioned the classroom context specifically. A sample item for performance goals (α = .65) would be “I want to do well at school to be better than my classmates.” An item for mastery goals (α = .71) would be “I try hard at school because I am interested in my work.”

3.2.3. Learning strategies

To measure learning strategies, we used the Deep Strategies subscale (e.g. “I try to relate what I learn in one subject to what I have learned in other subjects”) (α = .75) and Surface Strategies subscales (e.g. “In most subjects I try to do enough just to make sure I pass, and no more”) (α = .62) of the Learning Process Questionnaire (Biggs, 1991).

3.3. Data analysis

We first conducted a confirmatory factor analysis (CFA) to assess the construct validity of the individual differences and achievement goal measures. This was done because the individual differences and achievement goal items bear certain similarities to each other, thus a CFA will provide stronger evidence on whether these constructs should be treated separately or whether they should be combined.

The data in the present study were analyzed using path analytical procedures with AMOS 5.0 (Arbuckle, 2003). The scores for the individual items for each construct were added and used as manifest variables in the path analysis. We used the maximum likelihood method of estimation. Based on the recognition that a variety of fit indices would provide a better picture of model fit, different goodness of fit indices provided by AMOS were reported in the study such as the normed fit index (NFI), incremental fit index (IFI), Tucker-Lewis index (TLI), comparative fit index (CFI), and the root mean square error of approximation (RMSEA).

4. Results

4.1. Confirmatory factor analysis

A four-factor CFA model with trait mastery, trait competitiveness, mastery goals, and performance goals was tested. The four factors were allowed to be freely correlated with each other. The fit statistics supported the proposed four-factor model: $\chi^2 = 168.858; df = 48; p < .001; \chi^2/df = 3.518; RMSEA = .060; NFI = .913; IFI = .936; TLI = .912; CFI = .936$.

In addition, we also tested a two-factor model wherein the items for trait competitiveness and performance goals were used as indicators of an overall competitive/performance orientation construct. Items for trait mastery and mastery goals were also used as indicators of an overall trait mastery/mastery goal construct. The two factors were allowed to be freely correlated. This model had a poorer fit to the data compared to the four factor model: $\chi^2 = 220.243; df = 53; p < .001; \chi^2/df = 4.156; RMSEA = .067; NFI = .887; IFI = .912; TLI = .889; CFI = .911$. Please cite this article in press as: King, R. B., et al. Competitiveness is not that bad... at least in the East: Testing the hierarchical model of achievement motivation in the Asian setting. International Journal of Intercultural Relations (2011), doi:10.1016/j.ijintrel.2011.10.003
Table 2
Descriptive statistics and reliability coefficients for individual differences, achievement goals, and learning strategies.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual differences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trait mastery (3 items)</td>
<td>3.73</td>
<td>.69</td>
<td>.76</td>
</tr>
<tr>
<td>Trait competitiveness (3 items)</td>
<td>3.30</td>
<td>.71</td>
<td>.65</td>
</tr>
<tr>
<td>Achievement goals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mastery goals (3 items)</td>
<td>3.68</td>
<td>.60</td>
<td>.71</td>
</tr>
<tr>
<td>Performance goals (3 items)</td>
<td>3.03</td>
<td>.78</td>
<td>.65</td>
</tr>
<tr>
<td>Learning strategies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface strategies (6 items)</td>
<td>2.88</td>
<td>.62</td>
<td>.62</td>
</tr>
<tr>
<td>Deep strategies (6 items)</td>
<td>3.25</td>
<td>.49</td>
<td>.75</td>
</tr>
</tbody>
</table>

Table 3
Zero-order correlations among individual differences, achievement goals, and learning strategies.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Trait mastery</td>
<td></td>
<td>.453***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Trait competitiveness</td>
<td>-.491***</td>
<td></td>
<td>.649***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Mastery goals</td>
<td>-.326***</td>
<td>-.481***</td>
<td></td>
<td>.588***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Performance goals</td>
<td>-.340***</td>
<td>-.552***</td>
<td>-.326***</td>
<td></td>
<td>.477***</td>
<td></td>
</tr>
<tr>
<td>5. Deep strategies</td>
<td>-.152***</td>
<td>-.455***</td>
<td>-.340***</td>
<td>-.552***</td>
<td></td>
<td>.010**</td>
</tr>
<tr>
<td>6. Surface strategies</td>
<td>.103***</td>
<td>-.152***</td>
<td>-.455***</td>
<td>-.340***</td>
<td>-.552***</td>
<td></td>
</tr>
</tbody>
</table>

Note:
* * * p < .001.
** p < .01.
*** p < .05.

A chi-square difference test was conducted to see whether there was a significant difference in fit between the four-factor and two-factor model. Results indicated that the four-factor model had a better fit to the data: chi square difference = 51.385; change in df = 30; p < .001. This provides support for keeping individual differences distinct from achievement goals.

4.2. Preliminary analyses

Descriptive statistics and Cronbach’s alpha reliabilities are presented in Table 2. Results indicated acceptable reliabilities for all of the scales used (Nunnally & Bernstein, 1994).

4.3. Correlations among the variables

Zero-order correlations indicated that trait competitiveness was positively correlated with both mastery and performance goals. Trait mastery was also positively correlated to both mastery goals and performance goals. These correlations pose an interesting contrast to findings in the West where non-significant correlations between trait mastery and performance goals on one hand and between trait competitiveness and mastery goals on the other were found (e.g. Harackiewicz et al., 1997; Harackiewicz, Barron, Pintrich, et al., 2002; Harackiewicz, Barron, Tauer, et al., 2002). Interestingly, performance goals were not significantly related to surface learning strategies but positively related to deep learning strategies (Table 3).

4.4. Path analysis

For the path analyses, we tested two models. The first model is called the Western model (see Fig. 2) based on findings of Harackiewicz et al. (1997), Harackiewicz, Barron, Pintrich, et al. (2002) and Harackiewicz, Barron, Tauer, et al. (2002) which were conducted among students from the U.S. In this model, individual differences in trait competitiveness only influenced the adoption of performance goals, while trait mastery only influenced the adoption of mastery goals. This was consistent with what was found in previous studies (Durik et al., 2009; Harackiewicz et al., 1997, 1998; Harackiewicz, Barron, Pintrich, et al., 2002; Harackiewicz, Barron, Tauer, et al., 2002). Mastery and performance goals, in turn, were posited as having a direct influence on learning strategies. Previous studies have shown that achievement goals mediated the effects of individual difference variables on learning outcomes (e.g. Bartels & Magun-Jackson, 2009; Elliot, 2005; Harackiewicz, Barron, Pintrich, et al., 2002; Harackiewicz, Barron, Tauer, et al., 2002). We drew paths from mastery goals to both deep and surface learning strategies and from performance goals to deep learning strategies. We did not draw a path from performance goals to surface learning strategies because the zero-order correlations indicated that they are not significantly related to each other. This was done for both the Western and Chinese models.

The second model is called the Chinese model (see Fig. 3). The only difference between this model and the Western model is that in this model, we added a path from trait competitiveness to mastery goals. All other relationships were held constant across the two models except for this additional path from trait competitiveness to mastery goals. In addition, for
both models we correlated the errors for mastery goals and deep learning strategies. This was done because of the unusually high Modification Index (MI) associated with these two constructs, which may be due to some degree of similarity in wording.

A look at the fit indices indicated that the Western model did not fit the data well (see Table 4).

Next, we tested the hypothesized model, which we called the Chinese model (see Fig. 4) based on findings from cross-cultural research among the Chinese. This model fit the data well (see Tables 4 and 5).

It is generally recognized that CFI, TLI, and RFI values greater than .90 and RMSEA less than .08 are considered representative of a well-fitting model (Hu & Bentler, 1995). Results indicated that the Chinese model where a path was drawn from trait competitiveness to mastery goals was added fit the data better than the Western model where no such path was drawn.

Table 4
Goodness-of-fit statistics for the Western and Chinese models.

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$\chi^2$/df</th>
<th>p value</th>
<th>RMSEA</th>
<th>NFI</th>
<th>IFI</th>
<th>CFI</th>
<th>TLI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western model</td>
<td>108.358</td>
<td>8</td>
<td>13.545</td>
<td>&lt;.001</td>
<td>.134</td>
<td>.908</td>
<td>.914</td>
<td>.914</td>
<td>.838</td>
</tr>
<tr>
<td>Chinese model</td>
<td>34.749</td>
<td>7</td>
<td>4.964</td>
<td>&lt;.001</td>
<td>.075</td>
<td>.971</td>
<td>.976</td>
<td>.976</td>
<td>.949</td>
</tr>
</tbody>
</table>

Note: RMSEA = root mean square error of approximation; NFI = normed fit index; IFI = incremental fit index; CFI = comparative fit index; TLI = Tucker–Lewis index.
Fig. 4. Final model with path coefficients. All paths are significant at $p < .01$.

A chi-square difference test was conducted between the two models and the results indicated that the Chinese model fit the data significantly better compared to the Western model (change in chi square = 73.609, change in df = 1, $p < .001$).

5. Discussion

Stemming from the recognition that competitiveness may be beneficial among students from collectivist cultures, we investigated whether the relationships of the constructs in the hierarchical model of achievement motivation found among Western students would hold in the collectivistic Chinese setting. Results indicated that there were some interesting differences.

5.1. Relations of individual differences to achievement goals and learning strategies

As hypothesized, this study showed that trait competitiveness led to the adoption of both mastery and performance goals confirming H1. This stands in contrast to the findings in the West where trait competitiveness only predicted the adoption of performance goals and not mastery goals (e.g. Harackiewicz et al., 1997, 1998; Harackiewicz, Barron, Pintrich, et al., 2002; Harackiewicz, Barron, Tauer, et al., 2002).

This disparity between the current study and Western studies corroborate the findings of Watkins (2007) who showed that Chinese students viewed competition as crucial for self-improvement. This makes it possible for trait competitiveness to be positively related to mastery goals. Competition has been frequently viewed as the relatively unfavourable pole of a cooperation-competition dichotomy (Fulop et al., 2007; Watkins, 2007, 2009). For example, Martin and Larsen’s (1976) Competition-Cooperation Attitude Scale (CCAS) conceptualized competitiveness as the opposite pole of being cooperative and as something that is negative. An example of a competition item is “Losers are inferior.” Even more recent measures of competitiveness which do not portray competition as inherently negative still do not capture the positive aspects of competition which have emerged in qualitative research (see Ryckman et al., 1996 for an exception). This phenomenon is also evident in educational psychology. Researchers have touted cooperation as a healthy form of social interaction which not

<table>
<thead>
<tr>
<th>Table 5 Standardized direct, indirect, and total effects.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trait mastery</strong></td>
</tr>
<tr>
<td>Direct</td>
</tr>
<tr>
<td>Mastery goal</td>
</tr>
<tr>
<td>Performance goal</td>
</tr>
<tr>
<td><strong>Trait competitiveness</strong></td>
</tr>
<tr>
<td>Direct</td>
</tr>
<tr>
<td>Mastery goal</td>
</tr>
<tr>
<td>Performance goal</td>
</tr>
<tr>
<td>Deep strategies</td>
</tr>
<tr>
<td>Surface strategies</td>
</tr>
<tr>
<td><strong>Mastery goals</strong></td>
</tr>
<tr>
<td>Direct</td>
</tr>
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<td>Mastery goal</td>
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<td>Performance goal</td>
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<td><strong>Performance goals</strong></td>
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<td>Direct</td>
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<td>Mastery goal</td>
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only enhances performance but also encourages social and interpersonal development, while at the same time advocating for the elimination of competition which is typically viewed as leading to negative outcomes such as high anxiety level and lack of motivation among others (Johnson & Johnson, 1989; Kohn, 1986). Research conducted within achievement goal paradigm have advocated for the elimination of competitive practices like announcing the grades of top students and displaying honor rolls in the classroom. Some achievement goal theorists have claimed that such competitive practices could lead to the adoption of maladaptive outcomes (Midgley et al., 2001a, 2001b). The deleterious effects of competitiveness, however, have not been found among Chinese students, at least in terms of achievement goals and their attendant learning strategies. This is because they might be buffered by their cultural belief that competition is necessary for growth and improvement. Despite this, there is still a need for additional research since our present study only focused on the effects of trait competitiveness on achievement goals and learning strategies. Having a competitive orientation might be potentially harmful if we measure other outcomes such as psychological adjustment and avoidance strategies (e.g. Kaplan & Maehr, 1999; Levy-Tossman, Kaplan, & Assor, 2007; Urdan, Midgley, & Anderman, 1998).

H2 was also confirmed with trait mastery predicting the adoption of mastery goals. This supports the findings of Harackiewicz et al. (1997) who found that people who prefer to work hard and tackle challenging tasks were more likely to adopt mastery goals.

5.2. Relations of achievement goals to learning strategies

Achievement goals have been found to be mediators of the effects of individual differences on learning strategies. This mediating relationship strengthens the theoretical contention that achievement goals serve as proximal mediators of the effects of individual differences on achievement-related outcomes (Harackiewicz, Barron, Pintrich, et al., 2002; Harackiewicz, Barron, Tauer, et al., 2002). As Cury, Elliot, Da Fonseca, and Moller (2006, p. 677) put it, “achievement goals are the specific channels through which general orientations exert their influence on achievement behaviour.” This makes achievement goals ideal targets for educational intervention. In this study, the pursuit of mastery goals positively predicted deep learning strategies and negatively predicted surface learning strategies thus confirming H3. This finding corroborates the huge literature on the positive effects of mastery goals, which is generally viewed as the most adaptive goal in achievement theory. Aside from deep learning, mastery goals have also been linked to a host of other positive outcomes such as well-being (e.g. Sideridis, 2005), interest (e.g. Elliot & Murayama, 2008), effort (e.g. Sideridis, 2005), persistence (e.g. Wolters, 2004); engagement (e.g. Gonida et al., 2008); and positive emotions (e.g. Pekrun, Elliot, & Maier, 2009). The positive effects of mastery goals seem to be applicable across studies from different countries (Elliot, 2005).

Surprisingly, performance goals were only positively related to deep learning strategies and not surface learning strategies. These results are in conflict with the traditional mastery goal perspective (Midgley et al., 2001a, 2001b), which holds that the pursuit of performance goals is detrimental to learning. It also contradicts previous findings that performance goals are unrelated to deep learning strategies (Greene & Miller, 1996; Harackiewicz et al., 1998; Miller, Greene, Montalvo, Ravindran, & Nichols, 1996; Schraw, Horn, Thorndike-Christ, & Bruning, 1995). It does, however, offer partial support to the revised goal theory perspective which claims that performance goals may be adaptive in certain contexts (Harackiewicz, Barron, Pintrich, et al., 2002; Harackiewicz, Barron, Tauer, et al., 2002). For example, a few Western studies have indicated that having a performance goal may be more adaptive in a competitive learning environment than in a mastery oriented environment (Barron & Harackiewicz, 2003; Harackiewicz et al., 1998). In Hong Kong, competition is strongly emphasized both in school and in society in general (Watkins, 2009; Zeng, 1999) and being competitive is deeply ingrained among Hong Kong students since their early academic years (Biggs, 1991). Such a context may account for why performance goals were adaptive in this study, in the sense that it was positively related to deep learning strategies.

Kumar and Maehr (2007, p. 47) claimed that central to understanding the effects of achievement goals is the need to clarify the “meaning and definition of success in a learning environment.” We argue that in the Chinese context, the meaning and definition of success is interpersonally oriented, differing from that commonly found in the Western culture. For students who define success through interpersonal standards, the pursuit of performance goals may not be maladaptive. For individualistic students, who define success primarily through self-referenced standards, performance goals may not be as adaptive because the motivation becomes extrinsic and may represent “a desire to gain favourable judgements…particularly if success is achieved through a minimum exertion of effort” (Murphy & Alexander, 2000, p. 28). However this does not seem to be the case among the collectivist Chinese for whom the dichotomy between extrinsic and intrinsic motivation does not hold (Watkins, 2000; Watkins & Biggs, 1996). The issue of incongruity between the desire for self improvement (mastery) and the desire to demonstrate superiority (performance) does not seem to be that salient among the Chinese who find no trouble associating socially defined standards for success with personal interest in a material (Lee, 1996). This is reflected in the following Chinese idioms, “There are golden houses in books and there are beautiful girls in books” and “Although studying anonymously for ten years, once you are successful, you will become well-known in the world” (Lee, 1996, p. 37). Indeed, previous studies among Chinese students have consistently shown a positive link between performance goals and deep learning (e.g. Lau & Lee, 2008; Lau et al., 2008; Liem et al., 2008). This may also account for the non-significant association between performance goals and surface learning strategies in our study. However, caution is needed in interpreting these results since we only looked at how performance goals influenced learning strategies. There is a need to look at other relevant outcomes especially since Midgley et al. (2001a, 2001b) warned of its negative consequences. Future research is needed to explore this further.

5.3. Relationship between the achievement goals

Although not a main objective of this study, it is also interesting to note the positive correlation between mastery and performance goals, which is usually not found in Western studies (e.g. Harackiewicz, Barron, Pintrich, et al., 2002; Harackiewicz, Barron, Tauer, et al., 2002; Pekrun et al., 2009) but has been consistently found among other collectivist cultures students not only among the Chinese (e.g. Bernardo, 2008; Chang & Wong, 2008; Lau & Lee, 2008; Tao & Hong, 2000). This positive relationship between the two achievement goals can again be accounted for by the socially oriented motivation of Chinese students. Tao and Hong (2000, p. 18) argued, “To fulfil the expectations of social groups, individuals might not only learn new skills, but also demonstrate the new skills publicly to gain social approval. As such, the learning (or mastery) and performance goals would be mutually reinforcing. That is, mastery of new skills would imply that one can document the new skills publicly. This may explain why the correlation between…mastery goal and performance goal endorsements is often positive among Chinese respondents.”

5.4. Limitations and directions for future research

The first limitation is that we only investigated the approach forms of achievement goals. It would be interesting to investigate in future research what the antecedents of mastery-avoidance and performance-avoidance goals would be. In addition, we only investigated learning strategies as outcome measures. Though performance goals and also trait competitiveness proved to be adaptive in that they promote deep learning, there is a need to focus on other outcomes. Midgley et al. (2001a, 2001b) have warned that there might be costs associated with being competitive such as the use of self-handicapping strategies, avoidance of novelty and challenge, cheating, and reluctance to cooperate. Whether Chinese students who pursue performance goals will demonstrate these problems is a subject that should be explored in future studies. The third limitation of our study was that we did not have a Western sample. We compared a hypothetical Western model with a Chinese model using only Chinese data. More large-scale studies in the future could be conducted with students drawn from different cultural contexts. Common method variance was another limitation of our study. In this study, we relied entirely on self-reports. Future studies may utilize other sources of information such as teacher and peer-ratings. In addition, future investigations may also control for social desirability when conducting their analysis.

5.5. Implications

This study has implications for multicultural education which emphasizes the acknowledgement of cultural diversity in the schools (Banks, 1981). As society becomes more globalized, an understanding of the cultural nuances associated with achievement motivation is important especially for the development of intercultural competence. As shown in this study, competitiveness and performance goals may have different effects on Chinese students which may not necessarily coincide with what has been found among Western samples. This makes salient the culturally bound nature of certain psychological phenomena. This study may also have implications for practitioners who want to apply Western theories of motivation into other cultural contexts. As this study highlights, there might not be one “magic bullet” approach to motivating students from different cultures but that there might be multiple pathways to achieving this end.

6. Conclusion

We found interesting differences between our study and previous studies conducted in the West. First, contrary to Western findings, trait competitiveness was positively related to both mastery and performance goals. Second, we found that performance goals were only related to deep learning strategies and not to surface learning strategies. This suggests that among Chinese students, both trait competitiveness and the adoption of performance goals seem to be related to positive outcomes. These paradoxical findings could be accounted for by cultural factors. This work, however, only represented an initial exploration. Clearly, more research is needed to draw more substantial conclusions. Thrash and Elliot (2001, pp. 12–13) claimed that “…mastery and performance goals, respectively, appear to have become nebulous mixtures of that which is ‘good’ and that which is ‘bad.’” This study points to the need to contextualize this statement in different cultures. These results should also make us wary of generalizing results obtained in the West to the East. As Watkins (2000, p. 166) noted, “Western dichotomies…do not seem to travel to the Orient.”

References


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