

Cultural Differences in Feedback Interpretation and Mindset:
Implications for Intervention
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I Abstract

Growth mindset literature suggests that an emphasis the ability to improve yields positive learning outcomes for many American institutions, where a fixed mindset philosophy is common. Growth mindset interventions, however, have not been widely conducted on populations from East Asian cultures. Results and findings from both cultural and developmental scholarships suggest that there may be similarities between the growth mindset and East Asian cultural values, but individuals from East Asian cultures may still be underperforming due to exposure from American institutional fixed mindedness. This literature review proposes that 1) the phenomenon of high-achievement observed in East Asian populations is a manifestation of inherent key growth mindset concepts in their cultural way of being, and that 2) the implementation of growth mindset interventions can serve as a tool for addressing institutional mismatches in cultural expressions of feedback and growth, while narrowing achievement gaps.

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Contents

1 Introduction: Why Growth Mindset Matters and Current Issues in Academia	1
2 Mechanisms Underlying Fixed & Growth Mindsets	4
2.1 Independent View of Self: Fixed Contingencies	4
2.2 Interdependent View of Self: Growth Contingencies	6
2.3 Individualism & Collectivism: Reinforcers of Mindset	8
2.4 Implicit Trait Theories: Malleability in Growth	9
2.5 Educators & Parents: Practices in Growth	11
3 Motivation: Avenues for Inducing Growth	13
3.1 Feedback Interpretation: is it Growth?.....	13
3.2 Self-Esteem: Driver of Feedback Interpretation	16
3.3 Self-Enhancement: Are Challenges Good?	16
3.4 Self-Criticism: Are Challenges Good?.....	17
4 How to Provide Feedback: Possible Solutions	19
4.1 Current Recommendations: Selective Feedback Provision	19
4.1 Current Issues: Bicultural Identities and Cultural Priming.....	19
4.2 Using Growth Mindset as a Solution.....	21
5 Discussion.....	23
5.1 Summary of Findings.....	23
5.2 Implications of Findings	25
6 References	28

1 Introduction: Why Growth Mindset Matters and Current Issues in Academia

The way in which students and learners operationalize their learning and performance goals is mediated by what mindset is more prominent in the individual (Grant & Dweck, 2003). Dweck (2008) introduces two key mindsets to approaching intelligence, the *growth mindset* and the *fixed mindset*. The growth mindset is a belief that abilities can change with effort and proper skill cultivation (Dweck, 1999; 2008), and is more associated with learning goal orientation (Blackwell, Trzesniewski, & Dweck, 2007; Dweck, 2008; Hong, Chiu, Dweck, Lin, & Wan, 1999; Leggett & Dweck, 1988). Dweck (2008) provides some examples of statements exemplifying the growth mindset:

1. No matter how much intelligence you have, you can always change it quite a bit.
2. You can always substantially change how intelligent you are.
3. No matter what kind of person you are, you can always change substantially.
4. You can always change basic things about the kind of person you are. (p. 12-13)

On the other hand, fixed mindset is a belief that abilities are consistent and fixed (Dweck, 1999; 2008). In contrast to the growth mindset, fixed mindset is associated with the prevalence of performance goal orientation (Blackwell et al., 2007; Dweck, 2014; Hong et al., 1999; Leggett & Dweck, 1988). Statements and beliefs exemplifying the fixed mindset are given by Dweck (2008):

1. Your intelligence is something very basic about you that you can't change very much.
2. You can learn new things, but you can't really change how intelligent you are.
3. You are a certain kind of person, and there is not much that can be done to really change that.
4. You can do things differently, but the important parts of who you are can't really be changed. (p. 12-13)

Indeed, for those with the growth mindset, it is "Nothing ventured, nothing gained" whereas for those with the fixed mindset, it is "Nothing ventured, nothing lost" (Dweck, 2008).

Studies investigating the intervention of the growth mindset found significant learning benefits for students' learning outcomes. Blackwell et al. (2007) found that over four semester terms, students who believed growth was possible performed reported higher math grades than students who believed that their abilities were fixed (Figure 1). When put into two conditions, an

intervention or control group, students that received a growth mindset intervention showed a significant rebound in math scores while those that received no intervention continued to show a decline in their math scores (Figure 2; Blackwell et al., 2007).

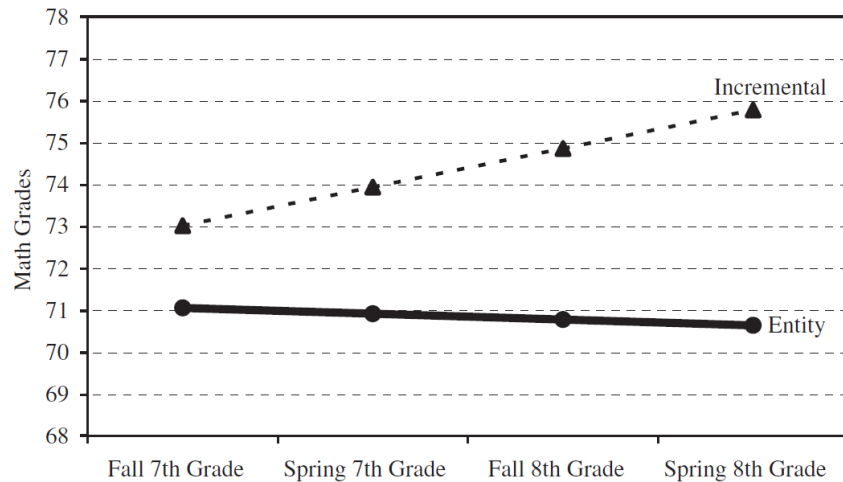


Figure 1. from Blackwell et al. (2007)

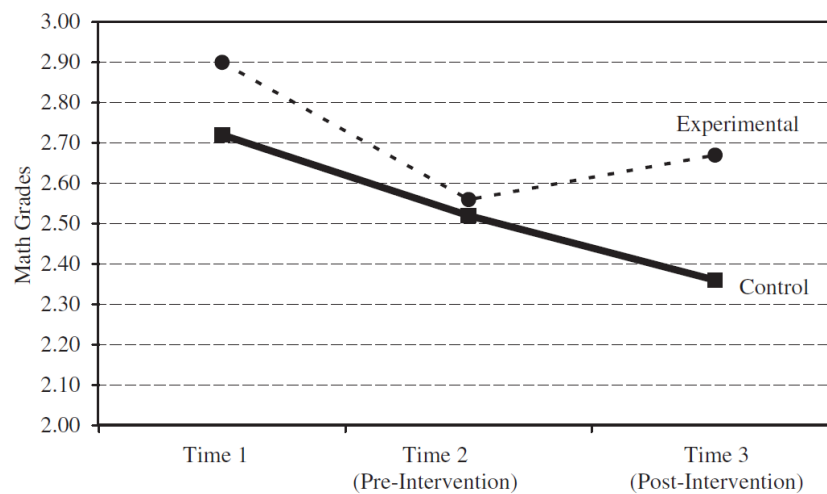


Figure 2. from Blackwell et al. (2007)

Similarly, Grant and Dweck (2003) found that endorsement of the growth mindset predicted higher grades in a university course. Both Blackwell et al. (2007) and Grant and Dweck (2003) suggest that mindset plays a key mediating role in how students may approach learning, and further facilitates use of proper learning strategies and feedback-seeking behavior. The benefits of the growth mindset have been found to be particularly prevalent in groups that have historically been marginalized, such as minority groups (Aronson, Fried, and Good, 2002;

Blackwell et al., 2007) and women in STEM fields (Good, Aronson, & Inzlicht, 2003). However, while the growth mindset has found through numerous studies that it is beneficial within the contexts of North American curricula, the number of studies that investigated the benefits for those from East Asian cultures is scant.

Heine et al. (2001) found that when exposed to concepts of fixed mindedness, East Asians also showed a significant decline in their persistence at a task. However, when exposed to concepts of growth mindedness, East Asian participants showed no significant difference in their persistence level from the control group, suggesting that key concepts of the growth mindset may not be as novel in many East Asian cultures (Figure 3). Cultures, such as countries in East Asia, which habitually place more emphasis on effort in their socialization of achievement (Chen & Uttal, 1988; Choi & Choi, 2002; Dweck, 2014; Heine et al., 2001; Stigler & Hiebert, 1999), also report more females entering STEM fields (Dweck, 2014).

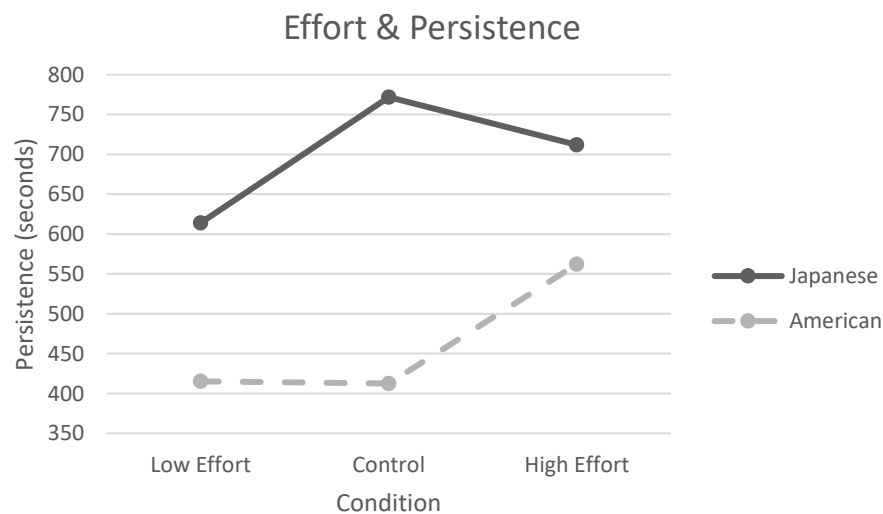


Figure 3. data from Heine et al. (2001)

Based on findings from Study 3 of Heine et al. (2001), there may be repercussions for students from East Asian cultures studying abroad in European-American cultures, where schooling practices are often based on fixed minded ideals (Dweck, 2008). The issue of a possible mismatch between independent and interdependent cultures (Stephens, Fryberg, Markus, & Johnson, 2012) is increasingly relevant with the globalization of academia; universities in the

United States and Canada are seeing an increase in the number of international students that attend their schools. Heine et al. (2001) and Peters & Williams (2006) allude to the idea that educators may be able to adjust the feedback they provide according to who is on the receiving end, which may be theoretically plausible, but impractical in real world applications. Thus, an alternative solution, the growth mindset, may be a practical intervention tool to address this issue.

This literature review proposes that the growth mindset is relevant to use in classrooms for those from East Asian cultural backgrounds as 1) the key concepts of growth mindset are inherent in their cultural socialization, and 2) current suggestions for addressing the known issue are contingent on superficial labelling, which poses numerous issues. This literature review provides a comprehensive review of mechanisms that may be underlying the cultural differences between European-American and East Asian cultures in the operation of feedback interpretation and motivation, such as implicit trait theory or self-construal. Possible issues with selective feedback provision are also discussed.

2 Mechanisms Underlying Fixed & Growth Mindsets

2.1 Independent View of Self: Fixed Contingencies

The notion that self-construal is a constructed manifestation of culturally driven social doctrine was, and continues to be, supported by a multitude of research on cultural differences. Markus and Kitayama (1991) introduced two divergent categorizations of self-construal, *independent* and *interdependent* views of the self. Independent view of self (Figure 4) is the ideology that one's self-identity is comprised of inner attributes and characteristics (Markus & Kitayama, 1991). This view of self is common in European-American cultures, such as the United States or Canada.

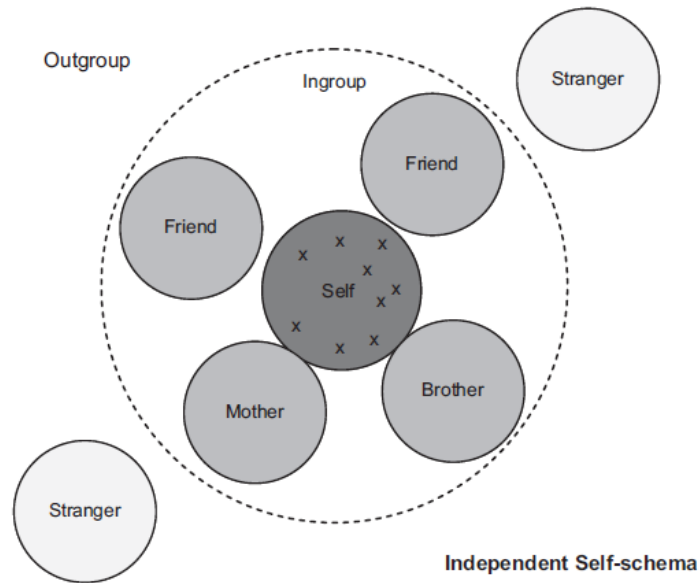


Figure 4 from Hughes (2012), *Disjointed Thinking*

It is accompanied by emphases on distinctiveness, uniqueness, and one's presence as an individual actor in a social scene. This set of values helps to define an independent self as being a complete, autonomous entity whose self-definition is not influenced by others or the context. Figure 4 depicts an independent view of the self, which categorizes the ingroup, a small group of shared interests or identities, comprised of close individuals (e.g. family, friends, etc.). Beyond the ingroup lies the outgroup, made up of other individuals (e.g. acquaintances, strangers, etc.). The X's represent different aspects of the individual's self-identity and important self-defining qualities. These particularly important qualities (e.g. personality, beliefs, abilities) are primarily found within the individual. The border around the individual is depicted with a solid line, signifying that for independent individuals, the self is perceived as being a consistent, immutable actor whose self-identity is both bounded and reinforced by inner characteristics rather than by contextual cues (Kanagawa, Cross, & Markus, 2001; Markus & Kitayama, 1991; Oishi, Diener, Scollon, & Diener, 2004; Suh, 2002). The fixed set of attributes comprising the self is thus considered the autonomous locus of control. Maintenance of one's character and self-view is conducted through motivated behavior that further identifies and affirms the individual's self-definition (Mesquita & Karasawa, 2002). This may possibly be a means to reduce one's cognitive dissonance from failing to act according to their identified self-definition (Heine & Lehman,

1997a).

Relationships with others are not significant factors in determining or influencing the independent individual's view of self (Markus & Kitayama, 1991). The dotted line defining the ingroup (Figure 1) suggests that members of the individual's ingroup may regularly transition in and out of the ingroup to the outgroup (Markus & Kitayama, 1991). Thus, while independent individuals may still view members of the ingroup as important aspects of their life, members of the ingroup and outgroup are not fundamentally distinct from each other. As Iyengar, Lepper, and Ross (1999) found, participants from traditionally independent culture groups did not distinguish between friends, strangers, or enemies when describing specific traits.

2.2 Interdependent View of Self: Growth Contingencies

Interdependent view of self (Figure 2), however, derives its processes from relationships with others and is contingent upon contextual cues, such as other persons or scenarios (Markus & Kitayama, 1991). The interdependent view of self is more commonly found in East Asian cultures (e.g. Korea, Japan, China), where values of collective connectedness are more imbedded within the culture (Heine, 2015; Heine et al., 2001).

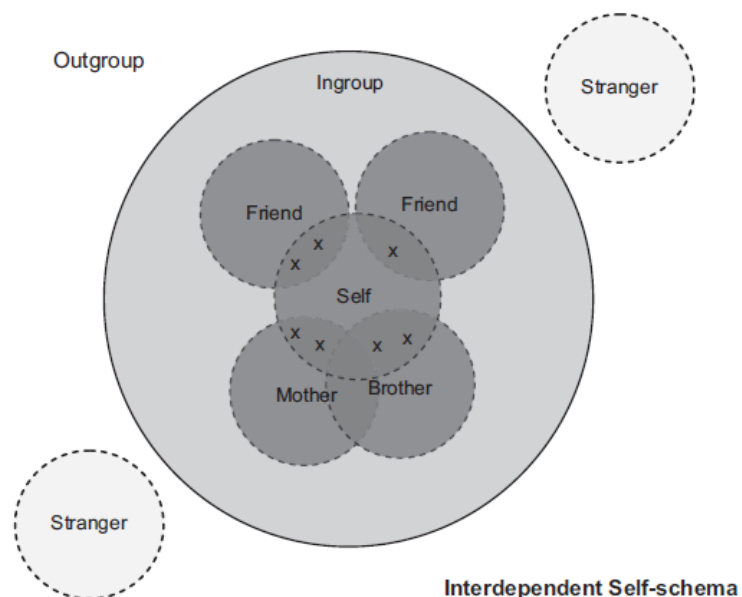


Figure 5 from Hughes (2012), *Disjointed Thinking*

The interdependent view is fundamentally different from the independent view in that the important aspects of self-definition are directly influenced by contextual cues rather than being immutable. These different sets of values underline the connection of the individual to members of their ingroup. The dotted line surrounding the self illustrates this malleable, and context-driven, view of self (Figure 2). The X's, representing important attributes to self, overlap with the individual and members of the ingroup, suggesting that one's identity may be more fluid and malleable, as opposed to being fixed, depending on the context (Kanagawa et al., 2001; Markus & Kitayama, 1991; Oishi et al., 2004). While some aspects of self may still be inherent to the individual, their identity is connected with others and is not defined as being fundamentally distinct (Markus & Kitayama, 1991). Thus, one's experience of self can vary depending on the situation, people, or assumed role in the context. Studies found that for Japanese (Kanagawa et al., 2001; Oishi et al., 2004) and Koreans (Suh, 2002), views about the self changed across situations, suggesting that context plays a large role in self-identity (Campbell et al., 1996; Cousins, 1989) relative to their Western counterparts.

The dotted line of the individual (Figure 2) also suggests that one's self-definition and identity is molded by ingroup members (Markus & Kitayama, 1991)—these relationships are extensions of one's identity (Heine, 2001; 2015). For instance, Japanese parents reported a higher degree of responsibility for their child's failures and burdens than European-American parents (Holloway, 1988). Further, Chinese individuals reported taking more responsibility for their interpersonal failures (Anderson, 1999). Iyengar et al. (1999) also found that, compared to European-American participants, Japanese participants showed the same amount of willingness to describe characteristics and traits of themselves or their friends. Unlike the independent selves, interdependent individuals draw a firmer line between their ingroup and outgroup. The tendency for Japanese, relative to American participants, to show lower levels of trust towards strangers (Iyengar et al., 1999; Yamagishi & Yamagishi, 1994) is symbolized by the rigid line enclosing the ingroup (Figure 2). This line represents the notion that while the individual's self-definition may be mutable, the overall composition of the ingroup is not (Markus & Kitayama, 1991). Therefore, to interdependent selves, unlike independent selves, strangers from the outgroup may not be regarded or perceived in the same manner as ingroup members. Interdependent individuals may

still change their ingroups, however, as seen in Yamagishi (1988) which found that Japanese were more likely than Americans to exit their ingroup when their ingroup members did not properly monitor their behavior.

Differences between independent and interdependent selves are not limited to theoretical modeling (Han & Northoff, 2009; Kitayama & Park, 2010). Studies measuring neurophysiological brain activities have shown cortical activity differences among interdependent and independent minded participants when tested for self-construal representation (for review, see Chiao et al., 2008; Chiao et al., 2009; Kitayama & Park, 2010; Ng, Han, Mao, & Lai, 2010; Zhu, Zhang, Fan, & Han, 2007) and contextual sensitivity (Lewis, Goto, & Kong, 2008), suggesting that cultural influences extend to both psychological and physiological processing.

2.3 Individualism & Collectivism: Reinforcers of Mindset

Independent view of self is more common amongst *individualistic* cultures whereas interdependent view of self is more common among *collectivistic* cultures (Heine, 2015). Accordingly, European-American cultures typically show higher levels of individualism (Hofstede, Hofstede, & Minkov, 2010) where Western doctrine underlies the values of uniqueness, individuality, and autonomy. East Asian cultures gravitate towards higher levels of collectivism (Hofstede et al., 2010) where much of the interdependent values underlying culture mediation derive from Confucian heritage and doctrine (Heine, 2001; Su et al., 1999). These cultures typically endorse the importance of relationships within the ingroup in the process of constructing their self-identity (Triandis, 1989).

Indeed, phrases and quotes like “the squeaky wheel gets the grease,” are commonly used to exemplify the underlying values of Western doctrine that encourage uniqueness, individuality, and autonomy. Socialization into independence (e.g. child-rearing practices, emphasis on autonomy) have aided individuals in individualistic cultures to better identify the construction of their self-definition, even in decontextualized instances (Cousins, 1989). Contrastingly, in Japan, a quote like “the nail that sticks out gets hammered down,” suggests that those that stand out

get the most criticism. In Kim and Markus (1999), participants were offered the choice of selecting between a minority colored pen (i.e. symbolic of standing out) or a majority colored pen (i.e. symbolic of fitting in) as compensation for completing a survey. American participants tended to choose the minority pens whereas East Asian participants chose the majority pen, indicating that behavioral inclination towards one orientation may be motivated by fundamental differences in self-expression. Markus and Kitayama (1991) argues that different quotes and proverbs found in cultures are surface examples of underlying cultural values of independence and interdependence.

When asked to define oneself through the Twenty-Statements Test (Kuhn & McPartland, 1954), American participants were more likely to reference attributes, characteristics, and traits in their self-descriptions (e.g. *"I am talented"*; Ma & Schoeneman, 1997; Trafimow, Triandis, & Goto, 1991). Contrastingly, self-descriptions of social roles and group memberships (e.g. *"I am the older sibling"*) were more commonly emphasized in collectivistic East Asian cultures like South Korea (Rhee, Uleman, Lee, & Roman, 1995), China (Triandis, McCusker, & Hui, 1990), and Japan (Bond & Cheung, 1983; Cousins, 1989). This is representative of a tendency for individualistic mindset to be more analytic of specific concepts, while collectivistic mindsets are more attentive to holistic contexts (Nisbett, Peng, Choi, & Norenzayan, 2001).

2.4 Implicit Trait Theories: Malleability in Growth

By having a more holistic interpretation of the context, some cultures emphasize attendance to situational or context variability. Compared to individualistic cultures, which typically report higher rates of predicted or assumed longitudinal self-consistency (Church et al., 2005), collectivistic cultures report higher degrees of assumed self-malleability (Choi & Choi, 2002; Lockhart, Nakashima, Inagaki, & Keil, 2008).

The emphasis on decontextualized consistency of autonomous, implicit traits in individualistic cultures (Bellah, Madsen, Sullivan, Swidler, & Tipton, 1985; Greenfield & Suzuki, 1998) is again reflective of the doctrine by which the independent view of self operates. This fixed, and longitudinally stable, conceptualization of the self is referred to as the *entity theory of*

self (Dweck, Chiu, & Hong, 1995; Dweck & Leggett, 1988). Individuals with the entity self-view adopt the belief that their abilities and traits are largely inherent qualities that are stable and fixed throughout their life. The underlying notion that one's qualities are innate and not susceptible to change is exemplified by popular quotes, such as "a leopard cannot change its spots." A chronic propensity towards positive self-affirmation (i.e. high regard and effortful maintenance of self-esteem) is a means by which one may further validate the sense of autonomous self-sufficiency as necessitated by cultural norms (Heine, Lehman, Markus, & Kitayama, 1999; Mesquita & Karasawa, 2002). Conversely, inability to validate self-sufficiency can make those with the entity self-theory more disposed to experiencing helplessness (Dweck et al., 1995). Lockhart et al. (2008) suggests that when faced with personal short-fallings, American adults may be more likely to feel helpless despite being able to succeed in the talents that they do possess.

In contrast, East Asian, interdependent individuals report less emphasis on the belief of self-consistency (Choi & Choi, 2002; English & Chen, 2007) and clarity (Campbell et al., 1996) for all ages (Lockhart et al., 2008). In Kanagawa et al. (2001), American and Japanese participants completed the Twenty-Statements Test in different conditions—in the professor's office, with another student, in a large group, and by themselves (Table 1).

Table 1. Ratio of Positive to Negative Statements by Culture (data from Kanagawa et al., 2001)

<i>Cultural Group</i>	<i>Condition</i>			
	<i>Authority (Professor's Office)</i>	<i>Peer (With another student)</i>	<i>Group (In a large group of 25-50 others)</i>	<i>Solitary (by themselves)</i>
Japanese	0.35	0.69	0.50	1.19
United States	3.77	3.26	3.30	3.22

American participants were much more positive in their statements across all conditions than Japanese participants. Japanese participants were most self-critical when in the professor's office and most positive when by themselves, showing that for different situations, Japanese self-

evaluated differently. English and Chen (2007) found similar results for Asian-Americans when measured for different contexts (e.g. gym, party, cafeteria) but also found that within each respective context, they exhibited longitudinal stability at the same level as European-Americans.

Belief in the malleability of the self is referred to as the *incremental theory of self* (Dweck et al., 1995; Dweck & Leggett, 1988). Unlike the entity view of self, the incremental self-theory adopts the belief that one's abilities and traits are malleable and can be altered or improved through various means. Accordingly, East Asian cultures that report high levels of interdependence also endorse the incremental view of self-malleability and change (Heine, 2001). Japanese report more optimism about the possible change of negative traits (Lockhart et al., 2008), and the belief in malleability of traits is also endorsed in both Korean (Choi & Choi, 2002) and Chinese cultures (Chen & Stevenson, 1995; Chen & Uttal, 1988). Lockhart et al. (2008) found that while Japanese children typically show higher optimism about the malleability of traits than adults, the adults still showed general belief in that positive changes to their traits are still possible, even in later life (c.f. English & Chen, 2007), suggesting that the chronic belief of self-consistency endorsed by American adults are mediated by cultural factors.

While implicit traits are recognized and endorsed by all cultures, compared to collectivistic cultures, it is particularly pronounced in cultures that report high levels of individualism (Church et al., 2006), reflecting that cultural doctrine may be moderating the level of endorsement of inherent traits.

2.5 Educators & Parents: Practices in Growth

Cultural differences in mindset and attendance to contextual cues are evident from early childhood. In individualistic schools and households, it is common practice to encourage independence and autonomy (Bellah et al., 1985; Greenfield & Suzuki, 1998) to nurture children into independent and unique individuals with distinct preferences, decontextualized from surrounding cues. European-American cultures, relative to Eastern cultures, report higher rates of children sleeping in rooms separate from their parents (Nisbett, 2010; Shweder, Jensen, & Goldstein, 1995), under the premise that such practices value, and nurture children into,

independence (Morelli, Rogoff, Oppenheim, & Goldsmith, 1992). Contrastingly, Eastern cultures report higher rates of children sleeping in the same room as the parents, exemplifying normative collectivistic values (Nisbett, 2010; Shweder et al., 1995). Emphases on independence and interdependence extends to parenting practices for children and adolescents. Due to the interdependent identity of self, a child's performance in academics may be perceived as a reflection of the family (Heine et al., 1999; 2001), thereby incentivizing parents to invest more into their children's academic achievement (Chen & Stevenson, 1995; Chen & Uttal, 1988; Goyette & Xie, 1999; Peng & Wright, 1994).

In Chen and Uttal (1988), mothers were given a scenario that stated that their child took a test with 100 total points and the class average was 75. When asked what score they predicted their child would get in this scenario, both American and Chinese mothers indicated that they predicted their child would get 80-85 points. However, when asked what score they would be satisfied with, American mothers, indicated that they would be satisfied if their child got at least 7 points lower than the predicted score whereas Chinese mothers indicated that they would be satisfied with a score that was 10 points higher than the predicted score. Chen and Uttal (1988) also found that compared to American parents, Chinese parents (both mother and father) reported, on average, spending more time with their children on their homework assignments (Chen & Uttal, 1988). Even when parents did not directly work with their children, Asian American parents still reported having higher expectations for their children (Goyette & Xie, 1999; Peng & Wright, 1994). Stevenson, Chen, and Lee (1993), however, found that despite American parents being aware of the comparative lack of achievement in the American education system, they tended to not associate such lagging performance with their own children. Thus, while a large number of American mothers (>40%) expressed satisfaction with their children's performance, few (<10%) Chinese and Japanese parents did the same.

The importance of parental influence also provides insight on the degree to which Asian parents share agency with children. Studies suggest that children that have shared agency with parents have more motivation and greater achievement than those that do not share agency (Kriegbaum, Villarreal, Wu, & Heckhausen, 2016). Less involvement from parents was related to lower motivation and less tendency for mastery-oriented mindset. This may perhaps explain why

Asian Americans, despite being in American environments, still show higher tendency to report the importance of effort than Caucasian Americans (Chen & Uttal, 1988) as a result of the family environment. Furthermore, Haimovitz & Dweck (2016) found that parents' failure mindsets were strongly associated with the children's mindsets. In other words, parents that hold assumptions of innate ability may further perpetuate children's fixed mindsets following each round of failure, as opposed to parents that hold assumptions of malleable ability. Studies on educators also report similar findings on the effects of shared agency.

Good, Rattan, & Dweck (2007a, as cited in Dweck, 2014) found that when adult participant teachers were given information that stated that skills in math were either fixed or growable, they geared their feedback to students according to which condition group they were initially assigned to. In another study, athletes that received feedback from a coach that adopted growth mindset tended to show improved performance the following season (Dweck, 2009). Good, Rattan, & Dweck (2007b, as cited in Dweck, 2014) states that when role-models were perceived as being born with innate talent in their fields, students are more likely to have fixed mindsets; whereas when role-models are portrayed as being passionate about their work, it instills in students a growth mindset. These studies demonstrate that mindsets of supervisors and instructors, as well as portrayals of role-models, are prominent in determining the receiving end's performance (Dweck, 2014; 2009; Rheinberg, Vollmeyer, & Rollett, 2000).

Stevenson and Stigler (1992) found that those that take on advisory roles (e.g. parents, teachers) in Japan, relative to the U.S., report more emphasis on effort than innate ability when striving for greater achievement. This may hold further implications for how the cultural differences in parenting and teaching practices between European-American and East Asian cultures may be mediating academic achievement gaps.

3 Motivation: Avenues for Inducing Growth

3.1 Feedback Interpretation: is it Growth?

The influence of feedback on an individual's motivation is mediated by their self-view,

which in turn, is influenced by cultural context. Those with incremental self-view are reportedly more likely to perceive and interpret negative feedback as a factor of lack of effort, rather than lack of innate ability (Hong et al., 1999). Incremental self-view is, to a large extent, associated with learning goals in which individuals sustain greater motivation and persistence in the face of difficult challenges or failures (Grant & Dweck, 2003; Heine et al., 2001) and predict an upward trajectory of performance (Blackwell et al., 2007). This is coupled with the fact that incremental minded people are more likely to seek help following unsatisfactory performance (Hong et al., 1999), suggesting that implicit lay theories contribute to the construction of a framework in which motivation is attributed. In contrast, having ability goals predicted withdrawal and worse performance in the face of a challenge, but yielded higher performance in the face of success (Grant & Dweck, 2003).

The type of feedback given to an individual may not reinforce the different culture-driven motivating factors of self. For instance, positive feedback (e.g. “You got a high score in the recent math test because you are good at math”) is in line with *self-enhancing* mindset of Americans but not for the *self-criticism* (i.e. self-improvement) mindset of Japanese. The converse is true where negative feedback (e.g. “You got a low score in the recent math test because you are bad at math”) reinforces self-criticism for Japanese but not self-enhancement for Americans (Heine et al., 1999; Heine, Takata, & Lehman, 2000; Heine et al., 2001; Heine, Kitayama, & Lehman, 2001; Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997).

Baumeister and Jones (1978) found that when given negative self-relevant feedback, Americans tended to inflate their self-assessment in another area to compensate. Although non-significant, Heine et al. (2001) found similar tendencies. Those with the entity theory are thus more likely to reallocate their attention and effort to another activity that will likely yield success if they encounter failure in the initial one (Heine et al., 2001; Steele, 1988; Crocker & Knight, 2005), resulting in challenge-avoidance and success-seeking behavior (Grant & Dweck, 2003).

Sherman, Nelson, and Steele (2000) suggests that feedback that affirms the self in another domain (e.g. self-view of being smart is affirmed by doing well in math) enables people to be more receptive to negative information in the initial domain (e.g. writing skills). Heine, Kitayama,

and Lehman (2001) found that compared to Canadians, Japanese participants were more likely to view themselves worse following failure, signifying a reverse self-enhancement effect (Heine & Lehman, 1995). Heine et al. (2001) showed that when met with failure, Canadian participants persisted less and Japanese persisted more in a follow-up activity, while the opposite for both groups was found when met with success (Figure 3).

In study 3 of Heine et al. (2001), participants were divided into three groups, low effort, control, and high effort, for their respective culture group. The low effort group was given instructions that suggested that performance was based on innate ability, whereas the high effort group was given instructions that suggested that performance was dependent on persistence and effort. High effort Japanese group did not persist longer than the control, while the high effort European-American group persisted longer, indicating that for the European-American group, but not Japanese, instructions of high effort provided novel information. The opposite was observed for low effort groups; low effort Japanese group persisted less than the control while low effort European-American group did not persist any less than the control group. This indicates that for Japanese participants, but not European-Americans, low effort instructions were novel information, providing implications regarding the inherent emphasis of effort in Japanese, but also in related East Asian cultures.

In a similar study, Peters & Williams (2006) found that greater ratio of negative to positive self-talk was related to decreased performance for European-Americans but increased performance for East Asians. Heine et al. (2001) and Heine et al. (1999) claim that Japanese tend to take on the chronic belief of *incompleteness*, attributing to the notion that these groups ascribe failure as areas of needed improvement. This, coupled with the belief of human malleability (Heine, 2001; Heine et al., 2001), combine to emphasize concept of effort in task performance and achievement. While the concept of self-esteem may be universal in nature, the ways in which European-American and East Asian cultures approach it diverge in literature. The cultural differences in how self-esteem is ascribed and expressed may be few of the underlying mechanisms in mediating feedback interpretation, motivation responses, and mindset.

3.2 Self-Esteem: Driver of Feedback Interpretation

Prior research suggests that while the conceptualization of self-esteem may be relatively universal (Brown, 1998), it is approached in various ways throughout both time and culture. In European-American cultures, there is a great deal of appreciation for high self-esteem and research studies, over the past few decades, have continuously found positive benefits associated to the maintenance of it.

Brockner (1979) found that when in presence of self-focusing stimuli (i.e. mirror), those with high self-esteem performed equally well on tasks after receiving feedback about success and failure, compared to those with low self-esteem where failure feedback yielded significantly worse task performance than success feedback. Indeed, high self-esteem may further facilitate persistence following indications of failure (Baumeister, Campbell, Krueger, & Vohs, 2003), and serve to bolster reception of indications of success (Baumeister & Tice, 1985). However, Baumeister and Tice (1985) also suggests that high self-esteem may also escalate one's sensitivity to signs or feedback indicating failure. In other words, one with high self-esteem may further nurture their interest in a task if their initial performance is met with success, but failure after the initial performance may be met with the interpretation of lack of talent, or even discounting the feedback received (Heine et al., 2000).

3.3 Self-Enhancement: Are Challenges Good?

Common in European-American cultures is the practice of self-enhancement, characterized by the apparent tendency, or gravitation, towards viewing oneself positively (Heine, 2015; Heine & Lehman, 1997b; Rogers, 1951; Taylor & Brown, 1988). This chronic positive view of the self stems from the desire to confirm for oneself that certain requisite characteristics for autonomy and self-sufficiency are present (Heine & Lehman, 1997b; Heine et al., 1999), thereby normalizing the possession of high self-regard. Such habitual motivation drives individuals to further discover and identify positive characteristics of their selves, and display them publicly while maintaining private affirmation (Kitayama et al., 1997; Markus & Kitayama, 1991), such as positive self-talk (Peters & Williams, 2006).

The disposition towards positive self-view, however, may lead to *self-serving bias*, a tendency in which there is a gross over-exaggeration of one's own capabilities. In Cross (1977), when professors of universities were asked whether they believed they were better than the average professor, a striking 94% replied stating that they were, going well above the 50% above average rate a normal bell-curve would otherwise indicate. This may be, in part, mediated by selective evaluation. Crary (1966) found that when self-evaluating, North American participants often gave themselves the benefit of the doubt and were selective in the type of information they attended to, taking credit for the primary control of successes and faulting failures to secondary control (Kashima & Triandis, 1986; Leuers & Sonoda, 1999; Zuckerman, 1979). Unless met with unavoidable evidence to suggest the otherwise (Kunda, 1990), North American self-evaluations typically exhibited some degree of resistance and consistency even in the face of negative third-party evaluations (Kim, Cohen, & Au, 2010). While some researchers suggest that self-enhancement is a universal phenomenon (Gaertner, Sedikides, & Chang, 2008; Leuers & Sonoda, 1999; Sedikides, 1993; Sedikides & Gregg, 2008), Heine (2001) and Heine et al. (1999) argue that East Asian expression of pursuing self-esteem emphasizes self-criticism and concerns esteem from others (Heine, 2001; Heine et al., 1999).

3.4 Self-Criticism: Are Challenges Good?

Compared to European-Americans, East Asians typically report lower self-esteem (Campbell et al., 1996). Conventional conceptualization of self-regard or self-enhancement bias is largely absent in Japanese (Kanagawa et al., 2001) and Chinese (Yik, Bond, & Paulhus, 1998) cultures, suggesting that it is deeply rooted in European-American cultural values but not in East Asian values (Heine et al., 1999). For East Asians, there is a greater desire for esteem from others (Heine, 2001), furthered by the notion of 'saving face'—maintaining reputation or stature (Chang & Holt, 1994). In Kim et al. (2010), while European-Americans' self-evaluations were unaffected by negative third-party impressions, Chinese showed a decline in the level of positive self-evaluation following perception of negative evaluation from others. Not only are Chinese attentive of others' perceptions on them, but others who are self-critical are typically viewed more positively than those that self-enhance (Leong & Ward, 1999). What is seemingly like

heightened attention to negative third-party evaluations (Heine & Lehman, 1995; Heine et al., 2000) may be attributed to the social norms set upon by Confucian doctrine in addition to the interdependent model of self. The standards with which individuals are expected to follow are determined at societal, rather than individual, levels and further endorsed by the hierarchy (Kitayama et al., 1997). Thus, individual self-evaluation is commonly contingent on the upholding of standards and affirming the relationships in which the individual is a part (Heine, 1999). Failure to properly perform the obligated duties is indicative of that individual's lack of contribution to group dynamic as determined by cultural interdependence values (Campbell et al., 1996).

Subsequently, the practice of maintaining self-evaluations, as seen in European-American counterparts, is less common in East Asian cultures (Cross, Liao, & Josephs, 1992; Heine & Lehman, 1997). Rather, self-criticism is more commonly accepted as normative practice (Heine et al., 1999; Heine, 2001). Heine et al. (2000) suggests that Japanese are more readily willing to accept information that are indicative of failure, as instances of failure are not generally construed as threats to self-ego, but rather demands for increased effort in areas of deficiency (Heine et al., 2001; Holloway, 1988). Similarly, Choi and Choi (2002) suggests that Koreans are more open than European-Americans are to receiving contradictory information. This type of failure-interpretation is synonymous with incremental, growth mindset (Dweck & Leggett, 1988), in contrast to a common European-American belief that failure can be seen as a signal of ability-deficiency and a threat to one's self-esteem (Holloway, 1988). Indeed, as exemplified in Kim et al. (2010), Kitayama et al. (1997) argues that East Asians' self-evaluations are more influenced by failures as opposed to success. The ideology that humans are inherently malleable and driven by contextual cues underlies much of East Asian philosophy on human development (Chen & Uttal, 1988; Chen & Stevenson, 1995; Heine, 1999; Heine et al., 2001). The tendency for East Asian cultural doctrine to emphasize similar values seen in the incremental, growth mindset, and European-American cultural doctrine to emphasize entity, fixed mindset, is further observed in areas concerning feedback perception.

4 How to Provide Feedback: Possible Solutions

4.1 Current Recommendations: Selective Feedback Provision

Heine et al. (2001) suggests that those in power to motivate others can be aware of cultural differences and choose different types of feedback depending on the situation at hand. However, this method of choosing may be more difficult in reality due to extraneous third variables, such as controlling for cultural priming or personal differences. Thus, the method of providing selective feedback could potentially yield adverse results. The growth mindset focuses on the importance of effort, which was shown to have maintained Japanese and improved European-American participants' persistence with no significant negative effects to either (Heine et al., 2001). Thus, the implementation of the growth mindset may possibly be a tool with which cultural differences may be addressed and academic achievement gaps narrowed.

4.1 Current Issues: Bicultural Identities and Cultural Priming

Independent and interdependent views of selves may not exclusively belong to specific cultures. Rather, the two views of selves both exist within an individual regardless of the culture with which they identify (Cho, Mallinckrodt, & Yune, 2010; Gudykunst et al., 1996; Markus & Kitayama, 1991; Oyserman, Coon, & Kemmelmeier, 2002; Singelis, Bond, Sharkey, & Lai, 1999; Singelis & Brown, 1995; Singelis & Sharkey, 1995). Individual personality differences, in turn, mediate the translation of cultural values and norms into expressions of behavior and perception (Choi & Miracle, 2004). Culture establishes normative rules of expression (e.g. behaving to fit in, in Japan) with which one's respective view of self is constrained or promoted.

Tafarodi, Marshall, and Katsura (2004) suggests that one's desire to be unique from others is not necessarily absent from Japanese mindset, but rather, the cultural doctrine suppresses the expression of it more than what is seen in Western cultures. Therefore, an individual's tendency to gravitate toward one mindset is influenced by which mindset is most accessible to said individual at the moment of self-cognition (Trafimow et al., 1991). Trafimow et al. (1991) suggests that there are two theoretical explanations as to how one's individual and collective selves are cognitively organized. The first explanation states that there is one cognitive

structure that stores cognitions of the self from which the self-identification is derived. This explanation is called the *one-basket theory*, and is introduced in Trafimow et al. (1991):

Consider a basket containing red and blue marbles. The probability of retrieving a red marble depends upon the number of red marbles, relative to the total number of marbles in the basket. (p. 1)

The one-basket theory implies that an individual's basket (i.e. self-conceptualization) holds both individualistic and collectivistic marbles (i.e. construals). However, the ratio of individualistic to collectivistic 'marbles' in an individual's basket is contingent upon the said individual's socialization (i.e. a person from a European-American culture may have more individualistic than collectivistic self-construals due to being brought up in a predominately individualistic culture that emphasizes independence). Consequently, the degree to which type of marble is more readily accessible is directly influenced by the ratio of individualistic to collectivistic self-construals of the person in question, and indirectly influenced by the contextual cues that prime the person's self-construals.

The second explanation, the *two-basket theory*, states that one's cognitive organization of self is dependent on the level of accessibility of each type of self-cognition. As Trafimow et al. (1991) states:

Consider two baskets of marbles, a red and a blue basket containing red and blue marbles, respectively. The probability of retrieving a red or blue marble depends upon which basket the person samples from. (p. 2)

The two-basket theory implies that an individual possesses two baskets, one for individualistic self-cognition and one for collectivistic self-cognition. Unlike the one-basket theory, the issue of which marble the individual picks is not based on ratio, but rather which basket was picked. This is representative of the notion that one's retrieval of individualistic or collectivistic self-cognition is primarily influenced by the degree of accessibility of each basket. For instance, to a person from North America, a basket of individualistic self-construals may be more readily accessible than a basket of collectivistic self-construals, whereas the opposite may be said for a person from East Asia. The level of accessibility, however, has been shown to be susceptible to the influence of cultural priming (Gardner, Gabriel, & Lee, 1999; Hong, Benet-Martinez, Chiu, & Morris, 2003; Hong, Morris, Chiu, & Benet-Martinez, 2000; Trafimow et al., 1991).

Experiments 1 and 2 of Trafimow et al. (1991) found that participants who were primed with an individualistic cognition were more likely to respond with greater ratio of personal self-descriptions to group membership or role self-descriptions than those that were primed with a collectivistic cognition, regardless of the participant's cultural membership or identity. In addition to Trafimow et al. (1991), Gardner et al. (1999) found that the efficacy of cultural primes is greater when the prime is opposite to that of the individual's chronic self-cognition (i.e. independent individuals are more influenced by interdependent primes, and vice versa). Cultural priming has also been found to be influential for bicultural individuals (Hong et al., 2000; Hong et al., 2003). When bicultural Chinese-American participants were primed with symbolic icons of either Chinese or American cultures, the participants' cognitions shifted accordingly.

Linguistic differences between cultures are also indicative of the disparity between individualism independence and interdependent collectivism, but are susceptible to influences of priming. In Chinese, there is no direct translation for "individualism," with the closest translation being "selfishness" (Nisbett, 2010). In Korean, singular pronouns, such as "I" or "me," are not commonly used to refer to certain nouns (e.g. "our house," "our family"; Na & Choi, 2009). However, in Brewer and Gardner (1996) and Gardner et al. (1999), priming with first-person, singular pronouns influenced participants' individualistic orientation while first-person, plural pronouns triggered collectivistic orientation. Korean individuals with collectivistic orientation, whether by socialization or cultural priming, showed higher rates of first-person plural pronoun use (Na & Choi, 2009).

In sum, prior research suggests that one's membership in a specific culture will not necessarily bar them from engaging in self-cognition that is not in accordance to their respective culture's normative view of self. Thus, contextual cues can greatly impact one's self-cognition (Gardner et al., 1999; Hong et al., 2000; Hong et al., 2003), and in turn, individual differences mediate the extent to which culture influences behavior and perception (Choi & Miracle, 2004).

4.2 Using Growth Mindset as a Solution

Mindset can be developed and cultivated through careful praise and feedback that

emphasize learning and effort (Dweck, 2008; 2010). Feedback that points to appraisal of how 'smart' the student is may imply that their worth is contingent upon meeting the label (Dweck, 2009). These students often develop a performance goal orientation in which the task outcome weighs more heavily on one's motivational drive than task process. When encountering challenging tasks, students with performance goals may be more likely to opt for easier, safer tasks that would yield the desired success in an attempt to affirm the 'smart' labels placed upon them (Ames & Archer, 1988; Grant & Dweck, 2003). Thus, performance goal orientation has been found to predict challenge-avoidance and learned helplessness in the face of failure and challenges (Cimpian, Arce, Markman, & Dweck, 2007; Dweck, 2009; Elliott & Dweck, 1999; Kamins & Dweck, 1999; Mueller & Dweck, 1998). Dweck (2009) found that following a series of difficult problems, students with the fixed mindset lost their passion for the subject, saw their performance drop, and later lied about the score they received. However, despite the strong association between having a fixed mindset and performance goal orientation, a fixed mindset may still operationalize mastery goal orientation in certain situations (Elliott & Dweck, 1988).

In Elliott & Dweck (1988), when performance goal values were highlighted for children who held views of low abilities and feedback regarding mistakes in a task was given, the children responded in a learned helplessness manner, attributing failure to lack of ability and answering with negative affect. Diener and Dweck (1980) found that children who learn helplessness tend to underestimate the amount of success and overestimate the amount of failure they encounter. On the other hand, in the same scenario, but with children with high ability views, the children responded in a mastery-oriented manner, continued to persist in finding solutions, and did not attribute failure with lack of ability. However, regardless of their beliefs in their abilities, both groups elected to forego opportunities to improve performance on tasks that carried possibility of entailing public mistakes (Elliott & Dweck, 1988). Contrastingly, when learning goal values were highlighted, belief about low or high ability was irrelevant and both groups sought to seek challenging tasks and opportunities to learn and improve skills despite potential public mistakes (Elliott & Dweck, 1988). Those that exhibit growth mindset qualities display more mastery-oriented responses to challenges and setbacks, employing strategies that reinforce greater effort and new strategy building (Blackwell et al., 2007).

Dweck (2014) notes, however, that having performance goals or a fixed mindset will not necessarily translate to poor performance. If a student is well prepared and completes tasks that are well within their capabilities, then success may still be achieved. Disadvantage to those with fixed mindset comes in the face of challenges that may trigger negative or avoidance responses (Dweck, 2014). Further, despite some of the negative outcomes fixed mindset is associated with, it is not something one should strive to eliminate from their or others' lives. Rather, the contrary; Dweck (2015) suggests that to properly adopt the growth mindset, one must acknowledge the fact that 1) we have a mix of fixed and growth mindsets, 2) probably always will, and 3) being aware of our fixed-mindset tendencies and thoughts is crucial to putting growth mindset into practice.

Findings from Blackwell et al. (2007), Aronson et al. (2002), and Good et al. (2003) suggest that the growth mindset consistently improves scores for those with fixed mindsets. There are no reports to suggest that implementation of growth mindset on an already growth minded population would yield negative results, alluding to the possibility of utilizing interventions to accommodate students from East Asian cultures, while also improving the performance of European-American students, thereby narrowing the achievement gap.

5 Discussion

5.1 Summary of Findings

Koreans, Japanese, and Chinese all report some degree of emphasis on effort as a key factor in reaching task achievement (Chen & Uttal, 1988; Choi & Choi, 2002; Heine et al., 2001). This type of mindset may be deeply rooted in the Confucian doctrine that largely underlies much of East Asian social philosophy (Chen & Stevenson, 1995; Chen & Uttal, 1988). Confucian ideology suggests that one should be mindful of others, while placing great weight on the well-being of the family. Collectivistic values within these cultures also obligates one to realize that they are a part of a larger social structure, rather than an independent actor in a play (Heine et al., 1999; 2001). Confucian ideology reinforces collectivistic values that implicitly instills a conceptual understanding of human malleability (Heine et al., 1999). Indeed, in Japanese cultures, the idea

of incompleteness of self is largely prevalent and strengthens the notion of developing areas of weakness. When one is deemed to be faltering in an area, they are perceived, whether by themselves or others, to be threatening the social harmony within their ingroup (Heine et al., 1999; 2001; Heine, 2001). Continued membership in their ingroup incentivizes and promotes greater effort to maintain the ingroup social harmony.

Receiving the proper feedback necessary to monitor their progress is highly valued. Japanese were more likely than Americans to exit their ingroup if one's own behavior was not being properly monitored by the ingroup (Yamagishi, 1988). This tendency to monitor one's behavior and progress of desired outcomes may provide insight as to why East Asian cultures report higher reception to negative feedback (Heine et al., 2001; Peters & Williams, 2006). Compared to European-American cultures, where high self-regard is fostered, East Asian cultures endorse some form of self-criticism and report higher receptivity to information that counter their own beliefs. For East Asian groups, changes in behavior and self-evaluation are also influenced by indications of failure more than success (Kim et al., 2010; Kitayama et al., 1997). In studies that assessed performance differences following either positive or negative feedback, Asian participants generally performed better after receiving negative feedback while European-American participants performed better after receiving positive feedback (Heine et al., 2001; Peters & Williams, 2006).

In East Asian cultures, parents and educators also share similar endorsement of practices incorporating careful monitoring of students' progress and emphasize effort. Educators frequently instill within students the concept of incompleteness and areas that need further improvement. Parents in East Asian cultures also report spending more time with their children on their academic work than their counterparts in European-American cultures, in addition to holding higher standards with which they govern their expectations of their children's performance (Chen & Stevenson, 1995; Chen & Uttal, 1988; Goyette & Xie, 1999; Peng & Wright, 1994). Higher emphases on effort, expected standards, and degree of parental investment cultivate a mindset more receptive to negative feedback and desire to monitor areas of needed attention. This is in contrast to European-American parents, who may endorse independence in their approach to their children's learning; children may learn ways to improve and tout their

self-esteem, while exercising their autonomy and self-efficacy (Chen & Uttal, 1988). Consequently, the two divergent styles of parenting may serve key roles in mediating East Asian culture's endorsement of self-criticism, and European-American culture's endorsement of self-regard.

Dweck (2008) introduced the growth mindset as being a perspective governed by the belief that one may improve and develop their basic abilities through effort, dedication, and strategic planning. In contrast to the growth mindset, the fixed mindset is a perspective governed by the belief that one's basic abilities (e.g. intelligence) are fixed and consistent over time. Typically, those with the growth mindset work towards developing their abilities while those with the Fixed Mindset work towards documenting their abilities. Growth mindset interventions have been successful in numerous settings, particularly in students of historically marginalized groups (e.g. minority groups, women, etc.) (Aronson et al., 2002; Blackwell et al., 2007; Good et al., 2003; 2008). Thus, findings of these studies suggest that the Growth Mindset may help to provide students a means to be resistant to stereotype threats.

5.2 Implications of Findings

The goal of this paper was to survey the body of literature to examine the inherency of key growth mindset concepts (e.g. emphasis on effort and interpretation of performance feedback) in East Asian culture. East Asian cultural endorsement of effort to achieve success and high receptivity to negative feedback parallel these key qualities. This literature review confirmed Dweck's (2008) assertion that cultivation of the growth mindset hinges on input from both biological and environmental influences. Studies found neurophysiological differences between European-American and East Asian cultures for cortical brain activity when interpreting the self or others. Such differences may also be derived from differences in socialization. Data from several studies (e.g. Heine et al., 2001 and Peters & Williams, 2006) and direct comparison of cultural theories in motivation suggest that key concepts of growth and fixed mindset are inherent in East Asian and European-American cultural values, respectively.

East Asian and Asian-American populations often perform well above other cultural

groups in academia (Chen & Stevenson, 1995; Peng & Wright, 1994). However, it may be possible that their academic achievements are still being handicapped by the academic systems that foster a fixed mindset, potentially contributing to the lack of research of growth mindset interventions being conducted on these populations. There does appear to be some degree of institutional mismatch regarding the accommodation of independent and interdependent orientations in academia (Stephens et al., 2012), which sparks the question, “if research is being conducted to investigate how institutions may accommodate minority groups, should there be equal effort committed to examining Asian groups, despite their high performance?” I would argue “yes,” as not doing so under the notion that these groups are well-performing only further perpetuates the exclusion of Asian groups as a cultural minority group. Difficulty arises when solutions are theoretically simple and straightforward, but little to no data exists to confirm relevance of real world application.

Heine et al. (2001) and Peters & Williams (2006) allude to the idea that educators may be able to adjust the feedback they provide according to who is on the receiving end. In theory, assuming perfect discrimination, such practices may be possible. However, in real world applications, it is difficult to gauge one’s preferences in self-construal. As discussed in prior sections, cultural primes can drastically influence one’s cognition of self. Individuals who are bi-cultural with identities in both individualistic and collectivistic cultures may be particularly susceptible to the influences of cultural primes. It is also worth reiterating that, even in the absence of apparent primes, an individual’s race or membership in a cultural group is not always a good indicator of feedback preference or mindset. Socialization within a culture merely influences, but does not strictly enforce, the endorsement or suppression of independent or interdependent self-construals. Thus, providing certain type of feedback based on superficial indicators of cultural membership (e.g. race) may yield negative outcomes if the individual’s self-view runs counter to the culture-specific feedback.

Findings from reviewed studies suggest that the implementation of the growth mindset, to some extent, may be able to improve academic achievement of European-American students without incurring the negative effects of culture-opposite feedback (e.g. fixed mindset/performance goal orientation) on East Asians. In other words, while the growth mindset

may not provide any novel information for individuals from an East Asian culture, and thus theoretically would not improve performance, it can prevent any decrease in performance and persistence deriving from cultural priming of the fixed mindset. European-Americans, on the other hand, could benefit from the novel introduction of one's abilities to improve, and observe improvement in their performance and persistence, thereby reducing the academic achievement gap between the two groups.

There are, as of now, no evidence to suggest that implementation of the growth mindset will yield negative outcomes to the academic achievement of any culture group. Findings from prior studies show that some cultural groups may not observe any improvements due to the lack of novel information from growth mindset. Only the fixed mindset appears to induce negative outcomes when instilled in cultural groups where the concept of innate talent is interpreted as novel information. In sum, the concept of growth mindset appears to be inherent in East Asian cultural groups, and the implementation of this mindset may serve to narrow the achievement gap evident in American academia.

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