History of Mindset Theory and its Relevance to Second Language Learning in a Japanese Context

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I Introduction

Implicit psychological mindsets or self-theories held by students regarding their own competencies in the classroom can affect learning in either positive or negative ways. These have been the focus of Carol Dweck and associates for the past few decades, and her research, originally stemming from attribution theory, has been prolific (see: Diener & Dweck, 1978; Dweck, 1986; Dweck & Leggett, 1988; Elliot & Dweck, 1988; Dweck, 1991; Dweck, Chiu & Hong, 1995; Chiu, Hong & Dweck, 1997; Dweck, 2006; Blackwell, Trzesniewski & Dweck, 2007; Dweck, 2008; Murphy & Dweck, 2010; Elliot & Dweck, 2013 etc.) as well as very influential, spurring Boaler (2013) to describe it as the cause of nothing short of a "mindset revolution". The canon of work shows with consistency that those subscribing to an entity (fixed) mindset believe that intelligence is fixed/immutable, and are concerned primarily with measuring and validating their competence resulting in poor academic outcomes and a tendency towards helpless responses in the face of failure. In contrast, those with an incremental (growth) mindset view intelligence as malleable and developed through effort. These theorists generally do better in school, are more satisfied, motivated, engaged, and less likely to see failure as a threat to their self-worth.

Students subscribing to the fixed theory focus more on measuring and validating themselves as they view challenges not as opportunities to learn and grow, but as threats to their self-worth. This is understandable, for if it is true that one's intelligence is static or immutable, then it stands to reason that measurement of said intelligence can cut fairly close to one's sense of

self-worth. Consequently, rather than facing challenges head-on in the interest of development, fixed mindset subscribers will often avoid them; preferring instead to either do nothing, or engage in work they feel comfortable will not threaten how they view themselves, as well as how others view them (Dweck & Molden, 2005; Dweck, 2000). The research shows that students subscribing to fixed mindset are concerned primarily with validating their competence to themselves and others to the eventual detriment of their grades (Dweck, 2000; Hong, Chiu, Dweck, Lin, & Wan, 1999; Blackwell, Trzesniewski, & Dweck, 2007). Their reaction to failure in - for example - a math test might result in their deciding "I guess I'm not a math person", which often results in their neglecting the study of math altogether (Yeager et al., 2016).

Those holding incremental or growth mindsets on the other hand are able to view challenges as natural and necessary to self-development. They exhibit *mastery* rather than *performance* goals (Dweck & Leggett, 1988), are more concerned with improving and learning, and have a less static view of people generally. They are less anxious, as they do not generally feel that negative results from tests or challenges reflect on them *as people*, but rather simply on a lack of progress or effort thus far (Dweck, 2000; Dweck, 2006; Dweck, 2008). Whereas in the face of failure the fixed mindset subscriber will say "I guess I'm not a math person", the growth mindset subscriber will say "I guess I'm not a math person *yet*" (Dweck, 2015). This article will outline the evolution of this influential theory, and consider its relevance within a Japanese and language learning context.

II Mindset Beginnings

We all have beliefs which give meaning and structure to our lives and day to day experiences. One of the primary reasons human beings subscribe to belief systems, according to George Kelly, is so that we can garner a sense of security in our ability to predict future events (1955, as cited in Dweck, 2000). Some beliefs depict a dynamic world in which things, other people, and even one's self are capable of change and growth. These beliefs help us move

forward, see problems as having solutions, and view others - as well as ourselves - as not finished projects but rather in the midst of their (our) own learning journeys. Generally, the world according to those subscribing to this view is filled with potential. Another way of looking at the world around us is to see things and people as generally static and unchanging. Qualities and abilities possessed by people as well as ourselves 'are how they are', and there is not much that can change that.

Importantly, it is not which of these two general viewpoints are more "logical", "rational" or "developmentally mature", as they both can be "internally consistent, and they are both widely held by people of all levels of education and from all walks of life." (Dweck, 2000, p. 132). In fact, there are advantages to both. The advantage of the more 'dynamic' view, is that subscribers to it view change and growth as natural and hence are themselves more capable of change and growth, whereas the advantage of the latter mentioned view is that it portrays a simpler, more knowable world; and there can be a great sense of security gleaned from this belief (Dweck, 2000).

The concept of self-theory and its role in behaviour has been discussed and researched within psychological communities for over forty years now. In its nascency, Dweck and Reppucci (1973) found that students with *learned helplessness* (see: Seligman, 1972) both a) took less responsibility for their failures as well as successes, as well as b) to the extent they did accept responsibility, accredited said success/failure to ability rather than effort. In her later seminal study Dweck (1975) found subjects who also underwent failure attribution retraining (in which they were taught to take responsibility for failure, and attribute it to effort) fared much better academically than helpless students who underwent training which simply attempted to manufacture perseverance by highlighting students' correct answers and glossing over their mistakes. (This later attempt to remedy struggling students - dubbed a "success only procedure" - was a technique recommended by a host of behaviour modifiers at the time (p. 675).)

Following this, Diener and Dweck (1978) began documenting the two different response patterns (helpless and non-) within grade school children in dealing with challenging classroom material. They found the helpless

group would respond by either avoiding the material entirely, or in a way which displayed a marked deterioration of performance. Most interesting was the fact that those displaying the helpless response patterns were often equally or even brighter than those who embraced the challenges (as defined in the study). Equally as puzzling was the fact that those most concerned with their ability, as the more helpless children seemed to be, behaved in ways which clearly hampered their own development and growth.

Dweck and Elliot (1983) later began looking to students' goals as an explanation for said behaviour. They submitted that the goals that individuals harboured created the framework within which they acted, interpreted, and reacted to events. Specifically, within the realm of intellectual achievement, students appeared to harbour either *performance goals* (in which they sought primarily favourable judgements from peers and teachers) or *learning goals* (in which learning and mastering the material were the major goals).

Still unanswered however was the question as to why students in the same situation; both wanting to do well, would possess such different goals. This led to the proliferation of Dweck's *Implicit theory* which has been her focus for the last few decades. Stemming from attribution theory, different hypotheses students hold about themselves were tested and it was found that students who viewed their own intelligence as a fixed entity consistently pursued *performance* goals while those who viewed intelligence as more malleable pursued *learning*, or *mastery* goals (Bandura & Dweck, 1985). More pointedly, *implicit* or *mindset theory* posited that in different domains students attribute successes and failures either to primarily natural and unchangeable innate talent (comprising a *fixed* or *entity* mindset), or to their essentially having (or not) exerted enough effort or learned enough (exhibiting a *growth* or *incremental* mindset).

Dweck and Leggett (1988) later presented the *social-cognitive approach to motivation and personality* model which purports that students' goals set up patterns of response, and that these goals are further fostered and reinforced by individuals' self-conceptions. The model is built around goal-oriented behaviour but identifies individual differences in beliefs and values

which generate differences in behaviour. The social-cognitive approach to motivation and personality model further seeks to illuminate specific psychological mediators of behaviour while "assigning a central role to interpretive processes in the generation of affect and the mediation of behaviour" (p. 257).

It is important to note that up until this point, essentially the only domain that had been studied was that of intellectual achievement/theories of intelligence, etc. However, Dweck and associates would soon expand this to that of the realm of social interactions and then to a host of other domains as well. In her book *Self-Theories* (2000) Dweck outlines how the research had expanded up until the book's publishing date. Asserting a surprising amount of internal consistency within the belief systems of both growth (incremental) and fixed (entity) mindset subscribers, she cites research findings that show that entity theorists are more likely to hold and act on stereotypes (Levy & Dweck, 1998) and to believe in "destiny" (Carver, Scheier & Weintraub, 1989). Entity theorists were further shown to put more weight on grades than learning, were more likely to refuse help in school when offered it in comparison to incremental theorists (Dweck, Chui & & Hong, 1995), and were shown to be more likely to view someone as intelligent based on the *ease with which they achieved* in an academic context as opposed to the *effort or struggle they exerted* (Mueller & Dweck, 1997). They were also shown to be more likely to feel success by outshining others (versus incremental theorists who were more likely to feel successful via personal progress) (Dweck & Sorich, 1999) and they were more likely to give up when challenged (Dweck, 2008),

Furthermore, fixed mindset subscribers were more likely to have lower self-esteem (Robins & Pals, 1998), were more likely to seek friendships and romantic relationships which gave them status and validated them in the eyes of others as opposed to relationships which challenged them to grow (Kamins, Morris & Dweck, 1996), and they were more likely to view a potential partner as either 'destined to get along with them, or not' (Knee, 1998). As well, they were more likely to disengage from relationships in the face of a negative event (Carver, Scheier & Weintraub, 1989), they were more prone to have self-worth contingent on the opinions of others and seek validation

(Kamins & Dweck, 1999), and finally, they were also shown to be generally more anxious, and prone to depression (Zhoa, Dweck & Mueller, 1998).

One could not be faulted for thinking that the issue here might be a lack of confidence; indeed, the theory's proximity to notions of success and failure would seem to suggest this, and there is research linking confidence with higher grades in school (Dweck, 2000). However, interestingly confidence levels between entity and incremental mindset subscribers are fairly even (Hong et al., 1998). The fissure within these students appears to be their ability (or inability) to maintain a confident and non-defensive demeanour when faced with challenges and/or failure. Indeed, it is precisely here - during these more tumultuous times - where Dweck and associates have in fact found that high confidence/fixed theorists lose ground (grades-wise) while low confidence/growth theorists thrive (Henderson & Dweck, 1990). Dweck (2000) suspects that it is in fact this *lack* of confidence which spares the latter group from interpreting challenges as commentary on their (lack of) intelligence, or as viewing the entire interaction as a proving ground of sorts. In other words, those lacking confidence, but equipped with a growth mindset are advantaged in that they are looking to increase their ability, not to show others they have it.

This - Dweck postulates - is why students with generally higher academic success rates early on, are often more likely to be fixed or entity theorists: they have recognized that - compared with other students - school is easy for them and have come to define themselves as the high-achievers or as the "smart students" in the class. These early performers are often girls, as girls mature quicker than boys, and they are further able to regulate their behaviour more successfully which lends them to more praise regarding their behaviour/intelligence from teachers, which only serves to further cement their entity mindset (for more on the detriment of praise which promotes an entity mindset see: Dweck, 2000; Gunderson et al., 2013; Dweck, 2015).

Indeed, as studies have shown (Licht & Shapiro, 1982; Licht, 1984; Dweck and Leggett, 1988; Licht, Linden, Brown & Sexton, 1984), bright elementary school-aged girls are one of the most vulnerable groups. So much so

that in one study (Licht, 1984), students were grouped according to their levels of achievement and it was found that the *higher* the achievement of the girls, the *more* they displayed helpless responses when presented with challenging material. These primary school "bright girls" (who, by a fair margin, outperformed their male counterparts) were also the most likely to choose material which was "easy enough so I don't make mistakes", while almost none of the boys opted for the easier material. Furthermore, when the boys were presented with the challenging material, those with higher IQs mastered the material the quickest. The takeaway from all of this is that confidence and past scholastic success is by no means evidence of a growth mindset, and often an indicator of quite the opposite.

Significantly, the impact of a student's mindset does not typically surface until he/she is faced with a failure situation (Lou & Noels, 2016; Dweck, 2006; Hong, Chui, Dweck & Lin, 1998; Dweck, 2000). Even fixed mindset subscribers who are generally well prepared can perform adequately as long as they do not encounter difficulty. In a longitudinal study by Blackwell, Trzesniewski, and Dweck (2007), students of comparable math ability transitioning from elementary to junior high school were categorized (via survey) as either growth or fixed mindset subscribers. By the next year, the growth mindset students had median scores approximately six percentage points higher than their counterparts, and these scores continued to diverge (from the fixed mindset students') as time went on. Additionally, in a study of tenth grade students, growth/fixed mindsets were found to be predictive of students' nationalized test scores at all socio-economic levels (Claro et al., 2016). Indeed, the predictive power of how mindsets impact student grades has been well documented (Dweck, 2006; Dweck, 2008).

However, more recent research has also challenged some of the theory's assertions. Sisk et al. (2018) conducted a meta-analysis examining the strength of the relationships between mindset and academic achievement for a host of studies, finding a relationship they describe as weak. They do, however, – along with other researchers (Burnette et al., 2013) - cede that overall mindset efficacy and interventions may perhaps be more promising for lower SES, underachievers, and other at-risk students.

It is worth mentioning at this juncture that although the growth/fixed dichotomy discussed here may seem to suggest it, the theory does not entirely compartmentalize students as strictly one or the other. Rather, it is more fruitful to view the construct as a continuum, with students *generally* falling somewhere in between. The extent to which this is the case is probably best illustrated by Dweck herself in the following paragraph:

> "Students who consistently agree with the fixed mindset items and disagree with the growth mindset ones are classified as holding a fixed mindset (about 40% of students). Those who consistently agree with the growth mindset items and disagree with the fixed mindset ones are classified as holding a growth mindset (about 40%). About 20% of students do not choose consistently and are not classified. (In some analyses, the mindset scores are used as a continuous measure and the results are similar.)" (2008, p.2).

With that said, other more recent studies claim that it is more productive to treat growth and fixed mindsets as negatively associated, yet relatively independent constructs within certain domains (Karwowski, 2014). Clearly it is not a straightforward theoretical phenomenon and therefore best perhaps – from a researcher's perspective - to proceed with caution.

III Mindset Interventions

Diagnosing students as either growth or fixed mindset oriented is a fairly straightforward process involving relatively brief surveys which invite participants to rate the degree to which they agree with a host of growth and fixed mindset statements (see: Dweck, 2008). Other studies however have looked to remedy fixed mindsets and associated psychological maladies. Typically, mindset interventions involve little more than – in one way or another – convincing participants that *anyone* can learn the target domain (i.e: math, science, language learning) and that doing so is dependent entirely on effort and has little or nothing to do with individual talent. Good et al. (2003) conducted a mere two 90-minute growth mindset mentoring sessions in a test group of 7th grade math students which led to a 4.5-point increase in math scores; the effect of which was most pronounced in girls.

Looking to the tertiary level, Yeager et al. (2016) intervened in the mindsets of disadvantaged students enrolled in and transitioning to university and reduced the achievement gap by 31-40%. Additionally, Aronson et al. (2002), conducted similar interventions in the US leading to clear gains in all students, but gains which were most pronounced in African American university students leading them to conclude that mindset interventions could combat stereotype threat after just three sessions. What is shown consistently, is that in many scholastic domains in which students face challenges, there are students struggling due to what may in part be remediable psychological barriers, and this is borne out in the literature (see: Diener & Dweck, 1978; Dweck, 1986; Dweck & Leggett, 1988; Elliot & Dweck, 1988; Dweck, 1991; Dweck, Chui & Hong, 1995; Chui, Hong & Dweck, 1997; Dweck, 2000; Dweck, 2006; Blackwell, Trzesniewski & Dweck, 2007; Dweck, 2008; Murphy & Dweck, 2010; Elliot & Dweck, 2013; Spenner, 2017).

It should be noted that the longevity of these interventions is still up for debate. Dweck (2006) found intervention results to be resilient for two years, and Aronson et al. (2002) found them resilient after one year, while other studies have shown the impact of interventions to be rather short-lived (Meyers et al., 2015; Rattan, Good & Dweck, 2012).

Notably, other studies have found the effects of interventions to be virtually naught. In a study mentioned earlier, Sisk et al. (2018) conducted a second meta-analysis looking at the effectiveness of mindset interventions on academic achievement, and they demonstrated that mindset interventions had only a very small effect on academic achievement. They do however cede that academic interventions generally generate fairly modest effect sizes, though not as low as what they found mindsets interventions to have broadly. Likewise, although it was found that in the US, 98% of teachers believe that changing students' mindsets would be beneficial in terms of academic achievement (Yettick et al. 2016), a more recent large-scale study (involving 100 schools) found that mindset interventions were unable to improve student test scores (Foliano et al., 2019). Finally, Yeager et al. (2018) found a 50-minute intervention among over 12,000 students to increase grades by a fairly weak 3%. With that said, a relatively low time investment

of 50 minutes resulting in any increase at all is at least worthy of consideration.

IV Mindset and Culture

According to Stigler and Hiebert (1997) many Asian countries have in place educational systems based more concretely on the idea that learning is a process which is spurred on through effort rather than ability. Lockhart, Nakashima, Inagaki & Keil (2008) found that the Japanese participants they tested more closely subscribed to a growth mindset than their American counterparts, while Stevenson, Lee, Chen, Stigler, Hsu and Kitamura (1990) assert that "Asian cultures see effort as being a major and integral part of intelligence, much more than Americans" (as cited in Dweck, 2000, p. 60). Chen et al. (2005) also found evidence suggesting that Asian or Confucian cultures subscribe to a 'required motivation' construct which strives to meet societal, parental, and educational expectations. Further, it has been suggested that growth mindsets may be more prominent in Confucian cultures owing to Confucianism's emphasis on self-improvement and self-criticism as opposed to Protestantism's emphasis on positive self-presentation in the West (Heine et al., 2001; Rattan et al., 2012a). It is possible that Eastern/Confucian culture broadly lends itself to more awareness and acceptance of change generally, as Ji, Nisbitt and Su (2001) found that Chinese nationals were - among other things - more readily expectant of change generally, more tolerant of contradiction and more persistent on tasks. In sum, the underlying assumptions of the growth mindset subscriber's worldview seem more prevalent within Confucian or Asian cultures.

However, before writing the situation off as a largely cultural - and hence primarily a Western - problem, it is important to remember that the myth of the gifted language learner is one that persists all over the world (Mercer & Ryan, 2009; Mercer, Ryan & Williams, 2012; Mori, 1999; Burns & Garcia, 2017). Indeed, Mercer (2012) as well as Burns and Garcia (2017) propose that this universally accepted trope is perhaps in part due to the internationally used Modern Language Aptitude Test (MLAT) which was popu-

larized in the 1960s and is still widely used today. Its widespread use is predicated on the notion that people are born with a static proclivity for language learning; that is, the MLAT makes the same assumptions about language learning that a fixed mindset subscriber does and hence its widespread use - it would stand to reason - would only further cement entity theories into the collective consciousness. In fact, even fairly recently language teachers and researchers cling to this assumption despite a lack of evidence either for or against it (Burns & Garcia, 2017).

V Mindset, Proficiency and The Language Learning Domain

As mentioned earlier, mindset research is *domain specific*. The implication of this is that a student can simultaneously be a fixed mindset subscriber in − for example - Math, but a growth mindset subscriber in Science (Dweck, 2008). Furthermore, with respect to second language learning, a student could in fact be a fixed mindset subscriber with regards to listening, but not for reading (Mercer & Ryan, 2012). As an academic domain, second language learning as it relates to mindsets is unique in at least two ways: first, language learning can occur outside of the classroom and hence involves learning of not just the subject matter, but also cultural practices (Mercer & Ryan, 2010; Gardener, 2010). Secondly, it is unique in the marked paucity of attention it has received by scholars to date (Mercer 2012; Lou & Noels, 2016; Mercer, personal communication).

Although research has been sparse, there have been two notable approaches to date. Firstly, Lou and Noels (2016) developed the Language Mindset Inventory (LMI) which is a survey-style measurement tool examining students' mindsets (whether growth or fixed) in relation to a) general language intelligence (GLB), b) second language aptitude beliefs (L2B) and finally c) age sensitivity beliefs (ASB). Beyond verifying the instrument for use with university students, they found through path analysis that growth mindset subscribers were likely to be more goal-oriented and mastery-oriented in the face of failure, while their counterparts showed greater concern with simply demonstrating competence (2015; 2017). In a second study

within the same article mentioned earlier, Lou and Noels (2016), primed students with either a growth or fixed mindset belief (via two "scientific" articles professing the efficacy − in the case of one - hard work and − the other - natural talent; essentially priming students with either a growth or fixed mindset) which was shown to impact how students reacted within future language failure situations. Importantly, they acknowledge that the longevity of the impact of the interventions is entirely unknown. It should be noted that recently Lou and Noels' LMI instrument was checked for validity within a Japanese context and limited support for its validity was found (see: Collett & Berg, 2020).

Secondly, Mercer and Ryan's (2010) approach comprises a more qualitative one in that they conducted case studies with a total of nine ESL learners from Austria and Japan. Learners tended to express an amalgam of views which characterized them as neither growth nor fixed mindset oriented, but rather as having *tendencies* towards one or another end of a mindset *spectrum*. Notably, the Japanese interviewees tended to express more homogenously, growth mindset-oriented views. Mercer and Ryan suggest this may be due to their largely quoting from a culturally authored "socialized script" in that despite the prominence of a more effort-oriented mindset, there were also many statements which seemed to be in direct contradiction to said script. One can imagine how Chen et. al's (2005) assertion that Asians generally subscribe to a 'required motivation' construct − one which strives to meet societal, parental and educational expectations − would support the notion of a socialized script. In a sense, this idea echoes those mentioned in the earlier section on culture.

To what extent a second language learner's proficiency impacts their mindset (and vice versa) has been a question raised by Horwitz (1999) and echoed by Mercer and Ryan (2009). Lou and Noels (2014) proposed a model which further refines second-language-learning-fixed-mindset subscribers as either viewing themselves as more or less proficient as language learners. Those viewing themselves as *more* competent will typically subscribe to *performance-approach* goals in which they are motivated to win positive judgements (for example, getting good grades, winning positive praise) and

look “smart”, while those with *less* confidence in their proficiency will typically subscribe to *performance-avoidance* goals in which they seek avoiding negative feedback, or having their incompetence exposed. Importantly however, in accordance with mindset theory more generally, regardless of whether they seek performance-approach or performance-avoidance goals, as alluded to earlier, they are generally more anxious and fearful of failure, reacting more helplessly because they view *any* failure as comment on something immutable about themselves. According to the model, growth mindset subscribers are immune to the effects of being either perceived high or low ability, as both ability groups view development as possible through the application of more effort, and are not as prone to take criticism personally. They harbour *learning* or *mastery* goals and are not self-conscious or concerned so much with performance (Lou & Noels, 2017).

To summarize, the paucity of research with respect to Mindset Theory and language learning presents a perplexing situation in light of the widespread acceptance of Mindset Theory among educators today (Boaler, 2013). This is particularly true when one considers the further inherent cultural context which has also remained largely unresearched.

VI Summary

Mindset Theory has come a long way over the decades from being a somewhat obscure psychological theory to a fundamental tenet of Western educational theory. This article has attempted to summarize for the reader the history of Mindset Theory to date broadly, placing it within a Japanese second language learning context. It is hoped by the authors that at the nexus of culture and second language learning, mindset theory might receive more attention in future research.

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