We Imagine Therefore We Think: The Modality of Self and Thought in Japan and America

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Abstract

Kim（2002）は，米人は言語を発声させられることで影像的問題の解決能力が上がり，言語発声を阻止されることで問題解決能力が下がるのに対して，アジア人は言語発声の阻止であまり影響されず，逆に発声させられることで問題が解決できなくなる結果から，アジア人の思考は言語的でないという結論を出した。本論では，Lacan（2007）の《鏡像から言語へ》という自己発達論を逆転したテーゼに基づき，まず日本人が内言するより想像をすることを確かめた。次にKimの実験における言語と影像を置き換え，米人は影像を思い浮かべることでも，想像を阻止されても，言語的問題解決能力があまり影響されないのに対して，日本人は想像で問題解決能力が上がり，想像を阻止されると問題解決能力が下がる結果から，日本人の思考の主たる媒体が言語より影像である結論へと導き，思考とは何かにまで考察を広げた。

Using data from a compelling series of experiments published in 2002, Kim argued that East Asians do not think in language, at least when solving visual problems. Kim followed this line of research demonstrating that East Asians have less desire to express themselves in language (Kim & Ko, 2007) and that language use does not relieve stress in East Asians (Kim, 2008). Since language has traditionally been argued to be central to thought (see Kim, 2002; Haidt, 2009) and self-evaluation (Mead, 1934/1967), Kim's groundbreaking research has yet to be fully integrated into cultural psychological theory (Buchtel & Norenzayan, 2009). Kim's research also declines to answer the question as to what the nature of East Asian thought actually is.

Kim's research is not alone. The Japanese are often described as non-verbal

but the elucidation usually ends there. The Japanese communicate in a *Silent Language* (Hall, 1973). Japanese mothers use less language to communicate with their children, and do so - in contradistinction to American mothers - to address negative situations (Caudill & Weinstein, 1969). Japanese hospitality eschews giving guests the opportunity to verbalise choices, requiring that hospitality service providers empathise with the needs of their guests (see, e.g., Doi, 1973, Chapter 1). An expert on Japanese expression (Haga, 1979) describes the chief characteristics of Japanese culture as being a "non-narrating," "non-explaining" culture. Japanese culture, it would seem, is best described by the absence of words, including those to describe it.

This research will argue that Japanese thought is not absent but is instead more visual than verbal. Based upon the hypothesis that thought may manifest itself as self-talk (Brinthaupt, Hein, & Kramer, 2009) in the Western mind, there may be an equivalence to the calling to mind of images in the East Asian mind. The current research first confirms that visual thought is prevalent among Japanese, then parallels Kim's experimental research, on Japanese and American participants, requiring them to tackle a linguistic task in control, imagination suppression and imagination enhanced conditions. The results of this cross cultural experiment will be discussed with implications for the nature of thought and Japanese culture.

Background

Starting from the awareness that Asian American students are far less likely than their European American classmates to ask questions and otherwise express themselves linguistically in class, Kim's highly original paper, "We Talk therefore We Think" (2002) challenged the common perception that this lack of classroom talk among East Asians is a problem. Kim argued that in the West, since at the least the time of the ancient

Greeks, thought has been understood as self-talk, or "the souls discourse with itself" (Plato, see Kim, 2002, p.829). This conception is not shared in East Asia where, Kim argues, silence is believed to be conducive to thought.

To demonstrate the divergent effect of talking upon thought depending upon culture, Kim conducted experiments where East Asian and European Americans carried out visually presented reasoning tests (Raven's Progressive Matrices; Raven, 2000), in three conditions: 1) Control, 2) Thinking aloud, and 3) Language suppression, in the latter, to suppress meaningful self-talk, participants were required to repeat the alphabet.

In the case of European Americans, and in line with previous research, Kim (2002) found that thinking aloud improved problem solving compared to the control condition whereas language suppression significantly decreased problem solving ability. This result is adequately explained by the common view that among Westerners, thought *is* self-talk, so encouraging Westerners to talk encourages thinking and improves problem solving, whereas supressing Westerners' self-talk prevents their thinking and impairs problem solving. However, the situation among East Asians was radically different. When required to talk, East Asian problem solving ability was significantly reduced, whereas in the language suppression condition their ability was reduced only slightly, and not significantly. Kim argued that this demonstrates that East Asian thought is not self-talk and that therefore "thinking aloud" is a misnomer for being required to perform a second task of verbalising Asian non-verbal thought. In the language suppression condition Kim argued that East Asians were able to repeat the alphabet without interfering with whatever manner or mode of thought that they are employing.

Despite introducing one of the few studies to highlight the phenomenon of Asian mental imagery (Ball & Torrance, 1978), Kim (2002) argues that

Asian thought is intuitive, not requiring a phenomenological self-stimulus in the way that Westerners stimulate their problem solving ability by self-talk.

Kim's assumption falls largely in line with the main cultural psychological theory of Western analytical and East Asian holistic thinking which situates the latter as the active suppression of analysis, and *not* attending solely to focal stimuli, but rather actively attending to both focal and contextual information (e.g., Masuda & Nisbett, 2001; Miyamoto, Nisbett, & Masuda, 2006; Masuda, Wang, & Senzaki, 2012). In this way, as noted in the Introduction, Japanese thought is described as an active negation.

The current research was motivated by the hypothesis that rather than lacking a focus, East Asian and particularly Japanese psychology may have a different focal mode: not language but vision. This hypothesis was originally formed by reversing the developmental theory of Jacques Lacan (1977). Lacan argues that while infants recognise themselves first in mirrors, it is only with their ability to narrate themselves that they become able to be reflexive. A linguistic "Other" can be internalised, whereas visual self-cognition require an "orthopaedic" (Lacan, 1977, p.78) physical mirror or the reactions of others. This view of the centrality of narrative to self-concept, and externality of image, is shared by many Western psychologists (e.g. Rochat, 2009; Mead, 1967/1934).

We however hypothesise that the centrality of language may be replaced by a centrality of vision in Japan, and in that sense, the theory of Lacan could be inverted, or transformed language for vision, to give a "Nacalian" (Lacan reversed-ian) theory of the Japanese self. The narrative self, as proposed by Lacan and other Western theorists, has a number of aspects which can be argued to be reversed in Japanese culture as summarised in Table 1.

Table 1. Nacalian Transformation of the Narrative Self

	Western Narrative Self	Japanese Specular Self
Centre of self-cognition	Self-narrative "I"	Face
Primary mode of self-representation	Linguistic	Visual
Secondary mode of self-representation	Visual	Linguistic
Absent mode of reflexivity	Viewer	Listener
Intra Psychic Other	Listener	Viewer
Desire for self-expression	Linguistically	Visually

Considering the Western self, a large number of Western scholars claim that the self-narrative is at the centre of self-cognition (Mead, 1967/1934, Bruner, 1987, Ricoeur, 1990, Gottschall, 2012, Dennett, 1992). There is clear and far reaching evidence for the positivity of linguistic self-representation in the West (e.g., Taylor & Brown, 1988; Heine, Lehman, Markus, & Kitayama, 1999). Visual self-representation in the West is judged to be secondary, relatively insignificant - "mere image" and "narcissistic," (Breckman, 1976) -- and is generally viewed more negatively as indicated by the negative affect aroused by mirrors, which Westerners seek to avoid (Duval & Wicklund, 1972). The way in which Westerners become more prosocial when situated in front of self-reflecting mirrors also demonstrates that visual reflexivity is not something provided by the Western mind (Duval & Wicklund, ibid). On the other hand it is often argued that, for Westerners, language is reflexive by virtue of the fact that Westerners are continually accompanied by an intra-psychic other as linguistic interlocutor variously termed "a cap of hearing" (Freud, 1961, p.24), "a super-addressee" (Bakhtin, 1986, p.126), "generalised other" (Mead, 1967/1953, p. 154) "Other" (Lacan, 1966/2007, p. 3), and "ear of the other" (Derrida & McDonald, 1985, p. 51) which enables linguistic self-objectification. And it is in this primary, positive, omnisciently heard, linguistic modality that Westerners, but not East Asians, have a desire to express themselves (Kim & Ko, 2007).

Considering the Japanese sense of self (Table 1), it is argued that the mask or face is primary or central to the Japanese self or "persona" (Watsuji, 2011). Japanese visual self-representations such as auto-photography (Leuers = Takemoto & Sonoda, 1998), collage (Leuers = Takemoto & Sonoda, 2000) and auto-portraiture (La Voy et al., 2001; Takemoto, 2017) are very positive, far more than that of Americans, standing in contrast to self-effacing Japanese verbal self-expression (Heine, Lehman, Markus, & Kitayama, 1999). It is further argued that, for the Japanese, language is non-reflexive, due to the absence of any linguistic "third person" view of self, such that the Japanese linguistic first person is a "you for you" (Mori, 1979/1999, see Maynard, 2000, p. 278). Most puzzlingly for Westerners perhaps is the assertion that the Japanese are accompanied by an intra-psychic other as gaze. This autoscopic gaze is argued to be achieved through practice of forms (*kata*) such as those of Noh (Zeami see Yusa, 1987), Japanese archery (Yamamoto, 2009), and various rituals (*girei*) that traditionally permeated Japanese society (Miyanaga, 1987). Evidence for the attainment of a simulated, self-seeing capability can be found in the work of Cohen and Gunz (2002) who described the discovery of Japanese "third person memories" of themselves as viewed as if from the outside. The Japanese "specular" self may also be inferred from the way in which Japanese traditional artworks and the drawings of East Asians individuals represent the world from an eye in the sky (Masuda, Wang, Ito, & Senzaki, 2012), and from the first author's research on the way in which the Japanese, unaffected by physical mirrors, would appear to have *Mirrors in the Head*[1] (Heine, Takemoto, Moskalenko, Lasaleta, & Henrich, 2008). In common parlance, the Japanese believe that "the kind old sun is watching" (*Otendou-sama ga miteiru*, see Funahashi, 2008), and that

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1) A better title would be "Mirrors in the Mind" since to reflect the face the mirror cannot be inside the head.

they consume the mirror of the Sun Goddess as mirror rice cakes (*kagami-mochi*) at the major festival at New Year. The current research examines the degree that the Japanese are motivated to view and express themselves in this their primary, positive, omnisciently observed, visual modality.

Irrespective of the persuasiveness of the aforementioned "Nacalian" theory of the modality of Japanese self-cognition, the question as to whether the theory can further be applied to the modality of Japanese thought is even more contentious. Not only is linguistic thought regarded as being uniquely suitable for cognising the self, as discussed above, language is also claimed to provide an 'enormous advantage' as modality of thought. For example, the preeminent linguistics scholar, Noam Chomsky (2002), opines regarding the origin of language as follows:

> If one person suddenly got the language faculty, that person would have great advantages; the person could think, could articulate to itself its thoughts, could plan, could sharpen, and develop thinking as we do in inner speech, which has a big effect on our lives. Inner speech is most of speech. Almost all the use of language is to oneself, and it can be useful for all kinds of purposes (it can also be harmful, as we all know): figure out what you are going to do, plan, clarify your thoughts, whatever. So if one organism just happens to gain a language capacity, it might have reproductive advantages, enormous ones. (p. 148)

Bearing in mind views of this kind regarding the advantageousness of linguistic thought as self-talk, an initial study was conducted upon Japanese participants to test to see whether Japanese visual thinking is similar in frequency to Japanese linguistic thinking.

Study 1

In order to assess whether visual thinking among Japanese may be comparable to thought as self-talk, an initial study was carried out with Japanese students to gauge the relative prevalence of thought in each modality. The Self-Talk Scale (STS) developed by the second author and colleagues (Brinthaupt et al., 2009[2]) was translated into Japanese and administered to 196 participants (80 male, 115 female, 1 missing) together with a modified version of the same scale. The sample ranged in age from 18-28, M = 19.97, SD = 1.28.

In the modified version, hereafter referred as the Self-Image Scale (SIS), the initial instruction stem "I talk to myself when" was subsequently replaced by "I imagine the situation, people, myself etc when..." followed by the same list of situations. Both the STS and SIS were rated according to a 5 point frequency scale (1 = *Never*, 5 = *Very Often*). Rather than counterbalance the order of presentation of the two scales, the STS was given first with participants being required to rate their use of images in the same situations using a different mark on the same scale to encourage comparison of the frequency of the two types of thought. The scales were given only in one order, STS then SIS, since the STS was designed to evaluate linguistic thought in situations wherein self-talk would be likely to arise, and it was initially anticipated that visual thought in these situations would often be low or "never", whereas ceiling effects were anticipated should the scales be administered in the reverse direction.

Items used for both measures appear in Table 2. These items include STS subscales of self-criticism, self-reinforcement, self-management, and social-assessment. Internal consistencies were acceptable for the total STS

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2) The current research used an earlier version of the STS. Brinthaupt et al. (2009) contains the final, validated 16-ite$M$ STS scale.

(r = .90) and SIS (r = .88) measures. Subscale internal consistencies were also acceptable, ranging from .66 - .83. Total and subscale STS and SIS scores were calculated by averaging the ratings for the respective overall or subscale items.

Study 1 Results

It should be noted that while no attempt was made to validate the SIS, the STS does show good test-retest and internal consistency (Brinthaupt et al. 2009). The situations included in the STS were generated as those in which individuals are inclined to self-talk, such as when "I want to support or congratulate myself for something I said or did." Thus if the modified, visual form of the STS should show that Japanese call images to mind as much as they engage in self-talk in the same situations, it would provide substantial evidence for the conjecture that visual thought is an important mode of thought among Japanese.

The average score on the total SIS (M = 3.29, SD = 0.68) was significantly higher than that on the total STS (M = 3.08, SD = 0.67), with images being called to mind more than self-talk, $t(195)$ = 4.23, $p < .001$. SIS and STS scores were significantly and positively correlated, $r(195)$ = .45, $p < .001$, indicating that participants who reported talking more to themselves reported more often calling images to mind with respect to the situations included in the measures.

To examine differences among the individual scale items, paired-sample t-tests were conducted. Images were reported more often in 12 of the 24 situations (see Table 2), whereas self-talk was engaged in significantly more frequently in only 4 situations. Examination of the STS and SIS subscales revealed that 3 of the 4 subscales differed significantly. Self-critical STS scores (M = 3.25, SD = 0.89) were higher than self-critical SIS scores (M =

3.09, SD = 0.97), $t(195)$ = 2.11, p = .036. On the other hand, self-managing SIS scores (M = 3.49, SD = 0.89) were higher than self-managing STS scores (M = 3.19, SD = 0.79), $t(195)$ = 4.16, p < .001. Social-assessment SIS scores (M = 3.41, SD = 0.83) were also higher than social-assessing STS scores (M = 2.95, SD = 0.84), $t(195)$ = 6.99, p < .001. Self-reinforcing STS scores (M = 2.96, SD = 0.84) did not differ significantly from self-reinforcing SIS scores (M = 3.06, SD = 0.85), $t(195)$ = 1.49, p = .14.

Interestingly, and in agreement with the overall hypothesis of this paper, Japanese self-talk was used significantly more than images only when being self-critical, whereas participants called images to mind more frequently than self-talk in a wide variety of self-management and social-assessment situations. Brinthaupt et al. (2009, Study 6) used a measure of verbal (e.g., "When I remember things that I have read, I recall the exact words of the text") and visual (e.g., "When I read a story, I visualize the described situations and characters") cognitive strategies. They found that verbal scores were more strongly related to self-talk frequency than were visual scores, supporting the idea that the STS captures verbal cognitive tendencies.

Study 2

Study 1 provided some preliminary support for a Nacalian inversion of the modes of both self-cognition *and* thought among Japanese participants compared to Western patterns. Noting that Kim (2002) had manipulated linguistic thought among Asian and European descended participants performing a visual task, the second study addresses the question as to the effect of manipulating visual thought among Japanese and American students performing a linguistic task. Upon the hypothesis that the focal mode of the Japanese self-cognition and thought is visual, the following

Table 2: Frequency of Self Talk (STS) and Calling Images to Mind (SIS)
Based on prototype version of the Self-Talk Scale (Brinthaupt et al., 2009)

Item	STS M (SD)	SIS M (SD)	Dominant Modality	t-test value
1. I want to support or congratulate myself for something I said or did. (reinforcement)	2.83 (1.04)	2.77 (1.18)		0.63
2. I review things I've said to others. (social-assessment)	3.55 (1.13)	3.43 (1.24)		1.04
3. I tell myself that I "should," "ought to," or "have to" do something. (management)	3.46 (1.17)	3.40 (1.32)		0.60
4. I'M giving myself instructions or directions about what I should do or say. (management)	3.17 (1.18)	3.32 (1.22)		1.43
5. I need to figure out what I should do or say. (management)	3.37 (1.13)	3.57 (1.25)		1.80
6. Something good has happened to me. (reinforcement)	2.96 (1.28)	3.15 (1.33)		1.58
7. I'm imagining how other people respond to things I've said. (social-assessment)	2.72 (1.32)	3.48 (1.30)	IMAGE	7.47***
8. I'm criticizing myself for something I've said or done. (critical)	3.29 (1.25)	2.99 (1.32)	TALK	2.70**
9. I want to analyze something that has recently happened to me. (social-assessment)	2.93 (1.36)	3.42 (1.30)	IMAGE	4.43***
10. I want to give myself courage to do something. (reinforcement)	3.35 (1.32)	3.05 (1.40)	TALK	2.80**
11. I feel ashamed of something I've done. (critical)	3.14 (1.27)	3.27 (1.36)		1.14
12. I want to review things that have happened in the past. (social-assessment)	3.27 (1.28)	3.67 (1.31)	IMAGE	4.01***
13. I want to imagine what other people might think about me. (social-assessment)	2.67 (1.18)	3.38 (1.27)	IMAGE	7.09***
14. I want to replay something that I've said to another person. (social-assessment)	2.91 (1.31)	3.18 (1.34)	IMAGE	2.72**
15. I'm proud of something I've done. (reinforcement)	2.53 (1.18)	2.94 (1.34)	IMAGE	4.25***
16. I'm mentally exploring a possible course of action. (management)	3.02 (1.17)	3.60 (1.24)	IMAGE	6.28***
17. I wish that I could change things I've said to others into "better" or different things. (social-assessment)	3.11 (1.16)	3.46 (1.26)	IMAGE	3.68***
18. I try to anticipate what someone will say and how I'll respond to him or her. (social-assessment)	2.46 (1.19)	3.29 (1.32)	IMAGE	8.12***
19. I feel discouraged about myself. (critical)	3.17 (1.33)	2.79 (1.42)	TALK	3.37***
20. I'm clarifying my plans for the day. (management)	2.81 (1.29)	3.45 (1.28)	IMAGE	6.67***
21. Something bad has happened to me. (critical)	3.04 (1.24)	3.08 (1.43)		0.32
22. I'm trying to make up my mind about what to do. (management)	3.32 (1.07)	3.57 (1.25)	IMAGE	2.49*
23. I've done something really stupid. (critical)	3.63 (1.19)	3.35 (1.38)	TALK	2.53*
24. I've done something really good. (reinforcement)	3.14 (1.27)	3.37 (1.30)	IMAGE	2.22*

Note. N = 196; higher scores denote greater frequency; * $p < .05$, ** $p < .01$, *** $p < .001$.

hypotheses were made by transforming Kim's (2002) hypotheses and results:

1) Calling to mind images will enhance Japanese task performance since Japanese are likely to use images to think

2) Suppressing the ability to call images to mind will diminish Japanese task performance

3) Supressing the ability to call images to mind will have little effect upon

American task performance since Americans are unlikely to use images to think

4) Calling images to mind will diminish American task performance due to the need arising for participants to perform a dual task

American (n = 315, 184 female, 124 male, 7 missing) and Japanese (n = 134, gender not available) students were required to write down as many positive adjectives as possible in five minutes in one of three conditions.

1) Control condition: Participants in this condition were only told the nature of task, "please write as many **positive adjectives** as possible, such as "fun," (in Japanese "*tanoshii*") for 5 minutes only."

2) Imagination enhancement condition: Participants in this condition received the following additional instructions: "While you are performing the task, please call to mind concrete situations, people, faces, and scenes from movies."

3) Imagination suppression condition: Students in this condition were given the additional instructions, "While performing this task, please try to call to mind an image of a white wall."

The dependent variable was the number of words generated (excluding repetitions of the example adjective and other parts of speech). Only adjectives that were clearly positive were included in the total score for each participant. After reading the instructions, the researcher prompted participants to turn the page and begin the brainstorming task. After

5 minutes had passed, participants turned their packets over and the researcher collected them.

Study 2 Results

A 2 X 3 ANOVA was conducted to examine the condition and country effects on the number of generated adjectives. This analysis reveals a country main effect, with American participants (M = 17.93, SD = 8.58) generating significantly more adjectives than Japanese participants (M = 15.16, SD = 6.65), $F(1, 443)$ = 13.23, p <. 001). However, neither the condition nor the interaction effects reached statistical significance. The average numbers of positive adjectives generated in each of the three conditions in each culture are given in Table 3.

Table 3. Number of Adjectives Generated in Each Condition (by Country)

	Imagination Enhancement (n = 157) M (SD)	Imagination Suppression (n = 128) M (SD)	Control (n = 164) M (SD)
Japan	16.57 (7.17) (n = 54)	12.92 (4.05) (n = 24)	14.75 (6.80) (n = 56)
USA	18.54 (8.57) (n = 103)	17.44 (9.15) (n = 104)	17.81 (8.05) (n = 108)

Following Kim's (2002) analysis, the results of the control condition were subtracted from the two imagination manipulation conditions to give the effect of the manipulation, which is expressed as a percentage of the control condition word total (See Table 4).

Table 4: Effect of Imagination Enhancement and Suppression (by Country)

	Imagination Enhancement	Imagination Suppression
Japan	12%	-12%
USA	4%	-2%

Among the Japanese sample, the effect of imagination enhancement resulted in a 12% increase in the number of positive adjectives generated compared to the control condition, and the imagination suppression condition resulted in an equal 12% decrease in the number of positive adjectives generated compared to the control condition. Examining the Japanese participants separately, the number of words generated in the imagination enhancement condition was significantly greater than in the suppression condition, $t(76) = 2.33$, $p = .02$. Among the US participants, the number of words generated in the enhancement condition did not differ significantly from the suppression condition, $t(205) = 0.89$, $p = .37$.

While not anticipated, the fact that US participants generated significantly more words than Japanese participants is understandable given that the former belong to a linguistically oriented culture. Applying this reasoning to the more visual task used in Kim's (2002) experiment may go some way towards explaining why scores on Raven's Progressive Matrices are highest in East Asian participants (Lynn & Vanhanen, 2009).

The most encouraging results were that among Japanese participants both imagination enhancement, by having participants call to mind images of "situations, people, faces, and scenes from movies," and image suppression, by having participants imagine a white wall, impacted task performance in the predicted directions; imagination enhancement resulted in participants producing on average 12% more positive adjectives, and imagination suppression resulted in participants producing 12% fewer positive adjectives compared to the control condition. These results can be argued to suggest that the Japanese think more in images compared to US participants. Both Hypotheses 1 and 2 were supported. Suppressing the ability to call relevant images to mind appeared to diminish Japanese task performance.

The results among the American participants indicated that the effects of imagination enhancement and suppression were similar and not significantly different from the control condition. While these results supported hypothesis 3, there was no support for hypothesis 4, that calling images to mind would impede US participants' performance. This finding may be due to the fact that dual tasks involving the production of images have little effect on the Americans' preferred method of thought, presumed to be self-talk. This possibility is indicated by the way in which "repression of proactive interference" (Wickens, 1973), or return to initial performance level, occurs when memory test stimuli are presented in visual form after a sequence of verbal tests but not in the opposite direction (Hopkins, Edwards, Tamayo, Holman, & Cook, 1973). These results suggest that the dual processing of language and vision is something that even Americans are accustomed to doing, possibly due to the fact that humans are generally bombarded by visual perceptual information and do not generally need to shut their eyes to think. A further possibility is that American participants were simply less diligent in calling images to mind since to them doing so may have been a distraction, impeding their task performance. This possibility points to a need to have participants perform manipulation tasks, such as a visual memory test, that can be checked.

Implications for the Nature of Thought

The results of these studies indicate, as hypothesised, the possibility that self-talk is to Americans as imagination (calling images to mind) is to Japanese. At first blush it may be difficult to see how this could be possible. As noted earlier, linguistic thought seems to allow individuals to make behavioural choices based upon complex rational and even mathematical evaluation of preferences and anticipated outcomes. Non-verbal, visual

thought on the other hand is often presented as inferior (Littlewood, 1996), or the domain of savages (Lévi-Strauss, 1966) or animals and the autistic (Grandin, 2006).

Before returning to consider Japanese culture in the conclusion, this section will consider implications for the function of thought upon the assumption that self-talk and imagination are functionally similar, starting with a brief overview of how views on thought as self-talk have changed to a point where self-talk and imagination can now be argued to play a similar role.

Traditional Western philosophical, psychological and common sense views of thought as self-talk construe thought as an executive function used to evaluate, instigate and then directly control behaviour. In economics too, that individuals make rational choices based upon linguistic thought would appear to be a commonly held assumption. In the widely cited "Tragedy of the Commons," Hardin (1968) describes the process of deliberation on whether or not to add an animal to common land in the following way:

> as rational being, each herdsman seeks to maximize his gain. Explicitly or implicitly, more or less consciously, he asks, 'What is the utility to me of adding one more animal to my herd?... Adding together the component partial utilities, the rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. (p. 1244)

In this way, humans as 'rational choice makers' have been assumed to talk to themselves, ask themselves questions, compute utilities, and reach conclusions, which like executive decisions, cause behaviour.

In the field of psychology, however, the power of self-talk has come under increasing attack to the point where it is now sometimes regarded as an epiphenomenon (see Baumeister, Masicampo, & Vohs, 2011 for a review).

Milestones in the retreat of the belief in the direct efficacy of thought as self-talk will now be considered.

Freud was one of the first to argue that unconscious processes determine preferences and behaviour, and that talk about the same may even be a "defense mechanism" in direct contradiction to lived reality. Freud's theory has been supported experimentally by research which shows, for example, that conscious linguistic expression of homophobia correlates with increased arousal while viewing homoerotic pornography (Adams, Wright, & Lohr, 1996).

Split-brain patients are those who have had their corpus callosum, the interconnecting tissue between the left and right hemisphere of their brain, cut as part of an early treatment for epilepsy. Work carried out on split-brain patients in the 1960s and 1970s found that left brain linguistic explanations for behaviour associated with the less linguistic (right) half of the brain were post hoc and utterly bogus (see Gazzaniga, 1998). For example, when a patient chose a shovel as associated with a picture of a snowstorm shown to the less linguistic right brain, while the left brain was presented with a picture of a chicken's foot, and asked the reason for the choice of the shovel, the patient came up with a bogus interpretation "to clean out the chicken's shed."

Strong evidence to believe that it is not only "split-brain" patients but also the general population that provide bogus post hoc explanations for their behaviour was provided by Nisbett and Wilson (1977), where it was found that participants whose decisions and behaviour had been swayed by external stimuli were not only unaware of this influence, but also provided bogus post hoc explanations for the cause of their actions. Nisbett and Wilson (ibid) argue that we do not know the causes of our behaviour, and when we give reasons for them, we are therefore *telling more than we can*

know.

This still leaves the possibility that spurious post-hoc interpretations are generated to explain our behaviour *to others*, whereas conscious thought in the form of self-talk *to ourselves* may be contemporaneous with or even constitute decision making as "will". A stronger attack on the temporal precedence of conscious thought was made by Libet (1999) who found conscious willings of when to push a button are preceded by neuronal activity, strongly suggesting that conscious thought occurs *after* whatever mental experiences corresponds to and causes with our behaviour. This view was strengthened by neuroscientific research (Soon, Brass, Heinze, & Haynes, 2008) which asked participants to press one of two buttons, and found neurological activity not only prior to conscious thought, but also which allows experimenters to predict which button will be pressed due to the hemispheric distribution of neural activity.

The growing realisation that thought is, or is often, subsequent to decision making has given rise to the question of why thought as self-talk should be carried out at all. This discussion will end by considering two explanations for thought: as practice for communication and as self-monitoring.

With the awareness that thought as self-talk frequently occurs after behaviour, thought has increasingly become understood as centred in communication, specifically as a practice for communication. Slobin (1996) argues that thought as self-talk is "thinking for speaking," as a way of mastering language. Rochat (2009) argues that due to importance of asserting our property rights, self-talk related thought is a practice "negotiation". Haidt (2001, 2004), continuing Nisbett and Wilson's (1977) attack on what he calls the "rationalist delusion" (Haidt, 2013), theorises that since thought occurs after the act, it is a post-hoc behavioural justification, or excuse preparation. He argues that we think about our behaviour so that we can

make excuses for preconscious intuitions, and thereby justify our behaviour to others.

The significance of the hypothesis suggested by the current research— that imagination is to East Asians as self-talk is to Americans—is that it undermines the view of self-talk as thinking for speaking. East Asians do not, and would not be able to, get out a sketch book and justify their actions in a comic strip based upon the images that they have been imagining. The images that Japanese call to mind are no doubt culturally conditioned and have a social function, but being images and therefore difficult to represent to others, they are presumably predominantly self-consumed.

Given the possibility that thought may occur outside of the communicative medium of language, specifically in images, a communication-centred explanation of its occurrence is difficult to maintain. An alternative explanation is given by self-regulation theory (Higgins, 1987, 1996; Vohs & Baumeister, 2016; see also Brinthaupt et al., 2009). Under this theory, a primary function of thought is a means by which the individuals become affectively involved in their behaviour. Aronson (1968), the doyen of dissonance theory, one of the bases of self-monitoring theory, summarises the new attitude towards rational thought, as self-talk, in the following way. "Dissonance theory does not rest upon the assumption that man is a *rational* animal; rather, it suggests that man is a rational*izing* animal - that he attempts to appear rational, both to others and to himself" (ibid, p. 6).

The self-regulatory process can also be illustrated by two non-linguistic examples. The first example, is that of the "weigh yourself" diet. While controversial, there is considerable evidence to suggest that weighing oneself daily encourages individuals to maintain control of their weight (Levitsky, Garay, Nausbaum, Neighbors, & Dellavalle, 2006). This is not of course because perceiving the dial of the scales causes weight loss directly,

or even result in a conscious decisions to exercise but rather because a daily habit of self-weighing provides a feedback path which encourages individuals to take an interest in and control their body weight. The second example of self-monitoring is provided by Higgins (1987) based upon the theory of objective self-awareness (Duval & Wicklund, 1972). Higgins notes that that mirrors encourage prosocial behaviour among Westerners because, once again, they provide a feedback path which encourages individuals to take an affective interest in their behaviour.

This paper proposes that self-regulatory thought can be facilitated both by self-talk and by the imagination. Both modes of self-stimuli are not necessarily causal —it is not, for instance, by saying "right" or imagining a right hand button that we press a button on the right. But by the presence of both self-talk and images in mind encourage people to attend, persevere, and achieve results in their behaviour as demonstrated by Kim (2002) and the present results.

Conclusion

This research found that Japanese call to mind images more than they talk to themselves in situations which typically elicit self-talk (Brinthaupt et al., 2009), suggesting that thinking in images is prevalent among Japanese. Building upon this result and previous research on self-cognition, study 2 tested the hypothesis that calling images to mind is to Japanese as self-talk is to Americans. The result that encouraging and supressing images to mind resulted in more than a 10 percent increase and decrease in verbal task performance respectively among Japanese, while having little impact upon Americans, provides partial support for the hypothesis that Asians, at least in part, imagine therefore they think.

The aestheticism and visual creativity of Japanese culture is often pointed

out but is either interpreted as being collectivistic (Benedict, 1946/2006; McVeigh, 2000; Richie & Garner, 2004), a denigrating Western stereotype (Littlewood, 1996, p. 94) or passive (Kim, 2002, personal communication). Cultural psychological research on, arguably the most obvious visual expression of East Asian individualism, the bursting, chaotic nature of East Asian urban landscapes, is interpreted as "complex and ambiguous" (Miyamoto, Nisbett, & Masuda, 2006, p. 118) and lacking in focus.

The conclusion of this research suggests that the overvaluation self-talk as the uniquely appropriate mode of thought (e.g. Mead, 1967), has resulted in Japanese culture being misunderstood. Once self-talk is understood not as computational and causal executive function but, as is also the case with calling images to mind, an ongoing self-representative feedback path and form of self-regulation (Higgins, 1987, 1996; Brinthaupt et al., 2009), then the visual form of thought and expression can be reappraised. It is not that Japanese cities, selves, or thinking that lack focus but that they focus on a different modality of self-representation.

Finally, while a great deal of previous research finds that among Westerners appropriate self-talk has a positive impact in a wide range of areas such as leadership skill (Rogelberg et al., 2013), job satisfaction (e.g. Judge & Locke, 1993), sports performance (see Hardy, 2006 for a review), and above all psychological health (Kendall & Hollon, 1989; Schwartz & Caramoni, 1989: see Brinthaupt et al., 2009), Kim's research (2002) provided evidence that thought in an inappropriate modality has deleterious effects on problem solving ability. Based upon a theoretical framework proposing a "Nacalian" transformation (see Table 1 above) of the modality of self-representation in Americans and East Asians, the current research lends further theoretical and empirical support to the importance of paying attention to the modality of thought. Bearing in mind research showing

that visual self-representation increases suicide ideation among Westerns (Selimbegović & Chatard, 2013), and linguistic self-expression increases stress in East Asian Americans (Butler, Lee, & Gross, 2009), perhaps the most important implication of our "Nacalian" turn is to raise the possibility that encouraging thought in an inappropriate modality in clinical situations may even be resulting in increased suicide rates (Takemoto, 2017, March).

The current research has a number of limitations including, most importantly, the lack of SIS data from American participants, and the absence of a manipulation check in the imagination suppression and imagination enhanced conditions. These limitations should be addressed in future research.

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