

## Abstract 15DP-002 Furuya Daiki

Human beings can arbitrarily relationship given stimuli with other stimuli, regardless of their physical characteristics. The Relational Frame Theory (RFT; Hayes et al., 2001) focuses on the relationship between stimuli. The present study investigated Japanese university students' implicit self-esteem (ISE) based on the RFT framework using the Implicit Relational Assessment Procedure (IRAP; Barnes-Holmes, Barnes-Holmes, Power, Hayden, Milne, & Stewart, 2006), which is a scale for measuring the strength and relationships between stimuli.

ISE is assessed using a scale that indirectly measures self-evaluation, which is different from explicit self-esteem (ESE), which is assessed using self-report type questionnaires. The Implicit Association Test (IAT; Greenwald et al., 1998) is a typical scale for assessing ISE. Combinations of "self-positive words," "self-negative words," "other-positive words," and "other-negative words" are used for assessing ISE in the IAT by simultaneously presenting combinations of "self-positive words" and "other-negative words," as well as "self-negative words and other-positive words." The strength of associations is measured using the response latency as an index, which is the time required to categorize related words, with the strength of associations being the ISE score. A previous study on ISE conducted with university students using IAT indicated the strong association between "self-positive words" and "other-negative words," indicating that participants showing a stronger association between the two combinations tended to buffer (or reduce) the effect of adverse events (Greenwald & Farnham, 2000), suggesting the clinical significance of increasing ISE (Fujii, 2018). However, each associative strength's result cannot be shown individually by the ISE using IAT, and the relationships between stimuli can be assessed only at a coordination level (Stewart et al., 2017). However, when measuring ISE using IRAP, participants are required to choose one of two response options, such as "yes" or "no," in response to four combinations of stimuli used in the IAT. The relationship between stimuli and the relationship's strength is measured by using the response latency as an index. For example, the association between "self-positive words" is strong at a coordination when a participant quickly selects "yes" for a combination of "self-positive words." Moreover, the D-IRAP score, indicative of ISE, is calculated by the IRAP. The D-IRAP score indicates the relationship between stimuli and the strength of the relationship between stimuli based on differences in response latencies for the response options.

Previous studies assessing ISE using IRAP have indicated a coordination relationship between "self" and "positive words" in university students. Moreover, the D-IRAP score

for “self-positive words” has indicated a negative correlation with depression and a positive correlation with life satisfaction (Timko et al., 2010; Stewart et al., 2017). The above results suggest that the strength of the association between “self” and “positive words” might be correlated with psychological health (Timko et al., 2010). On the other hand, there are inconsistent findings regarding the relationship between “self” and “negative words,” with specific studies that show a distinction relationship and other studies that do not indicate a distinction relationship between self and negative words. The coordination relationship between “self” and “positive words” and the distinction relationships between “self” and “negative words” are consistent because both indicate positive evaluations of the self. However, this relationship has different tendencies, which might be caused by differences in the psychological functions in response to “self-positive words” and “self-negative words.” For example, it is unclear whether ISE's clinically significant buffer function is caused by positive responses to “self-positive words” or negative responses to “self-negative words.” Furthermore, different types of stimulus sets are used for measuring ISE using IRAP. These include the stimulus set developed by Vahey et al. (2009) and the set developed by Timko et al. (2010).

Based on the above, the present study investigated the buffering function of ISE against adverse events and discussed its clinical significance from the perspective of coordination and distinction relationships between “self-positive words” and “self-negative words” and the strength of this relationship by assessing ISE of Japanese university students using IRAP. We examined the following issues in four studies: (1) the reproducibility of ISE measurements using IRAP by using two stimulus sets; (2) the relationship between the ISE's buffer function and the D-IRAP score for self-positive and self-negative words; and (3) variables of the relationship between self-positive and self-negative words and their strength.

In Study 1, the ISE of Japanese university students was measured using IRAP by referring to the stimulus set developed by Vahey et al. (2009), who measured university students' ISE using IRAP. Vahey et al. reported self-positive and other-negative tendencies. We examined whether the identical tendency could be reproduced in Japanese participants, who tend to show self-negative tendencies (Kitayama & Karasawa, 1995). The results indicated that the same tendency, i.e., self-positivity and other-negativity, was also observed in Japanese university students. The reproductivity of the results of measuring ISE using IRAP by referring to the stimulus set developed by Vahey et al. (2009) was examined.

In Study 2, the ISE of Japanese university students was measured using IRAP by referring to the stimulus set developed by Stewart et al. (2017), a typical stimulus set

used after Timko et al. (2010). Stewart et al. (2017) measured university students' ISE using IRAP and indicated a strong association between self and positive words at a coordination. The results of Study 2 replicated the identical tendency in Stewart et al. (2017). Moreover, we examined correlations between ISE's buffer function against adverse events, which might be similar to resilience, and four combinations of ISE measures. The resilience scale (Tanaka & Kodama, 2010) used in Study 2 was composed of four factors; self-acceptance, trust in others, trust in self-ability, and optimistic thinking. The results indicated a positive correlation only between optimistic thinking and "self-positive words." It is suggested that individuals who quickly select "yes" for "self-positive word" combinations might perceive the world more optimistically.

In Study 3, we experimentally examined the ISE's buffer function by using the IRAP scale. Greenwald and Farnham (2000) classified participants into high and low difficulty task groups and examined the correlation between their post-task self-assessment and the two types of self-esteem (ISE and ESE). The results indicated that the group with high ISE in the difficult task group evaluated their ability measured by the task as high, even when they received negative feedback. Moreover, they estimated that they would get a higher score by repeating the task. The results of Greenwald and Farnham (2000) suggest that ISE buffers against the effect of negative feedback after doing a highly difficult task. We changed the ISE scale to the IRAP scale and the dependent variable to the number of tasks repeated based on Greenwald and Farnham (2000). We prepared two types of tasks; solvable and unsolvable tasks, and two groups of participants. Each group conducted one type of task, and participants conducting the unsolvable task inevitably receive negative feedback. The results indicated that participants showing a strong and coordination relationship between self and positive words in the unsolvable task group tended to continue the task. However, there was no interaction between the two groups observed. Nevertheless, the results indicate that D-IRAP scores for self-positive and self-negative words are correlated to buffer functions.

Study 4, based on the findings of Study 3, examined whether succeeding in a difficult task might affect the strength of the association between self-positive and self-negative words. High and low difficulty level tasks were prepared, and participants were classified into two groups, one conducting high and the other conducting low difficulty level tasks. ISE was measured using IRAP before and after the tasks. The results indicated a high "self-positive words" score in the group conducting the high difficulty task. Conversely, there was a marginally significant coordination relationship between "self" and "negative words." These results suggested that conducting a highly difficult task increased self-positive and self-negative feelings.

The results of these four studies assessing the ISE of Japanese university students using IRAP corroborated previous studies. Individuals with a strong association between self and positive words tended to perceive the world optimistically and continue the task for a long time, despite receiving negative feedback. Moreover, the relationship between self and positive words increases when doing highly difficult tasks. Individuals showing a distinction relationship between self and negative words also tended to continue the task despite negative feedback. However, a coordination relationship between self and negative words might develop after completing a highly difficult task.

The present study suggested that self-positive affirmation and self-negative denial differ from RET's perspective, and examining these differences is significant.