学位(博士)論文　要旨

The effects of psychosocial resources on adaptation after social exclusion

Kuniaki YANAGISAWA

Graduate School of Integrated Arts and Sciences, Hiroshima University

Abstract: The present paper proposes a model of the effect of psychosocial resources on the adaptation process that occurs after social exclusion. Although human beings have access to various psychosocial resources that are associated with better adaptation to social exclusion, each resource can have different impacts at different stages in a series of adaptation processes occurring after social exclusion. The present study investigated the hypothesis that resources reflecting past experience influence the impact estimation process, while resources that reflect a "future perspective" influence subsequent regulation attempts. Chapter 1 presents a review of the literature on the relationship between psychosocial resources and the experience of social pain during exclusion, and the neural mechanisms which are though to reflect this relationship. Chapter 2 demonstrates that trait self-esteem and general trust (trait-based psychosocial resources) buffer against maladaptive behavior subsequent to social exclusion from a gaming simulation (e.g., withdrawal from interpersonal relationships). Chapter 3 describes evidence that general trust and trait self-esteem probably have different impacts at different times over the course of a series of adaptive processes, all geared toward the modulation of social pain. Chapter 4 describes the finding that a temporal distance approach (i.e., imagining the distant future), a "state-based" psychosocial resource, acts to regulate the impact of social exclusion after the latter has occurred, but does not appear to influence the earlier process whereby individuals estimate the potential impact of social exclusion. Finally, on the basis of the findings described in each of the preceding chapters, the more general effects of various psychosocial resources on the process of adaptation after social exclusion are discussed in chapter 5.

Chapter 1: Previous studies of social exclusion

Social exclusion often evokes social pain in excluded individuals. Human beings have a strong fundamental need to form and maintain social relationships, and this need likely has deep roots in our evolutionary history, exerting a powerful impact on contemporary human psychological processes (Baumeister & Leary, 1995; Leary & Baumeister, 2000). Failure to have these needs met would therefore be expected to lead to strong feelings of social pain, which can serve to promote various maladaptive reactions in extreme cases (e.g., depression, aggression against others, suicide).

Some recent studies suggest that people with ample psychosocial resources do suffer fewer negative effects during or after social exclusion (e.g., Eisenberger, Taylor, Gable,

Hilmert, & Lieberman, 2007; Kross, Egner, Ochsner, Hirsch, & Downey, 2007). Compared to those individuals with few such resources, people with ample psychosocial resources may experience diminished social pain responses because (a) they have a higher threat-detection threshold, meaning that potential exclusion events are less likely to be perceived as threatening in the first place (i.e., social pain impact estimation processes), and/or (b) such individuals are more effective at regulating the social pain that results when a threat is detected (i.e., social pain regulation processes). In addition, there are at least two types of neural structure underlying these adaptive processes: Neural structures that are involved in detecting or evaluating potential social exclusion threats, such as the dorsal anterior cingulate cortex (dACC), and neural regions involved in regulating or inhibiting social pain responses, including the right ventrolateral prefrontal cortex (rVLPFC) (Eisenberger, Lieberman, & Williams, 2003).

Based on the findings described above, a model of the effect of psychosocial resources on adaptation to social exclusion can be proposed. In particular, the present chapter focuses on (a) the resources that involve an accumulation of past experiences and that may influence social pain impact estimation processes, and (b) resources which reflect adoption of a future-oriented perspective, which can influence subsequent social pain regulation processes. The following chapters further describe these relationships and the associated neural mechanisms.

Chapter 2: Psychosocial resources buffer against maladaptive behavior after social exclusion

Social exclusion sometimes evokes maladaptive behavior in those excluded individuals who experience social pain as a result (e.g., Downey & Feldman, 1996). However, if indeed psychosocial resources can serve to regulate social pain, people with ample resources would be expected to differ from people with few such resources in terms of interpersonal behavior subsequent to social exclusion. One study examined trait self-esteem as a psychosocial resource which reflects past experience (Leary, Tambor, Terdal, & Downs, 1995), while another focused on general trust as a trait psychosocial resource which reflects a "future perspective" (e.g., Yamagishi, 1998), with both studies investigating effects on interpersonal behavior after social exclusion from a gaming simulation.

Across the two studies, participants who experienced social exclusion during an initial game showed a decreased frequency of interactions with others in a subsequent game, as compared to those who were included. However, this effect occurred only in those people with relatively few psychosocial resources. These findings strongly suggest that responsiveness after social exclusion may be moderated by psychosocial resources.

Chapter 3: The effect of trait psychosocial resources on adaptation to social exclusion

Previous neuroscience studies suggest that the ventrolateral prefrontal and anterior cingulate cortices (VLPFC and ACC respectively) play an extremely important role in reactions to social exclusion (e.g., Eisenberger et al., 2003). The ACC appears to be involved in detecting or evaluating potential social exclusion threats, while the VLPFC is involved in the regulation or inhibition of social pain. Notably, previous research indicates that the VLPFC activity associated with social pain occurs only in the

case of explicit social exclusion or ESE (i.e., when others prevent individuals from participating in a social activity), and does not occur in the case of implicit social exclusion or ISE (i.e., when individuals are unable to join other participants in a social activity because of extenuating circumstances) (Eisenberger et al., 2003). This pattern suggests that the direct self-regulation of social pain occurs only in response to ESE. Based on previous findings, trait self-esteem would mainly buffer against social pain subsequent to ISE, while general trust would primarily buffer against social pain resulting from ESE.

One study has investigated the relationship between trait self-esteem and general trust on the one hand, and the social pain impact of two forms of social exclusion (implicit and explicit) on the other, using a chat room conversation paradigm. Trait self-esteem predicted social pain during ISE, while general trust predicted social pain in the ESE condition. Another study assessed rVLPFC activity during social exclusion, within the context of a social neuroscientific experiment (Cyber-ball paradigm). Levels of trait self-esteem and general trust were negatively correlated with social pain in the exclusion conditions. Furthermore, general trust was positively correlated with rVLPFC activity, although there was no such relationship with self-esteem. Finally, rVLPFC activity mediated the relationship between general trust levels and social pain. Taken together, these findings suggest that trait self-esteem mainly affects the social pain impact estimation process, while general trust may serve to regulate social pain per se.

Chapter 4: Temporal distance insulates against immediate social pain

A recent investigation examined whether a "temporal distance approach" can help regulate the impact of social pain during both ISE and ESE. Further development of effective strategies for the regulation of social pain remains an urgent priority, and an optimal approach remains to be identified. However, relatively extensive psychological and neuroscience research does hint at a potentially effective approach. Psychological distance (temporal, spatial, and social) often helps to facilitate adaptive coping and self-control (Alford & Beck, 1998; Ayduk & Kross, 2008; Kross & Ayduk, 2008; Liberman & Trope, 2008). Because temporal distance appears to promote successful self-regulation, we hypothesized that imagining the distant future would help to regulate the social pain that is experienced during ESE, although this technique should not prove effective during ISE, where direct self-regulation likely does not occur.

In one experiment, participants who imagined the distant future (i.e., what next year would be like and beyond) felt less social pain during ESE (but not ISE), as compared to imagining events in the near future (i.e., tonight and tomorrow). An additional study examined rVLPFC activity during social exclusion. Again, participants who imagined the distant future suffered less social pain during an ESE condition. In addition, temporal distance led to increased rVLPFC activity during ESE. Finally, rVLPFC activity appears to account for the association between temporal distance and social pain observed under ESE conditions. These findings suggest that focusing on temporal distance is an effective approach that serves to promote rVLPFC activity, which itself reflects the regulation of social pain during exclusion. Temporal distance therefore acts to regulate the impact of social exclusion after the latter has occurred, but does not appear to influence the earlier process whereby

individuals estimate the potential impact of a social exclusion scenario.

Chapter 5: Summary and future directions

In a series of preceding chapters, we examined a model of the effect of psychosocial resources on the adaptation process after social exclusion, providing several convergent lines of evidence. Psychosocial resources that reflect an individual's past experience appear to influence the social pain impact estimation process, while the resources that reflect a "future perspective" appear to influence subsequent regulation attempts. Such findings have clear theoretical, practical and methodological significance. It is clear that although human beings have various psychosocial resources that are associated with better adaptation to social exclusion, each resource pool has a different impact at different stages in a series of adaptation processes occurring after social exclusion. A "temporal distance approach" appears to be of practical value in the regulation of social pain. Methodologically speaking, a collaborative relationship between social psychological researchers and workers in social neuroscience is likely to yield further important insights.

Interpersonal relationship factors (e.g., social support and high-maintenance interactions with others) and social structural factors (e.g., poverty and social strata) likely both play a role in adaptation to social exclusion. Further work will be necessary to investigate this "expanded" model, across these different research domains (e.g., social psychology, cognitive psychology, clinical psychology and social neuroscience).

References

Alford, B. A., & Beck, T. A. (1998). *The integrative power of cognitive therapy*. New York, NY: Guilford Press.

Ayduk, O., & Kross, E. (2010) From a distance: Implications of spontaneous self-distancing for adaptive self-reflection. *Journal of Personality and Social Psychology*, **98**, 809-829.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, **117**, 497-529.

Downey, G., & Feldman, S. I. (1996). Implications of rejection sensitivity for intimate relationships. *Journal of Personality and Social Psychology*, **70**, 1327-1343.

Eisenberger, N. I., Lieberman, M. D., & Williams, K. D. (2003). Does rejection hurt? An fMRI study of social exclusion. *Science*, **302**, 290-292.

Eisenberger, N. I., Taylor, S. E., Gable, S. L., Hilmert, C. J., & Lieberman, M. D. (2007). Neural pathways link social support to attenuated neuroendocrine stress responses. *Neuroimage*, **35**, 1601-1612.

Kross, E., & Ayduk, O. (2008). Facilitating adaptive emotional analysis: Short-term and long-term outcomes distinguishing distanced-analysis of negative emotions from immersed-analysis and distraction. *Personality and Social Psychology Bulletin*, **34,** 924-938.

Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: sociometer theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 32, pp. 1-62). San Diego: Academic Press.

Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, **68**, 518-530.

Liberman, N., & Trope, Y. (2008). The psychology of transcending the here and now. *Science*, **322**, 1201-1205.

Yamagishi, T. (1998). Trust and social intelligence: The evolutionary game of mind and society. (trans. T. Yamagishi). Tokyo: University of Tokyo Press.