Heightened Self-Reported Executive Function Difficulties in Young Adulthood: A Cross-Sectional Analysis Using the J-BRIEF-A

Mako Momoda, Hyogo Institute for Traumatic Stress, Japan

The Asian Conference on Psychology & the Behavioral Sciences 2026
Official Conference Proceedings

Abstract

Executive function (EF) is a multidimensional construct critical for goal-directed behavior. While performance-based tests are traditional, they often lack ecological validity. This study investigates the age and gender variations in self-reported everyday EF using the Japanese version of the Behavior Rating Inventory of Executive Function-Adult Version (J-BRIEF-A) across a stratified lifespan sample (N = 1,378, aged 18–89). Focusing specifically on the psychosocial impacts across different life stages, our cross-sectional analysis revealed a distinct "reverse age pattern." Significant age and gender differences emerged, demonstrating that younger adults—particularly men in their 20s and women in their 30s—perceive significantly more executive difficulties than older adults. The discussion integrates neurobiological development and Japanese national statistics on time use and stress. We suggest that self-reported EF difficulties do not merely follow a linear biological decline, but may be significantly influenced by life-stage specific stressors, such as chronic sleep deprivation and heavy domestic multitasking burdens. Future research should further examine these associations to clarify the causal impact of such environmental factors on perceived executive functioning.

Keywords: BRIEF-A, executive function, ecological validity, lifespan development, Japanese population

Introduction

Executive function (EF) refers to the higher-order cognitive processes required for goal-directed behavior, adaptive problem-solving, and self-regulation in complex environments (Hughes & Ensor, 2009). These functions—primarily encompassing inhibitory control, cognitive flexibility (shifting), and working memory—are essential for navigating the multifaceted demands of everyday life (Miyake et al., 2000).

Traditional neuropsychological assessments, however, face significant ecological challenges. While objective measures excel at evaluating cognitive capacity under strictly controlled laboratory conditions, they frequently lack ecological validity (Casaletto & Heaton, 2017). A recurring problem in clinical practice is that patients exhibiting obvious executive deficits in daily life may still perform within normal ranges on these abstract laboratory tasks (Miyake et al., 2000). Consequently, conventional measures may fail to accurately capture the nuanced executive difficulties individuals experience amid the unpredictable and stressful scenarios of real-world environments. To bridge this gap, there is a growing need for rating scales that capture EF as it manifests in "real-world" environments, leading to more specific and effective support for daily living (Diamond, 2013).

Against this background, Gioia et al. (2000) emphasize the importance of using assessment tools that are ecologically valid and capable of capturing broader aspects of complex, everyday problem-solving demands. The Behavior Rating Inventory of Executive Function (BRIEF), which includes parent- and teacher-rated scales for children and adolescents, was developed to improve the understanding of EF in real-world contexts (Gioia et al., 2000). Subsequently, a self-report inventory for adults (BRIEF-A) was established to extend this assessment across the lifespan (Roth et al., 2005).

Despite these intriguing findings, the trajectory of self-reported EF across the adult lifespan remains insufficiently explored within the Japanese population. Furthermore, the specific psychosocial and environmental mechanisms driving the heightened perception of executive difficulties among younger generations are not fully understood. Therefore, this study aims to investigate age and gender variations in self-reported everyday EF using the Japanese version of the BRIEF-A (J-BRIEF-A). By focusing specifically on the elevated difficulties observed in young adulthood, this cross-sectional analysis seeks to elucidate how life-stage-specific demands, societal expectations, and psychosocial stressors influence the subjective experience of executive capacity.

Method

Participants

A total of 1,378 Japanese adults participated in this study. To ensure a representative sample of the general adult population, we used a stratified sampling method based on gender and age. The participants were equally divided by gender (689 men and 689 women). The age distribution ranged from 18 to 89 years, with participants categorized into seven age-decades (18–29, 30–39, 40–49, 50–59, 60–69, 70–79, and 80–89). Each age group contained approximately 200 individuals, ensuring balanced representation across the lifespan. Regarding educational background, 49.3% of the total sample held a university degree or higher. All participants provided informed consent through an online platform before

participating in the study. This study received approval from the Ethical Review Committee of Hyogo Institute for Traumatic Stress (approval number: 4-1).

Measures

Japanese Behavior Rating Inventory of Executive Function-Adult Version (J-BRIEF-A): The J-BRIEF-A is a self-report questionnaire consisting of 75 items. Participants rate each item on a 3-point scale (1 = "Never," 2 = "Sometimes," 3 = "Often") based on their experiences during the past month. The items map onto nine clinical subscales: Inhibit, Shift, Emotional Control, Self-Monitor, Initiate, Working Memory, Plan/Organize, Task Monitor, and Organization of Materials. These subscales are further aggregated into two primary indices: the Behavioral Regulation Index (BRI) and the Metacognition Index (MI). A Global Executive Composite (GEC) is also calculated as a summary score of overall executive difficulties.

Study Procedure

An online survey of adults aged 18–89 years was conducted owing to the need to sample a wide range of ages throughout Japan. Permission to use the J-BRIEF-A was obtained from PAR, Inc. The Japanese version had already been developed by the publisher using standardized translation procedures, including both forward and back translation, to ensure linguistic and conceptual equivalence. Therefore, additional translation procedures were not conducted in the present study.

Analysis

All analyses were conducted using R version 4.2.2. As the data for gender and age groups were found to be non-normally distributed based on the Shapiro–Wilk test ($p < .001$), nonparametric statistical tests were employed for group comparisons. Specific tests included the Mann–Whitney U test for gender comparisons and the Kruskal–Wallis test for age group comparisons. All analyses used raw scores (sum of item-level scores).

Results

To examine the effects of age and gender on self-reported J-BRIEF-A, we conducted a series of non-parametric analyses, including the Wilcoxon rank-sum test for gender comparisons and the Kruskal–Wallis test for age group comparisons.

Regarding gender, men scored significantly higher than women on most J-BRIEF-A subscales, with the exception of Emotional Control, Self-Monitor, Working Memory, Organization of Materials, and the BRI. As shown in our analysis, the highest GEC scores were observed in the 18–29 age group for both men and women, indicating that younger adults perceive significantly more executive difficulties compared to older groups. Conversely, the lowest GEC scores were found in the 70–79 and 80−89 age groups.

Detailed subscale analysis revealed age-specific peaks. Among men, scores were highest in the 20s and generally decreased with age; notably, men in their 40s reported significantly higher scores than those in their 60s. Among women, a distinct peak was observed in the 30s, where scores for most items (except Inhibit) were significantly higher than in other age groups. Furthermore, women in their 50s exhibited a secondary elevation in areas such as Self-Monitor and Organization of Materials compared to those in their 70s. These results indicate that self-

reported EF difficulties do not follow a linear decline with age, but rather exhibit discontinuous variations linked to specific life stages and associated psychosocial burdens.

Discussion

Gender Differences and the Performance-Rating Paradox

A compelling finding of this study is the divergence between self-reported executive functioning and traditional performance-based research. While previous neurobiological studies indicate that men often outperform women in response inhibition on laboratory tasks (Ferguson et al., 2021), our J-BRIEF-A results showed that men reported significantly more difficulties in domains such as Inhibition and Working Memory.

This discrepancy can be attributed to the complexity of everyday life. Laboratory tasks assess cognitive capacity in isolation, whereas real-world EF requires the simultaneous processing of multiple information streams and long-term planning. Previous research suggests that women exhibit higher frontal cortical activity during complex problem-solving and utilize broader neural networks for strategic multitasking (Ferguson et al., 2021). This neurobiological efficiency in handling "real-world" complexity may explain why women in this study reported lower J-BRIEF-A scores compared to men, despite differing results in experimental settings.

The Age Paradox and Social Stressors

Contrary to the well-documented biological decline of the prefrontal cortex with age, our findings revealed a "reverse age pattern," where younger adults (20s–30s) perceived more executive dysfunction than older adults (60s–80s). This highlights that self-reported EF is not merely a reflection of biological capacity but is profoundly shaped by psychosocial burdens.

In Japan, the working-age population faces immense social and occupational responsibilities. National surveys indicate that stress levels are highest among those in their 30s to 50s（Statistics Bureau, Ministry of Internal Affairs and Communications [MIC], 2021）. For women in their 30s, the significant peak in reported difficulties likely reflects the "dual burden" of escalating professional roles and domestic demands; Japanese women spend significantly more time on housework and childcare compared to men（Statistics Bureau, 2021）. This capacity overload acts as a continuous stressor that degrades attentional processes (Paletta et al., 2019). Conversely, the lower scores observed in participants aged 60 and older likely reflect a period of "stress relief" following retirement and the independence of children, leading to a more stable perceived daily life.

Lifestyle Factors: The Impact of Sleep Habits

Lifestyle behaviors, particularly sleep habits, serve as critical moderators of perceived EF. Our results showed that women in their 50s reported more problems with Self-Monitor and Task-Monitoring compared to those in their 40s. According to the 2020 National Time Use Survey, Japanese women in their 50s report the shortest sleep duration (approximately 6 hours and 36 minutes), often remaining active late into the night due to domestic chores (NHK Broadcasting Culture Research Institute, 2021). Chronic sleep disturbance is known to impair metacognitive confidence and lower monitoring abilities (Aidman et al., 2019). The fatigue accumulating in middle-aged women is thus directly reflected in their elevated J-BRIEF-A scores.

Limitations and Future Directions

Several limitations must be acknowledged. First, the online methodology may involve a digital divide, potentially biasing the sample toward technologically active groups. Second, the current study relied solely on self-report measures. While the J-BRIEF-A offers high ecological validity, future research should integrate performance-based tasks to further clarify the correlation between subjective perception and objective capacity across the lifespan. Finally, individual-level variables such as psychological distress or specific occupational demands were not explicitly measured. Future longitudinal tracking and inclusion of physiological markers will be necessary to unravel the complex causal relationship between lifestyle stress and executive health.

Conclusion

In conclusion, this study highlights the J-BRIEF-A as a vital tool that reflects the impact of real-world variables on executive functioning. Beyond traditional cognitive assessment, our findings reveal how self-reported EF is profoundly influenced by life-stage specific stressors, such as sleep deprivation and the domestic multitasking burdens prevalent among young and middle-aged adults in Japanese society. The clinical utility of the J-BRIEF-A is expected to be significant. It provides a detailed understanding of the challenges, strengths, and support needs unique to specific gender and age groups. Moving forward, it will be highly useful in medical and social service settings for assessing individuals under high stress. By providing a bridge between clinical assessment and daily life, the J-BRIEF-A enables more personalized and effective support strategies across the lifespan.

Acknowledgements

This research was funded by a grant from JSPS KAKENHI (grant number JP22K13866).

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this work, the author used generative AI (NotebookLM and Gemini) to improve the readability and language of the manuscript. After using this tool/service, the author reviewed and edited the content as needed and takes full responsibility for the content of the publication.

References

Aidman, E., Jackson, S. A., & Kleitman, S. (2019). Effects of sleep deprivation on executive functioning, cognitive abilities, metacognitive confidence, and decision making. *Applied Cognitive Psychology*, *33*(2), 188–200. https://doi.org/10.1002/acp.3465

Casaletto, K. B., & Heaton, R. K. (2017). Neuropsychological assessment: Past and future. *Journal of the International Neuropsychological Society*, *23*(9–10), 778–790. https://doi.org/10.1017/S1355617717001060

Diamond, A. (2013). Executive functions. *Annual Review of Psychology*, *64*, 135–168. https://doi.org/10.1146/annurev-psych-113011-143750

Ferguson, H. J., Brunsdon, V. E. A., & Bradford, E. E. F. (2021). The developmental trajectories of executive function from adolescence to old age. *Scientific Reports*, *11*(1), 1–17. https://doi.org/10.1038/s41598-021-81373-w

Gioia, G. A., Isquith, P. K., Guy, S. C., & Kenworthy, L. (2000). Test review: Behavior Rating Inventory of Executive Function. *Child Neuropsychology*, *6*(3), 235–238. https://doi.org/10.1076/chin.6.3.235.3152

Hughes, C. H., & Ensor, R. A. (2009). How do families help or hinder the emergence of early executive function? *New Directions for Child and Adolescent Development*, *2009*(123), 35–50. https://doi.org/10.1002/cd.234

Miyake, A., Friedman, N. P., Emerson, M. J., Witzki, A. H., Howerter, A., & Wager, T. D. (2000). The unity and diversity of executive functions and their contributions to complex "frontal lobe" tasks: A latent variable analysis. *Cognitive Psychology*, *41*(1), 49–100. https://doi.org/10.1006/cogp.1999.0734

NHK Broadcasting Culture Research Institute. (2021). *2020 National Time Use Survey*. https://www.nhk.or.jp/bunken/yoron-jikan/

Paletta, L., Pszeida, M., Nauschnegg, B., Haspl, T., & Marton, R. (2019). Stress measurement in multi-tasking decision processes using executive functions analysis. *International Conference on Applied Human Factors and Ergonomics* (pp. 344–356). Springer. https://doi.org/10.1007/978-3-030-22419-6_31

Roth, R. M., Isquith, P. K., & Gioia, G. A. (2005). *Behavior Rating Inventory of Executive Function®–Adult Version (BRIEF-A)* [Database record]. APA PsycTests. https://doi.org/10.1037/t86244-000

Statistics Bureau, Ministry of Internal Affairs and Communications. (2021). *2021 Survey on Time Use and Leisure Activities*. https://www.stat.go.jp/data/shakai/2021/index.html

Contact email: mako_momoda@j-hits.org