

# A Quick Guide to Applied Cognitive Research in Japan

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## Abstract

This study provides an overview of the current landscape of applied cognitive sciences in Japan, particularly emphasizing research aims and methods. While numerous academic associations dedicated to basic and applied cognitive sciences regularly publish journals, most Japanese studies tend to be domestically focused and primarily published in Japanese. Within this context, we highlight three lesser-known yet potentially intriguing studies for international researchers: a false confession model by Hamada, a replication of an actual witness situation by Itsukushima, and a project addressing interviewing procedures for child witnesses by Naka. Additionally, we pinpoint two critical challenges in Japanese applied cognitive sciences—linguistic and social constraints in applied research—emphasizing the necessity to overcome these hurdles to advance applied cognitive research in Japan.

## Keywords

Academic Societies of Cognitive Sciences in Japan, Language Barriers, Cultural Constrains, Representative Studies by Japanese Researchers

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## 1. Introduction to Academic Societies/Associations of Cognitive Sciences in Japan

Like the Western nations, most Japanese researchers in applied/basic cognitive sciences are affiliated with universities. There are nearly 800 universities in Ja-

pan; however, the number of researchers in cognitive sciences is relatively small. For example, there are about 200,000 university researchers in various disciplines. However, the number of cognitive researchers is approximately 1000 or 0.5%, based on the number of regular members in the academic societies related to cognitive sciences (cf. <https://www.jcss.gr.jp/about/History/>).

In this review, we first overview four academic societies/associations related to cognitive sciences in a broader sense. Most researchers in cognitive sciences in Japan who are conducting research activities belong to one or more of these academic societies. They attend annual conventions and publish papers in journals edited and published by the societies.

### 1.1. Japanese Association of Educational Psychology (JAEP)

The JAEP was established in 1959 to promote the presentation of research results related to educational psychology and to contribute to developing this field in Japan. With 5703 members (as of March 31, 2020), it is one of the largest academic societies in psychology. Most JAEP members are educational psychologists researching various educational issues, yet some focus on human cognition in general. The society publishes the *Japanese Journal of Educational Psychology* four times yearly. In addition, they publish the *Annual Report of Educational Psychology in Japan* once a year. Both journals' current issues and back numbers are open at the J-Stage site:

<https://www.jstage.jst.go.jp/browse/jjep/-char/en> and  
<https://www.jstage.jst.go.jp/browse/arepj/-char/en>, respectively.

### 1.2. Japanese Cognitive Science Society (JCSS)

The JCSS was founded in 1983 to promote the exchange of information and discussion among those involved in cognitive sciences. Members (1055 regular members in 2022) with diverse backgrounds, such as psychology, artificial intelligence, linguistics, neuroscience, philosophy, and sociology, actively engage in research and studies aiming at comprehensive knowledge sciences. The Society publishes the journal *Cognitive Studies* four times a year, mainly in Japanese, with some articles in English. Unlike other official journals introduced in this review, submissions here, are open to non-members. The articles published in *Cognitive Studies* are available at the following J-Stage site:

[https://www.jstage.jst.go.jp/article/jcss/29/2/29\\_2022.005/article/-char/en](https://www.jstage.jst.go.jp/article/jcss/29/2/29_2022.005/article/-char/en).

### 1.3. Japanese Society for Law and Psychology (JSLP)

The JSLP started in 2000 with a collaboration of applied cognitive psychologists and judicial academicians and practitioners to provide a forum for those involved in research and practice in law, psychology, and related fields. Currently, as of 2022, there are 274 members. Their research outcomes have appeared in the Japanese Journal of Law and Psychology, published yearly in Japanese. Submissions are limited to members only, but the articles are open to public at:

<https://www.jstage.jst.go.jp/browse/jjlawpsychology/-char/en>.

#### **1.4. Japanese Society for Cognitive Psychology (JSCP)**

The JSCP is the youngest Japanese academic society in cognitive sciences, established in 2002, to promote the development of basic and applied research in cognitive psychology. There were about 800 members in 2021. The Japanese Journal of Cognitive Psychology is published twice a year mostly in Japanese, and is an open access journal, available at the J-Stage site:

<https://www.jstage.jst.go.jp/browse/jcogpsy/-char/en>.

#### **1.5. Accessibility of Japanese Papers**

As shown above, many journals published by academic societies are open at the J-STAGE (Japan Science and Technology Information Aggregator, Electronic) site, operated by the Japan Science and Technology Agency (JST). Although they publish mainly in Japanese, Western researchers can use Google Scholar to search with keywords in English or Japanese. It covers papers and articles published in Japanese. So, a Japanese keyword, such as “目撃記憶,” works for searching Japanese papers on eyewitness memory. Then, they can read them through automatic translation, such as DeepL

(<https://www.deepl.com/ja/translator>). Recent developments in generative AI, such as chatGPT (<https://chat.openai.com/>), make non-Japanese researchers easily read articles published in Japanese academic journals. The accuracy of automatic translation has improved dramatically over the past few years, translating Japanese and English at a reasonably practical level.

## **2. Literature Review of Research in Applied Cognitive Sciences**

In this section, we overview the studies published in journals by the societies in cognitive studies in Japan described in the previous section. Here, we focus on research areas or applied cognitive sciences, such as eyewitness memory, justice, crime, as well as various issues in school education and education in a broader sense.

Following Elizabeth F. Loftus' seminal experimental study (Loftus & Palmer, 1974), a series of studies on eyewitness memory distortion appeared. Most of them were replications of Loftus and colleagues' work with Japanese participants by adding some variables related to Japanese cultural characteristics. Soon, many of these eyewitness researchers expanded their research to more practical areas, such as criminal investigation and judicial practices, and collaborated with lawyers and others. As a result, they established the Japanese Society for Law and Psychology in 2000. However, the experimental studies by Japanese researchers and the collaboration of research psychologists and judicial practitioners are still behind those in Europe and North America.

Education has been the principal applied area for research psychologists in

Japan. The Japanese Association of Educational Psychology was founded in 1959. The flagship journal, *Japanese Educational Psychology (JEP)*, has a 70-year history. The JEP and other educational journals have published thousands of research articles in Japan on learning and teaching, support for children with developmental disabilities, and various educational issues such as bullying in schools. In addition to these studies, the findings of cognitive science on management in groups and organizations have been used by corporate consultants to facilitate communication within organizations. However, most studies focus exclusively on educational and social issues within Japan. Therefore, no educational theories or school systems are known overseas, although Japanese children have shown superb performances constantly, in international academic assessments such as PISAs [<https://www.oecd.org/pisa/>]. Although the Suzuki method of music education and the Kumon method for individual learning are exceptional examples known worldwide, Japanese academics have almost ignored them.

In the conclusions of this section, we raise the following issues of applied cognitive studies in Japan. First, most Japanese researchers are inward-looking and focus only on domestic issues. Although they read research papers published in Europe and North America, they do not dare to export their research results. Second, most of them do not publish papers in English. Moreover, the number of published papers on applied cognitive sciences in Japan has declined. New journals have almost exploded in Europe and the U.S., but in Japan, the number of journals itself has stagnated. Finally, the impact factors of these journals are all less than 1.0, and few papers are cited even by domestic researchers in Japan (Kato, Baba, Tabata, Shimoda, Fukuda, & Okubo, 2013). These issues are background reasons for the low presence of research psychologists in Japanese society.

Nevertheless, although published in Japanese, some studies may interest researchers overseas. Then, we have chosen three representative studies in applied cognitive sciences to introduce briefly in the next section.

### **2.1. Hamada's False Confession Process Model**

Sumio Hamada of Nara Women's University (then), originally a developmental psychologist, pioneered deciphering the false confessions made by innocent suspects by carefully reading the statements of falsely accused cases. Several criminal cases have involved false confessions by suspects. Why do they make false confessions if they are innocent? One of the factors is closely related to the Japanese judicial system. In Japan, most prosecutions and trials result in a guilty verdict; an acquittal is, thus, considered a significant stain on prosecutors. Therefore, despite wrongly suspecting an innocent, they will still excessively try to obtain a conviction. This often leads to cases of forced confessions.

Still, it is mysterious why innocent people should make false confessions. According to the false confession process model's first step (Hamada, 1992), an innocent suspect is forced to admit, whereby prosecutors' assumptions may force a

confession even in the absence of evidence. Hamada pointed out the paradoxical possibility that “being innocent” was a vital factor in false confessions. Since they have not committed a crime, innocent suspects have an optimistic outlook that “the facts will be revealed at the trial later.”

In step 2 of Hamada’s model, the suspect provides specific details. Even though innocent, once the suspect has confessed, they cannot go back; they construct a story in which they play the role of the actual culprit, using their imagination, based on hints given by the interrogators. Hamada described this relationship as a “magnetic field.” Poor innocent suspects continue to confess even to things they should not have known, as if being attracted by the magnet of the prosecution’s guidance. Nevertheless, Hamada pointed out that the statements retain some signs of innocence where innocent suspects have left some clues indicating their “inability to tell details.” Not knowing the facts leads the suspects to make unnatural or inconsistent statements with the objective evidence. Hamada further pointed out that the “magnetic field” remains after the interrogation procedure. When a suspect reverses their confessions, they are blamed for why they confessed in the first place. Consequently, they are unable to escape from the “magnetic field.”

Hamada has worked on many wrongful conviction cases and contributed to the defense of innocent defendants from cognitive psychology’s standpoint. Nevertheless, there remain many false conviction cases without solutions, primarily because the status of legal psychologists is still undervalued in the Japanese judicial system.

## **2.2. Itsukushima’s Replication of Original Witnessing Situation of the Case**

The Japanese criminal court allows research psychologists to give evidence based on psychological experiments. Yukio Itsukushima of Nihon University (now at University of Human Environments), with his expertise in cognitive psychology, has over 30 years of experience as an expert witness for the defense. Here, we describe how Itsukushima conducted the replicating experiment to evaluate the Iizuka case’s eyewitness credibility (Itsukushima, 2014).

In 1992, two first-grade elementary school girls were kidnapped on the way to the school and later found dead in the mountains nearby. Two years later, the police arrested a suspect who denied the crime and consistently pleaded his innocence at trials but ended with a death sentence. However, one of the witnesses’ testimonies was crucial in the judgment. The eyewitness stated that while driving, he saw a man standing beside a parked van on the day of the crime, where the girls’ clothing and bags were later found. His statement was extremely detailed, and the suspect owned a similar van to the witnessed one.

However, could the witness really recall such details? To examine the plausibility of the visual accuracy of the car driver, Itsukushima experimented with replicating the witnessed situation. He let 30 participants drive a designated route for about ten minutes and pass the witnessed scene on the way, as the wit-

ness did. He replicated the procedures as closely as the witnessed situation. Two weeks later, he interviewed all participants to report what they saw while driving. The results showed that none of the participants could report as detailed an account as the witness did. For example, while the witness stated that the van had “dual rear wheels,” none of the participants could recall this detail, even though they were told beforehand to pay attention to the parked van. Based on these experimental results, Itsukushima testified that it is implausible that the witness’ reports originated from his own experience; instead, they were formed by information from other sources.

However, the judges weighed little on Itsukushima’s experimental results, forcing the irrational interpretation that the witness was familiar with the road so he could see the details while experimental participants were not. Although Japanese judges allow replication experiments, they may lack the essential background for correctly interpreting experimental results. We must continue collaborating with the judiciary on advancing the Japanese trial procedures, scientifically, based on its various phases, including the scientific literacy education for judicial practitioners.

### **2.3. Naka’s Series of Studies on Child Witness Interviewing Procedures**

It has been known that a child’s testimony may be unreliable due to suggestions and leading post-event information, the child’s propensity for acquiescence, and memory deterioration. Also, repeated interviews increase the interviewee’s stress and may lead to PTSD (Fulcher, 2004). Therefore, developing a suitable method for interviewing children in judicial cases as child abuse victims and witnesses, is necessary.

Makiko Naka of Hokkaido University (now at Riken and Ritsumeikan University), who majored in cognitive and developmental psychology, has led this research area and its practical application in Japan. In searching for solutions to the issues of interviewing children, Naka came across the investigative interview initiatives in the UK, and then the NICHD protocol developed by Lamb and his colleagues (Lamb, Orbach, Hershkowitz, Esplin, & Horowitz, 2007). She and her colleagues translated the guideline and related books into Japanese.

Naka also researched the effect of repeated interviews and related topics. For example, in one of her representative studies, Naka (2012) investigated the most suitable interviewing procedures among free recall, that is free recall with context reinstatement, asking specific and directive questions, and interviewing with open-ended questions, and the effect of such procedures on children’s subsequent memory. Participants were 249 children of 8 - 10 years of age. Children were shown a video and interviewed with one of the four procedures. Then, they recalled what they observed, with an immediate recognition test and a delayed recall and recognition test, several days later. Results showed that the open-ended questions procedure was the most effective way of conducting investigative interviews with children to elicit accurate information and keep their mem-

ories relatively intact.

Naka expanded her research to an applied project in 2008 to develop interviewing methods and training programs with the support of the Japanese government, which lasted until 2021. The main activities were to run a PDCA cycle, i.e., develop a program, train the professionals, receive feedback, and modify the program. Although their publications are mainly in Japanese, they trained nearly 150,000 professionals and approximately 200 trainers who can serve as trainers in a training-trainer program (See the Forensic/Investigative Interview website of Ritsumeikan University at <http://en.ritsumei.ac.jp/research/forensic/>). At present, the forensic/investigative interviews are implemented nationwide by social workers, police, and prosecutors.

Such an array of research can be shared through interactions and collaborations with international colleagues. Thus, the study's goal for Japanese researchers is to promote the values of diversity and human rights investigated and surveyed in Japan to integrate cohesively into a global society.

### **3. Issues and Future Directions of Applied Cognitive Research in Japan**

Our review reveals that although several domestic academic societies in cognitive sciences publish official journals and hold regular conferences every year, they are published only in Japanese. It is mainly because all social activities in Japan, including higher education, are conducted entirely in Japanese and most Japanese researchers in social sciences, including psychology, publish papers in mostly in Japanese.

In addition, application-oriented studies are obliged to be strongly related to socio-cultural factors, making it difficult for university researchers to approach practical issues with laboratory studies. For example, scientific research in criminal investigation has been conducted in laboratories within police organizations, and there are few collaborations between the police and university researchers. Involvement of cognitive psychologists in trials has been occurring for a while but still shows little presence in judicial practices except for investigative/suspect interviews and identification. Although psychiatrists are legally required to conduct psychiatric evaluations of offenders and clinical psychologists are required to be involved in juvenile cases, the contributions of applied cognitive psychologists in these areas remain limited.

Meanwhile, educational psychologists, while tackling various educational issues, face the difficulty of socio-cultural characteristics of Japanese education and the scientific universality. Educational psychologists in universities have had trouble finding research participants in schools. Accordingly, they tend to conduct research within the campuses with undergraduate participants. There have been almost no experimental studies with elementary and high school students. Consequently, schoolteachers and administrators value these "campus" studies little for school education.



In such a context, Uchida and Mori's (2018) study was rare and exceptional in that it integrated scientific research and a practical issue in school. Their team of a schoolteacher and an educational psychologist made it possible to detect "fake math-dislike" in junior high school students and proved the effectiveness of a preventive measure through an RCT design experiment. The study was published in English but is hardly known to Western researchers, partly because it appeared in a journal published by the Taiwanese Ministry of Education. Therefore, we have chosen this study as an additional representative study in Japanese applied cognitive sciences.

Finally, although not cited individually in this review, we do not imply that Japanese applied cognitive psychologists have not published papers in English at all. Nevertheless, since Japanese is the default language in social sciences in Japan, most applied cognitive researchers predominantly publish books and journal articles in Japanese only. In addition, even application-oriented university researchers often have difficulty finding an appropriate research field, hence, they conduct a study on campus. As a result, practitioners find them inapplicable to the actual issues. Consequently, the vicious cycle increasingly divides the two sectors. Therefore, it is necessary to promote collaborative research between university researchers and practitioners, in various fields, and publish research results in English to enable international collaborations for the apposite future development of applied cognitive sciences.

#### 4. Conclusion

This review provides a comprehensive overview of the landscape of applied cognitive sciences in Japan, focusing on academic societies, notable studies, and critical issues. The introduction shed light on the limited number of cognitive researchers in Japan compared to the vast number of universities, emphasizing the importance of academic societies in connecting researchers and fostering collaboration. We delved into four prominent societies, namely the Japanese Association of Educational Psychology, Japanese Cognitive Science Society, Japanese Society for Law and Psychology, and Japanese Society for Cognitive Psychology, highlighting their contributions and the accessibility of Japanese papers through J-STAGE. Subsequently, our literature review explored the research areas within applied cognitive sciences, such as eyewitness memory and education, focusing on three representative studies. Hamada's False Confession Process Model, Itsukushima's Replication of Original Witnessing Situation, and Naka's Series of Studies on Child Witness Interviewing Procedures were discussed in detail, emphasizing their significance and contributions to the field. We concluded this section by addressing existing challenges, such as the inward-looking nature of Japanese researchers, the decline in English publications, and the need for increased international collaboration. The issues identified underscore the importance of bridging the gap between researchers and practitioners, fostering collaborative efforts, and publishing research results in English to



facilitate global contributions to the advancement of applied cognitive sciences in Japan.

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## Author Contribution Statements

The six co-authors wrote drafts of each of the following sections: AU wrote the overview section, HI the literature review, EW Hamada's study, YF the Itsukushima experimental study, MN her own research, and KM the issues and future directions section. All authors then collaborated on revisions.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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