Epilepsy & Behavior 73 (2017) 95–99

Contents lists available at ScienceDirect

Epilepsy & Behavior

journal homepage: www.elsevier.com/locate/yebeh

Longitudinal investigation into implicit stigma of epilepsy among Japanese medical students before and after mass media coverage of car accidents associated with people with epilepsy

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ARTICLE INFO

Article history:
Received 30 November 2016
Revised 30 April 2017
Accepted 13 May 2017
Available online 15 June 2017

Keywords:
Epilepsy
Stigma
IAT
Implicit attitude
Longitudinal study

ABSTRACT

Objective: Public attitudes and stigma toward epilepsy may limit patient motivation for treatment and participation in social activities. Stigma research requiring individuals to report personal beliefs is useful but is subject to social desirability bias. Self-reporting methods often do not capture implicit attitudes; therefore, in this study, implicit stigma was measured using the implicit association test (IAT), which is a word sorting task to minimize this bias. Recently, in Japan, several serious car accidents caused by people with epilepsy (PWE) resulted in pedestrian fatalities. Traffic accidents involving PWE have been reported extensively and repeatedly in the media since 2011. The present study aimed to examine differences in implicit stigma toward epilepsy among medical students in 2010, 2013, and 2016.

Methods: We recruited 41 medical students in 2010, 44 medical students in 2013 and 42 medical students in 2016. We investigated the strength of conceptual associations between the words "Epilepsy" or "Hypertension", and "Safety" or "Danger" in the IAT.

Results: The association between the words "Epilepsy" and "Danger" was stronger in 2013 compared with that in 2010; however, the association was weaker in 2016 compared with that in 2013. There was no significant difference between 2010 and 2016.

Conclusion: The change in IAT results between 2010 and 2013 might be due to the traffic accident involving PWE in Japan. However, the result in 2016 might indicate that the implicit attitudes toward epilepsy were improved to the same level as those in 2010.

1. Introduction

Stigma is a global phenomenon associated with several chronic diseases, including epilepsy, with great negative impacts on patients and their families, and deleterious consequences for their quality of life (QOL). Some of its effects include delay in diagnosis, risk behaviors, and poor adherence to treatment [1]. Epilepsy is one of the most frequent chronic neurological disorders. There are approximately one million people with epilepsy (PWE) in Japan, which is approximately 0.8% of the total population [2]. The Japanese government continues to make efforts to eradicate stigma toward people with disabilities and people with diseases, including those with epilepsy. A new law prohibiting discrimination against people with disabilities, including epilepsy, went into effect in April 2016 in Japan.

Stigma can be conceptualized as a dynamic social process. The stigmatized person is labeled as different and linked to negative stereotypes. A separation is forged between the stigmatizers and the stigmatized; when this process occurs in the context of a power imbalance favoring the stigmatizers, the stigmatized person suffers status loss and discrimination. In the health care setting, where a power differential is intrinsic to the doctor–patient relationship, there is increasing recognition that clinicians play an important role in perpetuating or mitigating stigma [3]. For this reason, some studies have targeted medical workers [3–7].

A growing body of studies about stigma toward epilepsy has been carried out globally; however, most of those studies focused on explicit attitudes and mainly relied on self-report measures [3]. The explicit measures represented by self-report measures are susceptible to the phenomenon of social desirability, wherein respondents provide answers they expect would be favorably viewed by others. To combat such biases, Greenwald et al. designed and developed the implicit association test (IAT) [8]. The IAT is a chronometric procedure that

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http://dx.doi.org/10.1016/j.yebeh.2017.05.008
1525-5050/

Table 1
Implicit association test categories and stimulus words.

	Categories	Stimulus words
Target	Epilepsy	Electroencephalography (EEG), brain function, seizure, convulsion, anti-epileptic drug
	Hypertension	Vessel, sphygmomanometer, palpitation, salt, antihypertensive,
Attribute	Dangerous	Violence, crime, narcotic drug, bacteria, kitchen knife
	Safety	Peace, friend, love, smile, family

quantifies the strength of conceptual associations by contrasting reaction latencies across conditions. Participants categorize stimulus words representing two couples of categories (total four categories) in two different conditions. Taking the example of flowers vs. insects and comfortable vs. uncomfortable words, in a condition known as the congruent task, participants categorized flowers and comfortable words together with one response key, and insects and uncomfortable words together with another response key. In the condition known as the incongruent task, participants categorized insects and comfortable words together with one response key, and flowers and uncomfortable words with the other [4,9]. The IAT is based on the logic that the word-sorting task should be easier, and thus faster, when the two concepts that share a response key are implicitly associated. Moreover, participants completing the IAT generally do not know the meanings of their responses; as such, the IAT is used in various fields to assess participants' implicit attitudes toward concepts or topics, such as a racial and sexual prejudice, self-esteem, and social cognition.

In recent years in Japan, several serious car accidents caused by PWE resulted in fatalities, including six children, since 2011. In 2011, traffic accidents involving PWE were reported frequently in the media. In 2012, another car accident caused by a PWE resulted in the deaths of eight pedestrians. Those tragedies had a palpable impact on Japanese society. As a result, in 2014, two laws concerning PWE drivers were modified. The Japan Epilepsy Association advised clinicians, patients, and their families to review the content of these laws and to obey them. Media coverage on this topic gradually decreased.

We investigated implicit attitudes toward epilepsy among medical students in 2010, 2013, and 2016 using the IAT. The main aim of the present study was to assess the changes in these students' implicit attitudes. We hypothesize that implicit attitudes toward epilepsy changed in 2010, 2013, and 2016 because of the frequent mass media reports on traffic accidents involving PWE.

2. Material and methods

2.1. Participants

We recruited 39 medical students (23 females; mean age, 21.7 ± 0.9 years) in 2010, 44 medical students (30 females; mean age, 22.0 ± 1.3 years) in 2013, and 42 medical students (26 females; mean age, 22.0 ± 1.2 years) in 2016. All the participants attended Tokyo Medical and Dental University, where they were studying medicine, dentistry, medical technology or nursing. All the participants had taken ≥90-minute classes about epilepsy. None had clinical experience in a hospital and none were associated with PWE or their family members. This study was approved by the Ethics Committee of Tokyo Medical and Dental University (approval nos. 803 and 1559). Before the experiment, we obtained written informed consent from each participant after thoroughly describing the experiment.

2.2. Implicit association test

In this study, we programed IAT using Inquisit_2.0 (Millisecond software, Seattle, USA).The IAT was performed according to standard procedures [8]. We chose hypertension as a physical illness to contrast epilepsy because it is a common chronic disease in Japan [4]. We assessed the associations of "Epilepsy" and "Hypertension" with two attributes ("Safety" and "Danger"). Each category included five stimulus words (e.g., "Epilepsy", which was the target category, included the following stimulus words: "electroencephalography", "brain function", "seizure", "convulsion", and "anti-epileptic drug") (Table 1). We instructed each participant to press the left or the right button on a keyboard in order to individually sort each stimulus word displayed in the center of the computer screen to left or right as quickly as possible. In one condition, the "Epilepsy" and "Danger" categories were presented in the top left corner and participants were instructed to categorize a stimulus word belonging to either "Epilepsy" or "Danger" by pushing the left key, and those belonging to either "Hypertension" or "Safety" categories by pushing the right key. In the second condition, the "Epilepsy" and "Safety" categories were shown in the top of the right corner and participants categorized a stimulus word belonging to either "Epilepsy" or "Safety" by pushing the left key, and those belonging to either "Hypertension" or "Danger" by pushing the right key. We defined the condition where the "Epilepsy" cues shared the response key with "Danger" and "Hypertension" cues shared the response key with "Safety" as the "congruent condition (CC)", and that where "Epilepsy" cues shared the response key with "Safety" and "Hypertension" cues shared the response key with "Danger" as the "incongruent condition

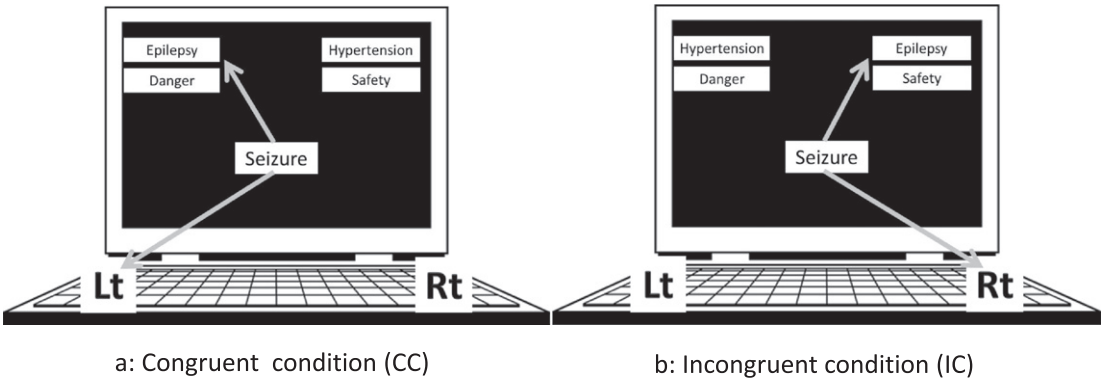

Fig. 1. The schema of computer screen of IAT. One of the 20 stimulus words was displayed in the center of the screen in the computer-loaded IAT software. Participants would sort the word pressing a left or right button on a keyboard. a: In the congruent condition (CC), "Epilepsy" shared the left response key with "Danger" and "Hypertension" shared the right response key with "Safety". b: In the incongruent condition (IC), "Epilepsy" shared the right response key with "Safety" and "Hypertension" shared the left response key with "Danger".