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# Factors Affecting Psychologists' Adoption of an Open Data Badge

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## ABSTRACT

**The purpose of this research is to investigate the individual, normative and resource factors affecting psychologists' adoption of an open data badge. The theory of planned behavior is employed as the theoretical framework to explain how these factors impact behavioral intention to adopt an open data badge. A national survey (n=341) of psychologists found that perceived benefits, norms of data sharing and attitude towards an open data badge had a significant positive relationship with attitude toward the open data badge, whereas perceived risk had a significant negative relationship. Perceived effort had a negative relationship to behavioral intention to adopt the open data badge, but had no relationship to attitude formation surrounding the open data badge adoption. The availability of a data repository and pressure from an open science journal did not have a significant relationship to behavioral intentions to adopt an open data badge. The implications for psychologists from a practical and theoretical perspective, and future directions for improving psychologists' data sharing behaviors are discussed.**

## KEYWORDS

data sharing, open data badge, psychologist, theory of planned behavior, social psychology, individual motivation

## INTRODUCTION

In 2014, an open data badge was promoted within the discipline of psychology as part of an initiative to create more open and transparent research among scholars in the field. The American Psychological Association journal, *Psychological Science*, adopted a badge incentive program to acknowledge researchers' willingness to share open data and materials after a manuscript was set to be published. To earn these badges, researchers must share data and/or materials digitally in an open access repository. Those who comply receive a badge for sharing raw data, materials from the study or both. The corresponding badges go at the top of the corresponding author's published manuscript. In the *Psychological Science* journal six months preceding the introduction of badges, an average of 2.5% of articles contained open data (range: 1.5%-4.0%). After the badge system was introduced, open data sharing practices increased significantly to 22.8% (range: 12.8%-39.4%) after January 1, 2014 (Kidwell et

al., 2016).

The objective of the present study is to investigate the individual, normative and resource factors influencing psychologists' adoption of an open data badge through using a theoretical model based on Fishbein and Ajzen's (1975) TPB (theory of planned behavior). By examining these factors under this theoretical framework, researchers can gain a better understanding of the areas that predict data sharing behaviors among psychologists.

## LITERATURE REVIEW

There are several factors that influence researchers' data sharing behaviors. There are individual factors, which include perceived benefits, risks and effort (Tenopir et al., 2011). There are also resource factors, which include the availability of an open data repository and journal requirements (Witt, 2008). Additionally, norms of data sharing can influence social scientists' decisions to engage in data sharing behaviors (Freese, 2007).

Data sharing behaviors among psychologists have remained relatively stable over time, but are still low considering the APA's ethical code to share data when requested. Wolins (1962) wrote to 37 authors of major APA journals inquiring about their data from a published manuscript, and nine authors provided data, leaving a data sharing rate of 24.3%. Similarly, Craig and Reese (1973) wrote to 53 authors of APA journal articles and received 20 responses, leaving a data sharing rate of 37.7%. Additionally, Wichets, Borsboom, Kats and Molenaar (2006) wrote to 141 authors of APA journal articles and received 38 responses, leaving a data sharing rate of 27.0%.

## THEORETICAL FRAMEWORK

This research utilizes the TPB to understand psychologists' behavioral intentions to adopt an open data badge. The TPB is a widely known social psychological theory and was developed as a means to explain various aspects of human behavior across different situations (Fishbein & Ajzen, 1975). This theory comprises attitudinal beliefs, subjective norms and perceived behavioral control factors. These factors influence behavioral intention, and that intention determines whether an actual behavior will be performed. In this particular study, the TPB can explain psychologists' intentions to adopt an open data badge.

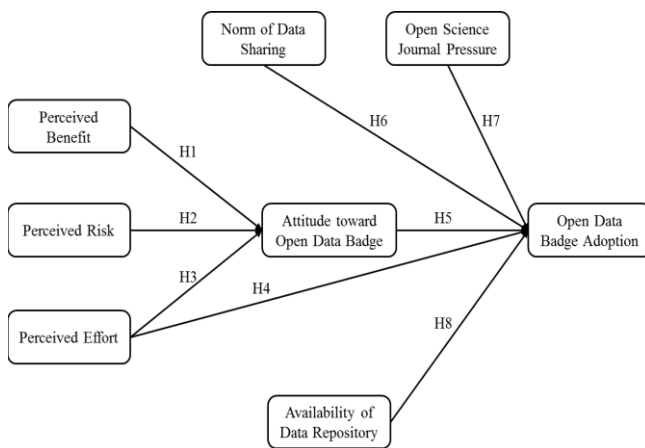
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## RESEARCH MODEL AND HYPOTHESES DEVELOPMENT

The following research model provides an overall map of psychologists' adoption of an open data badge. The model is designed to facilitate an understanding of individual, normative and resource factors influencing the decision to adopt the open data badge. The TPB provides insight into how the attitudinal beliefs (e.g., perceived benefit, risk and effort) influence a psychologist's attitude toward an open data badge. Perceived benefit, risk and effort refer to the degree to which a psychologist believes that sharing data could provide academic rewards, negative outcomes and difficulties in terms of time and energy. The TPB also provides insight into how subjective norms and perceived behavioral control (i.e., resource) factors impact a psychologist's decision to adopt an open data badge. Figure 1 shows the research model.



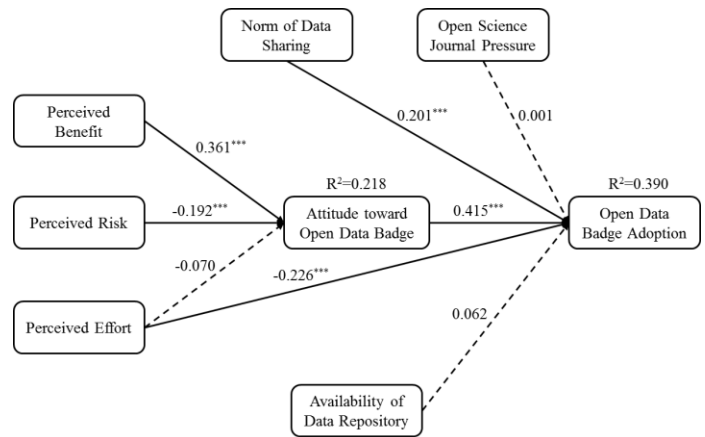
**Figure 1.** Research model for psychologists' adoption of open data badge

## RESEARCH METHOD

This study empirically evaluated the psychologists' open data badge adoption model and related hypotheses with survey data collected. The target population of this study mainly includes psychologists in U.S. research institutions. This research utilized the Community of Scientists (CoS) Scholar Database for its sampling frame. The survey was initially distributed to 2,919 potential participants through Qualtrics in November 2016, and it was closed for data collection on February 2017. A total of 341 responses from only psychologists were used for the final data analysis.

## DATA ANALYSIS AND RESULTS

This study used a structural equation modeling (SEM) approach to evaluate the hypothesized relationships in the psychologists' open data badge adoption model. A measurement model was evaluated to examine the reliability and validity of measurement items for each research construct, and then a structural model was assessed to investigate the hypothesized relationships among the research constructs by using partial least square method. Figure 2 presents the results of the structural model evaluation.



**Figure 2.** Hypothesis testing results based on social scientists' data sharing behavior model

## DISCUSSION AND CONCLUSION

As results, in regard to attitude formation toward an open data badge, perceived benefit and risk had significant positive and negative impacts respectively. Then, psychologists' attitudes toward an open data badge had a significant positive impact toward their behavioral intention to adopt an open data badge. Perceived effort did have a significant negative direct impact toward behavioral intention to adopt an open data badge. By emphasizing the perceived benefits and reducing the perceived risks, scholars can expect to see more favorable attitudes toward open data badge adoption. Also, psychologists' intentions to adopt an open data badge can be encouraged by reducing the effort expectancy involved in data sharing.

The results of this study also indicate that norms of data sharing positively influence psychologists' behavioral intentions to adopt the open data badge. Through fostering more open communication within the research community about scientific data sharing, psychologists can begin working more collectively to make strides toward more transparent research within the profession. They will eventually develop a strong norm of data sharing in their research community. By normalizing conversations about data sharing, we can expect to see higher involvement with data sharing practices. Due to the often sensitive nature of psychologists' research, ensuring additional confidentiality and privacy of participant information ought to be secured. Academic libraries that offer data services ought to consider the ways to reduce effort expectancy of researchers to de-identify, organize and manage data. In addition, libraries can provide data sharing education for psychology researchers to better understand the positive benefits of data sharing and to resolve any misunderstandings about the negative outcomes of data sharing.

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