
Research-in-Progress

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Abstract

IS researchers have studied online information privacy concerns for decades. However, prior research has produced a sub-optimal contribution to knowledge because findings are rather inconsistent and inconclusive. To address this issue, this research uses meta-analysis methods to analyze cumulative effects of the relationships between online information privacy concern and its theoretically-associated constructs. Our analysis of 89 empirical studies suggests that information privacy concerns have been most frequently tested with such constructs as user experience, awareness/knowledge, usefulness, privacy control, privacy risk, willingness to transact, willingness to provide personal information, trust, and attitude. We find that while most of these bivariate relationships are significant, their effect size varies. We also find that measure instrument, sample characteristics, and culture significantly moderate several relationships. We will use meta-analytic structural equation modeling techniques to delve deeper into the most frequently tested constructs.

Keywords: Online information privacy concerns, meta-analysis, APCO macro model, antecedents, outcomes, moderators

Introduction

With advances of communication and information technologies, online information privacy is one of growing concerns to multiple online stakeholders such as consumers, business managers, scholars, and government regulators (Skinner et al. 2006). Since Smith et al. (1996) developed an important measure of online information privacy called CFIP (Concern for Information Privacy), a number of empirical studies have tested antecedents and consequences of CFIP. However, this stream of research has produced a sub-optimal contribution to knowledge because findings are rather inconsistent and inconclusive (Smith et al. 2011). For a given relationship, some studies have demonstrated a non-significant effect while others have shown a significant effect. Yet, some other studies have shown a significant effect in the opposite direction. Furthermore, researchers have adopted a number of different theories with atypical variables in studying...
information privacy concerns (Li 2012). Thus, there was a need for systematic integration showing what variables are most frequently studied in the literature on information privacy concerns.

As a result, researchers have recently reviewed the literature from a few different perspectives (e.g., Belanger and Crossler 2011; Li 2012; Smith et al. 2011). While these review studies have significantly contributed to integration and sense-making of the fragmented, diverse literature, all of them took narrative and descriptive literature review approaches (King and He 2005). One important shortcoming of narrative/descriptive literature reviews is that they do not quantitatively accumulate the results of prior empirical studies. These reviews hardly inform us of a cumulative direction and strength of a certain hypothesized effect. As a result, effects of many theoretical relationships still remain inconclusive. Naturally, researchers have called for a quantitative meta-analytic review of the literature on information privacy concerns (Belanger and Crossler 2011; Li 2011).

This research aims to address this knowledge gap. Using quantitative meta-analytic techniques, this research accumulates correlations for the relationships that have been tested repeatedly and shows the direction and strength of the effect of antecedents on information privacy concerns and that of the effect on the outcomes of information privacy concerns. By so doing, this research can inform us how conclusive a certain effect is and thus helps us understand what we already know and what we don’t know yet. Another important intended contribution of this research is to test potential moderators on the relationships between information privacy concern and its theoretically-associated constructs. It is possible that some relationships have demonstrated mixed results due to the omission of important moderators. Once certain moderators are introduced, these relationships might show clearer patterns of effects. As a result, this research can resolve some of the inconsistent findings and explain why such inconsistency has been observed. Researchers have suggested a few important moderators that need to be tested. For example, Belanger and Crossler (2011) proposed that the characteristics of the subject (i.e., student vs. non-student) and the type of instrument (i.e., CFIP vs. other measures) are possible moderators. This research tests the effect of these moderators. Furthermore, it also tests the moderating effect of cultural/national differences.

In sum, this research responds to a call for quantitatively accumulating the results of prior empirical studies on information privacy concerns using quantitative meta-analytic methods. With the recent increase in empirical studies in this area, we are well posed to conduct a rigorous meta-analysis, which was not possible in the past due to a small number of repeated studies. By showing how conclusive certain effects are, the results of this research can guide future studies to focus on addressing still inconclusive and inconsistent effects rather than re-testing the effects that we already know with great confidence. What follows is a brief background and related work on central constructs of this study. We then present research methods followed by some preliminary results. We conclude by discussing expected contribution of this research and plans for completion.

Online Information Privacy Concerns, Antecedents, Outcomes, and Moderators

Privacy has been studied for centuries with slightly different definitions in different disciplines including philosophy, psychology, law, economics, information systems and others (Smith et al. 2011). Several influential studies on online information privacy concerns have focused on conceptualization (e.g., Belanger et al. 2002; Clarke 1999; Smith et al. 1996; Stone et al. 1983), privacy paradox (e.g., Bennett 1995; Acquisti 2004), privacy calculus (e.g., Ackerman 2004), measurement of privacy (e.g., Malhotra et al. 2004; Smith et al. 1996; Stewart and Segars 2002), research trends (e.g., Li 2011; Pavlou 2011) and literature reviews (Belanger and Crossler 2011; Smith et al. 2011).

For the conceptualization and measurement of information privacy concerns, for example, Smith et al. (1996) conceptualize the concern for information privacy concerns (CFIP) and develop measurement scale using four data-related dimensions (collection, errors, improper access, and unauthorized secondary use). Later, adapting the CFIP in the Internet context, Malhotra et al. (2004) conceptualize the Internet users’ information privacy concerns (IUIPC) as a second-order construct with three dimensions (control, awareness, and collection). Dinev and Hart (2004) also conceptualize two dimensional information privacy concerns (abuse and finding).
To present the relationships between privacy concerns and other constructs that have been empirically examined by prior studies, Smith et al. (2011) propose APCO Macro Model, a high-level process model delineating “Antecedents → Privacy Concerns → Outcomes.” Locating privacy concerns as a central construct, the model suggests five groups of antecedents of privacy concerns: privacy experiences, privacy awareness, personality differences, and demographic differences as individual level variables, and culture/climate as an organizational or national level. The model also presents several dependent variables as outcomes of privacy concerns, including behavioral reactions, trust, regulation and risks/costs. The most prominent variables are behavioral reactions to privacy concerns, which include individual’s willingness to disclose personal information and/or to engage in e-commerce transactions. Trust and regulation are considered to be both antecedent and outcome of privacy concern. Along with privacy benefits, privacy risks/costs are salient components to determine an individual’s behavioral reactions based on the tradeoff. This process is called privacy calculus which is also a part of the model. We used the APCO Macro Model to guide our literature search and code variables for meta-analysis.

**Moderators and Subgroups**

When Belanger et al. (2011) and Li (2011) call for meta-analytic studies on information privacy concerns, they suggest that moderating effects should also be tested. Following the suggestion, we examine the moderating effects of categorical grouping variables: (1) measurement instrument (CFIP vs. other measures), (2) sample characteristic (student sample vs. non-student sample), and (3) cultural difference (US vs. other countries).

CFIP (Smith et al. 1996; Stewart and Segars 2002) is the most frequently used instrument in the IS context. Malhotra et al.’s (2004) IUIPC is another widely-adopted instrument to measure privacy concerns, but we also found other types of measures including Dinev et al.’s (2004) and self-developed measurement. Therefore, we divided our sample into CFIP-based studies versus other measure-based studies to test the moderating effect of the instrument. A large number of previous studies on information privacy have heavily relied on student samples and U.S.-based samples (Belanger et al. 2011) partly because of the convenience in data collection. We examine the moderating effects of these sample characteristics (student vs. non-student, and US vs. non-US).

**Research Methods**

**Literature Search**

Our target literature is empirical studies that investigate privacy concerns and other related constructs. For quantitative meta-analysis, one of the important criteria for inclusion is that a paper must report correlation coefficients. We searched not only academic journals but also conference proceedings and unpublished dissertations and theses. Validity threats due to publication bias are mitigated through this multiple source methods since correlations reported in the studies published in journals may be higher than those reported in unpublished studies (King and He 2005; Sharma and Yetton 2007).

To identify the journal pool and relevant publications, we referred to the Association for Information Systems (AIS) website providing a list of high quality IS journals (Li 2011). We specifically adopted a list of over 100 IS journals published in the MIS Journal Rankings page (http://start.aisnet.org/?JournalRankings). Some journals from the list were excluded because they no longer exist, and technical journals or professional magazines were not considered either. We used an online database called Web of Science to extract relevant publications by using search keywords as “privacy concern(s)” and the journal names. We also used ProQuest Dissertations & Theses Full Text database to acquire proper sample of unpublished dissertations and theses with the search keywords as “privacy concern(s)”, “privacy risk”, or “security concern(s)”. In order to determine the appropriate conference proceedings for the meta-analysis, we firstly referred to the proceedings of the major conferences hosted by AIS, including ICIS, AMCIS, ECIS, and PACIS, and also reviewed the proceedings of the Hawaii International Conference on System Sciences (HICSS). The search period was not specified, so it covered all the journal publications, conference papers, and dissertations/theses dated up to March 2014. However, we excluded the redundant papers which used the same dataset with the same author(s) and constructs. This literature search process yielded 89 publications including 51 journal articles, 28 conference papers, and 10 dissertations/theses.
Since a number of constructs appear only once or twice in the identified sample of 89 studies, the first step was to classify a set of constructs that have been frequently tested, thus subject to meta-analysis. To that end, we listed up all the constructs with correlation coefficients reported in each empirical study. We then counted the frequency of the correlation between these constructs and the central construct, information privacy concerns. Field (2001) suggests that a meta-analysis should include at least 15 studies, otherwise the type I error (i.e., accepting a false null hypothesis) could be seriously inflated. Following this guideline, we only included the nine constructs with more than 15 correlations across studies. As a result, our research model for meta-analysis was developed (Figure 1). The definition of each construct is provided in Table 1.

### Table 1. Definition of Research Constructs

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience</td>
<td>Prior experience with the certain technology or general technology (e.g., Internet)</td>
</tr>
<tr>
<td>Awareness/Knowledge</td>
<td>The extent to which an individual is informed about the certain technology, service, or practice (e.g., privacy policy)</td>
</tr>
<tr>
<td>Usefulness</td>
<td>The degree to which an individual believes that using the technology/service will help him or her attain gains in job performance.</td>
</tr>
<tr>
<td>Privacy control</td>
<td>The perception of an individual about the possibility of managing their own information</td>
</tr>
<tr>
<td>Trust</td>
<td>The willingness to be vulnerable to the actions of another party</td>
</tr>
<tr>
<td>Privacy risk</td>
<td>The expectation of losses associated with the disclosure of personal information.</td>
</tr>
<tr>
<td>Willingness to transact</td>
<td>Willingness to be engaged in monetary transactions or to use certain services (continuously)</td>
</tr>
</tbody>
</table>

1 Some studies reported more than one correlation in one bivariate relationship: (1) when they had more than one datasets; (2) when the certain concept was measured in different ways within the same study; or (3) when the correlations between first-order constructs (e.g., privacy concerns or trust) of the second-order constructs were reported.
Willingness to provide personal information | The extent to which an individual would reveal personal information through the Internet
---|---
Attitude | A learned disposition to respond in a consistently favorable or unfavorable manner with respect to a given object or behavior

**Coding Procedures**

Using the research model developed, we further coded the 89 papers in our sample; each paper was assigned to two authors to avoid subjective decisions. When a disagreement arose, the authors discussed to reach consensus, although this was rarely needed because the coding criteria are quite objective and straightforward. First, we listed all studies that included correlations between the focal construct (information privacy concerns) and the nine identified constructs of the model. Then, we reviewed each paper thoroughly and coded the information about author(s), year of publication, journal name, construct names, their reliability index (i.e., Cronbach’s $\alpha$ or composite reliability), measurement types (CFIP or others), sample characteristics (student or non-student), country origin (US or non-US), sample size, and Pearson correlation coefficients. We gained 12$^2$ to 60 correlations for the nine pairwise relationships.

Out of 89 papers, 23 papers used CFIP measures while 66 papers used other measures. Student (46 papers) and non-student samples (43 papers) take up similar portion. Forty-six studies were conducted in United States while 39 studies were done in other countries. Four studies made cross-cultural comparisons; therefore they have both US and other countries samples.

**Meta-analytic Calculation**

Recently, meta-analytic studies used various techniques depending on their research questions and objectives. While Hunter and Schmidt’s (2004) bivariate meta-analysis technique (e.g., Lee and Xia 2006; Wu and Lu 2013) have been widely used, several recent meta-analysis studies have used weighted least square regression (e.g., Sharma and Yetton 2007; Sharma et al. 2009; Wu and Lederer 2009) and meta-analytic structural equation modeling (MASEM) (e.g., Colquitt et al. 2007; Joseph et al. 2007).

If we can identify a few important constructs derived from a strong theory (i.e., top-down approach), MASEM would be a good fit. On the other hand, if we investigate a comprehensive set of numerous constructs derived from multiple theories (i.e., bottom-up approach) and test moderating effects, then bivariate correlation analysis and weighted least squares regression would be better choices. This research combines these two approaches in two phases; in the first phase, we use bivariate correlation analysis to examine the cumulative direction and significance of the relationships shown in the research model. We then conduct a moderator analysis using $t$-approximation tests (Joseph et al. 2007). In the second phase, we will use MASEM to delve deeper into a smaller set of core constructs with greater rigor.

To perform meta-analysis of bivariate relationships, we used zero-order effect sizes (correlations), sample size, and reliability statistics (i.e., Cronbach’s alpha and composite construct reliability$^3$). When the reliabilities were not reported, we filled in the mean reliability value while those of one-item measures were set to 0.6 (Hunter and Schmidt 2004; Sharma and Yetton 2007). Following Hunter and Schmidt’s (2004) formula, correlations were weighted by sample size and corrected for reliability to acquire corrected meta-analytic correlations. The statistical significance of these correlations is decided by the 95% confidence intervals for the mean correlation; if 95% confidence interval does not include zero, it indicates the bivariate relationship is significant.

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2 The numbers of correlations of “privacy control-privacy concerns” and “experience-privacy concerns” relationships are less than 15 because some studies/correlation were excluded due to incomplete information.

3 Peterson and Kim (2013) revealed that the difference between Cronbach’s alpha and composite reliability value was relatively inconsequential for practical applications such as meta-analysis; hence, we used composite reliability when only this value was reported, while we used alpha value in case that the both estimators were reported.
To test moderating effects, we divided the sample into two subgroups by respective moderators for every bivariate relationship. Along with meta-analytic mean correlations and 95% confidence interval, \( t \)-value was computed to determine if the mean correlations of two groups are significantly different.

**Results**

**Meta-Analysis of Bivariate Relationships**

Table 2 summarizes the results of the meta-analysis of bivariate relationships between information privacy concerns and the nine identified constructs. Regarding every relationship, we report the number of correlations, the cumulative sample size, the average sample size, along with uncorrected/corrected mean of meta-analytic correlation, explained variance, and 95% confidence interval. Except for “experience-privacy concerns” relationship, every correlation is found to be significant. As expected, willingness to transact, willingness to provide personal information, privacy control, trust, and attitude are negatively associated with privacy concerns, while privacy risk shows positive correlation with privacy concerns. Unlike our expectation, interestingly, awareness/knowledge and usefulness are positively correlated with privacy concerns. The explained variance by sampling error in every significant relationship is less than 10 percent, which means additional moderators need to be introduced to further explain the unaccounted variance (Lee & Xia, 2006).

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. of corr.</th>
<th>Sample size</th>
<th>Average sample size</th>
<th>Uncorrected meta-analytic corr.</th>
<th>Corrected meta-analytic corr.</th>
<th>Explained variance (%)</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience</td>
<td>14</td>
<td>4974</td>
<td>355</td>
<td>-0.009</td>
<td>-0.013</td>
<td>48%</td>
<td>-0.041, 0.015</td>
</tr>
<tr>
<td>Awareness/Knowledge</td>
<td>24</td>
<td>12434</td>
<td>518</td>
<td>0.027</td>
<td>0.039</td>
<td>5%</td>
<td>0.021, 0.056</td>
</tr>
<tr>
<td>Usefulness</td>
<td>22</td>
<td>5208</td>
<td>237</td>
<td>0.063</td>
<td>0.074</td>
<td>9%</td>
<td>0.047, 0.01</td>
</tr>
<tr>
<td>Privacy control</td>
<td>12</td>
<td>4634</td>
<td>386</td>
<td>-0.218</td>
<td>-0.238</td>
<td>2%</td>
<td>-0.265, -0.211</td>
</tr>
<tr>
<td>Privacy risk</td>
<td>30</td>
<td>13172</td>
<td>439</td>
<td>0.337</td>
<td>0.391</td>
<td>2%</td>
<td>0.377, 0.406</td>
</tr>
<tr>
<td>Trust</td>
<td>60</td>
<td>23289</td>
<td>388</td>
<td>-0.115</td>
<td>-0.132</td>
<td>5%</td>
<td>-0.145, -0.120</td>
</tr>
<tr>
<td>Willingness to transact</td>
<td>48</td>
<td>15393</td>
<td>321</td>
<td>-0.131</td>
<td>-0.149</td>
<td>8%</td>
<td>-0.165, -0.134</td>
</tr>
<tr>
<td>Willingness to provide personal information</td>
<td>39</td>
<td>14048</td>
<td>360</td>
<td>-0.214</td>
<td>-0.248</td>
<td>9%</td>
<td>-0.263, -0.232</td>
</tr>
<tr>
<td>Attitude</td>
<td>22</td>
<td>8390</td>
<td>381</td>
<td>-0.197</td>
<td>-0.240</td>
<td>2%</td>
<td>-0.260, -0.220</td>
</tr>
</tbody>
</table>

**Moderator Analyses**

To test moderating effects of the three categorical moderators, we conducted \( t \)-approximation tests of the differences between the mean correlations of a pair of subgroups (Wagner and Gooding 1987). With a few exceptions, the three moderators show significant effects on most bivariate relationships. For example, in “privacy concerns-willingness to transact” relationship, non-CFIP measures, non-student, and non-US samples show significantly higher correlations than their counterparts. Some of these results are consistent with the findings of prior research. For example, Malhotra et al. (2004) have shown that IUIPC explains more of the variance in a person’s willingness to transact than CFIP.
Consistent with general beliefs that privacy concerns would play a less important role in younger generation’s behavior (i.e., students), non-student subjects show stronger effects than student subjects in most relationships. Regarding the cultural effect, the US samples generally produce weaker effects in most cases (i.e., willingness to transact, trust, privacy risk) except for one relationship (i.e., privacy concerns-attitude).

<table>
<thead>
<tr>
<th>Moderators</th>
<th>No. of corr.</th>
<th>Explained variance (%)</th>
<th>Corrected mean correlations</th>
<th>t'-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Willingness to transact online (Willingness to use services)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFIP vs. other measures</td>
<td>25 vs. 23</td>
<td>17% vs. 7%</td>
<td>-0.030 vs. -0.232</td>
<td>9.168**</td>
</tr>
<tr>
<td>Student vs. non-student</td>
<td>35 vs. 13</td>
<td>10% vs. 6%</td>
<td>-0.108 vs. -0.245</td>
<td>3.002**</td>
</tr>
<tr>
<td>U.S. vs. other countries</td>
<td>21 vs. 27</td>
<td>9% vs. 10%</td>
<td>-0.050 vs. -0.238</td>
<td>9.265**</td>
</tr>
<tr>
<td>Willingness to provide personal information (Self-disclosure)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFIP vs. other measures</td>
<td>3 vs. 36</td>
<td>100% vs. 8%</td>
<td>-0.319 vs. -0.244</td>
<td>6.604*</td>
</tr>
<tr>
<td>Student vs. non-student</td>
<td>12 vs. 27</td>
<td>27% vs. 7%</td>
<td>-0.195 vs. -0.267</td>
<td>4.556**</td>
</tr>
<tr>
<td>U.S. vs. other countries</td>
<td>33 vs. 6</td>
<td>10% vs. 7%</td>
<td>-0.242 vs. -0.278</td>
<td>0.557 (n.s.)</td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFIP vs. other measures</td>
<td>14 vs. 8</td>
<td>4% vs. 1%</td>
<td>-0.283 vs. -0.202</td>
<td>0.569 (n.s.)</td>
</tr>
<tr>
<td>Student vs. non-student</td>
<td>14 vs. 8</td>
<td>2% vs. 2%</td>
<td>-0.095 vs. -0.397</td>
<td>4.728**</td>
</tr>
<tr>
<td>U.S. vs. other countries</td>
<td>9 vs. 13</td>
<td>3% vs. 1%</td>
<td>-0.411 vs. -0.167</td>
<td>4.556**</td>
</tr>
<tr>
<td>Privacy risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFIP vs. other measures</td>
<td>12 vs. 18</td>
<td>2% vs. 3%</td>
<td>0.184 vs. 0.560</td>
<td>5.937**</td>
</tr>
<tr>
<td>Student vs. non-student</td>
<td>20 vs. 10</td>
<td>2% vs. 3%</td>
<td>0.315 vs. 0.579</td>
<td>7.390**</td>
</tr>
<tr>
<td>U.S. vs. other countries</td>
<td>19 vs. 11</td>
<td>3% vs. 3%</td>
<td>0.230 vs. 0.659</td>
<td>10.673**</td>
</tr>
<tr>
<td>Trust</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFIP vs. other measures</td>
<td>16 vs. 44</td>
<td>4% vs. 7%</td>
<td>0.018 vs. -0.188</td>
<td>3.371**</td>
</tr>
<tr>
<td>Student vs. non-student</td>
<td>37 vs. 23</td>
<td>6% vs. 4%</td>
<td>-0.080 vs. -0.236</td>
<td>4.108**</td>
</tr>
<tr>
<td>U.S. vs. other countries</td>
<td>38 vs. 22</td>
<td>4% vs. 6%</td>
<td>-0.111 vs. -0.161</td>
<td>14.889**</td>
</tr>
<tr>
<td>Experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFIP vs. other measures</td>
<td>9 vs. 5</td>
<td>40% vs. 87%</td>
<td>0.003 vs. -0.022</td>
<td>0.749 (n.s.)</td>
</tr>
<tr>
<td>Student vs. non-student</td>
<td>9 vs. 5</td>
<td>45% vs. 59%</td>
<td>0.003 vs. -0.023</td>
<td>1.209 (n.s.)</td>
</tr>
<tr>
<td>U.S. vs. other countries</td>
<td>16 vs. 8</td>
<td>27% vs. 2%</td>
<td>0.057 vs. 0.020</td>
<td>1.260 (n.s.)</td>
</tr>
<tr>
<td>Awareness/Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFIP vs. other measures</td>
<td>16 vs. 8</td>
<td>27% vs. 20%</td>
<td>0.057 vs. 0.020</td>
<td>0.410 (n.s.)</td>
</tr>
<tr>
<td>Student vs. non-student</td>
<td>17 vs. 7</td>
<td>26% vs. 2%</td>
<td>0.061 vs. 0.013</td>
<td>0.477 (n.s.)</td>
</tr>
<tr>
<td>U.S. vs. other countries</td>
<td>20 vs. 4</td>
<td>8% vs. 3%</td>
<td>0.103 vs. -0.069</td>
<td>2.090 (n.s.)</td>
</tr>
<tr>
<td>Usefulness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFIP vs. other measures</td>
<td>16 vs. 6</td>
<td>27% vs. 4%</td>
<td>-0.047 vs. 0.156</td>
<td>2.776*</td>
</tr>
<tr>
<td>Student vs. non-student</td>
<td>18 vs. 4</td>
<td>8% vs. 24%</td>
<td>0.098 vs. 0.020</td>
<td>2.787*</td>
</tr>
<tr>
<td>U.S. vs. other countries</td>
<td>7 vs. 15</td>
<td>50% vs. 6%</td>
<td>0.063 vs. 0.078</td>
<td>0.310 (n.s.)</td>
</tr>
<tr>
<td>Privacy control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFIP vs. other measures</td>
<td>5 vs. 7</td>
<td>33% vs. 1%</td>
<td>-0.464 vs. -0.126</td>
<td>2.357†</td>
</tr>
<tr>
<td>Student vs. non-student</td>
<td>4 vs. 8</td>
<td>1% vs. 3%</td>
<td>-0.246 vs. -0.230</td>
<td>0.110 (n.s.)</td>
</tr>
<tr>
<td>U.S. vs. other countries</td>
<td>4 vs. 8</td>
<td>7% vs. 20%</td>
<td>-0.314 vs. -0.134</td>
<td>1.068 (n.s.)</td>
</tr>
</tbody>
</table>

Note: ** significant at p<0.01, * significant at p<0.05, and † significant at p<0.1
**Expected Contribution and Plans for Completion**

This research conducts a quantitative meta-analytic review of empirical studies investigating the theoretical relationships between online information privacy concerns and other relevant variables. This study intends to integrate prior findings and resolve their inconsistencies by introducing moderators. The literature search result suggests that most frequently tested variables include user experience, awareness/knowledge, usefulness, privacy control, privacy risk, willingness to transact, willingness to provide personal information, trust, and attitude. The preliminary results of meta-analysis show that privacy risk, privacy control, willingness to provide personal information, and attitude are strongly associated with information privacy concern while awareness/knowledge, usefulness, willingness to transact, and trust are relatively weakly, albeit statistically significant, associated with it. The effect of experience is found to be insignificant based on the analysis of 14 correlations.

The three moderators – measure instrument, sample characteristics, and culture/nationality – show significant effects on several theoretical relationships. Overall, CFIP tends to produce a smaller effect size than other measures such as IUIPC. Non-student subjects tend to show stronger effects than student subjects. With a few exceptions, the subjects from the United States demonstrate weaker effects than those from other countries. These findings support that contexts and research methods matter to the study of information privacy concerns.

To complete this research, we will run additional analyses by introducing more moderators such as technological contexts. In addition, we will use meta-analytic structural equation modeling (MASEM) techniques (Viswesvaran and Ones 1995) to delve deeper into a subset of the variables that have been most tested. MASEM is considered more rigorous than bivariate correlation analysis. Furthermore, it could uncover significant relationships between variables that prior studies overlooked. The bivariate correlation analysis and the MASEM analysis will be complement to each other and are expected to generate different insights on the relationships related to online information privacy concern. We plan to report both results at the conference.

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(Eighty-nine articles preceded with an asterisk are included in the meta-analysis.)