Exploring Gender Disparity in Capable Guardianship Against Identity Theft: A Focus on Internet-Based Behavior

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Abstract

Despite the growing literature on identity theft, limited studies have been conducted to explore demographic differences between individuals in levels of self-protection measures. Additionally, previous research indicates that men are less likely to employ self-protection measures compared to women, but the potential mechanisms to explain this gender difference remain unclear. Using the 2016 Identity Theft Supplement of the National Crime Victimization Survey in the U.S., the current study examined the interrelationship between gender, Internet-based behaviors (e.g., online shopping, credit card use, and debit card use), and the use of self-protection measures. Our logistic regression models revealed that the use of debit cards to make purchases online mediates the relationship between gender and the decision to employ self-protection measures.

Keywords

Identity Theft, Capable Guardianship, Internet-Based Behaviors, Cyber Security

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* http://dx.doi.org/10.36889/IJCJ.2022.002
* Received 27 April 2022; Revised 17 June 2022; Accepted 22 June 2022
INTERNATIONAL JOURNAL OF CRIMINAL JUSTICE, Vol. 4 Issue 1, September 2022, 25-48

INTRODUCTION

Identity theft involves stealing personally identifiable information and misusing it (Allison, Schuck, & Lersch, 2005; Pontell, 2009). Personally identifiable information refers to various types of information linked to a specific individual, including name, residential address, or governmental or official individual identification (e.g., social security number, tax information, driver's license number, and medical information). This stolen information will be likely used for secondary offenses such as credit card fraud, scams, or voice phishing (Irvin-Erickson & Ricks, 2019). Thus, identity theft is an ever-increasing threat to many people in this digital age. In the United States, 16.7 million online customers fell victims to identity theft in 2018 (Pascual, Marchini, & Miller, 2018), and identity thieves were estimated to acquire approximately $17 billion in 2018 alone (Marchini & Pascual, 2019). Recognizing the importance of identity theft, the Federal Bureau of Investigation also started collecting data regarding identity theft using two primary data platforms, the Uniform Crime Report in 2016 and the National Incident-Based Reporting System in 2019 (Piquero, 2018).

The knowledge base regarding identity theft is rapidly growing. Risk factors associated with victims and offenders of identity theft have been identified (Copes & Vieraitis, 2009; Holtfreter, Reisig, Pratt, & Holtfreter, 2015; Irvin-Erickson & Ricks, 2019; Marcum, Higgins, Ricketts, & Wolfe, 2015; Reyns, 2013; Reyns & Henson, 2016), and perceptions of identity theft have also been of interest among researchers (Choi, Kruis, & Choo, 2021; Piquero, Cohen, & Piquero, 2011; Roberts, Indermaur, & Spiranovic, 2013). Scholars have also examined the consequences of identity theft victimization, including the emotional and physical tolls on victims (Golladay & Holtfreter, 2017; Randa & Reyns, 2019).

One area that has received limited attention is individuals' prevention efforts to avoid identity theft victimization. The lack of this research area is critical given that identity theft can be prevented even if strongly motivated offenders find the perfect target as long as capable guardianship (e.g., self-protection measures) is present according to routine activities theory (Cohen & Felson, 1979; Felson & Eckert, 2019). Recently, one study was conducted by Ylang (2020) to explore the relationship between demographic factors and self-protection measures. Further, many studies highlighted different patterns of internet-oriented behaviors or routines between men and women (e.g., Bae & Lee, 2011). For example, it has been found that women tend to show

consistent shopping at online markets compared to men while perceiving higher levels of risk of online victimization (Garbarino & Strahilevitz, 2004). Taken together, the current study is intended to replicate Ylang's findings using a different dataset (i.e., the 2016 Identity Theft Supplement from National Crime Victimization Survey) and explore the mediating roles of Internet-based behaviors between gender and taking precautionary measures against identity theft. Specifically, we expect that women are more likely to use debit cards to make purchases online, which subsequently increases the employment of self-protection measures.

LITERATURE REVIEW

Routine activities theory and identity theft

Cohen and Felson (1979) proposed the routine activities theory to explain the conditions that need to be met for crime to happen. They were interested in explaining changes in crime trends after World War 2 and argued that a substantial shift in the structures of routine activities increased the risk of various crimes during this time period. Specifically, they suggested that the three elements need to converge for a crime event to take place: a motivated offender, a suitable target, and the absence of capable guardianship. After World War 2, Cohen and Felson noted that the United States had experienced rapid economic growth, resulting in more valuable items available (i.e., suitable targets) and that more people were working outside their houses, leaving attractive items on the property left unguarded (i.e., absence of capable guardianship). Since the emergence of the theory, it has been one of the dominant theoretical frameworks used by scholars interested in understanding crime opportunity and risk factors of victimization (Miller, 2013; Wolfe, Marcum, Higgins, & Ricketts, 2016).

It is critical to clarify the distinction between a suitable target and capable guardianship so that these two concepts are not overlapped in this study. The concept of suitable target is focused on the attractiveness of a target (Ylang, 2020). If a target appears to be rich with multiple values of items, he/she can be considered a suitable target. On the other hand, capable guardianship is focused on the potential target's ability to protect themselves. This concept is known as personal guardianship (Kabiri, Choi, Shadmanfaat, & Lee, 2022).

Researchers have also suggested that the routine activities theory can be applied to a variety of crime that occurs in the virtual world (Brady, Randa, & Reyns, 2016; Clarke, 2004; Yar & Steinmetz, 2019). With the advent of diverse Internet-connected devices, the convergence in space and time between motivated offenders and potential victims has become easier. A recent US Census Bureau report based on a representative sample of US residents indicated that 92% of all households had at least one type of computer (e.g., desktops, laptops, tablets, and smartphones), and 85% had access to the broadband Internet home in 2018 (Martin, 2021). Additionally, advancements in the smartphone industry have made it possible for people to be increasingly interconnected with each other (Greenwood, Perrin, & Duggan, 2016). Although the Internet and mobile devices have contributed to increasing the productivity of our society, identity thieves have exploited these tools to steal and misuse other people's personally identifiable information.

Researchers recognized the applicability of routine activities theory to identity theft and began testing the theory using empirical data. Several studies have been conducted to examine the link between online routines and identity theft victimization. Anderson (2006) used data from the Federal Trade Commission's identity theft survey and found that certain demographic factors were associated with identity theft victimization. He used the logic of the routine activities approach to account for the observed effects of demographic variables on identity theft victimization. For example, he argued that older consumers tend to have fewer credit cards and make fewer purchases, reducing victimization of identity theft. Similarly, the number of children in the households was a significant predictor of the increased risk for identity theft victimization because more transactions are likely to happen in the households with more children, and they may have less time to adopt precautionary measures against identity theft victimization. Reyns (2013) used the data from the British Crime Survey and tested whether online routines were associated with the risk of identity theft victimization. He controlled for individual characteristics such as gender, age, and marital status in his statistical model to estimate the relationship between online routine activities and victimization. Although not all online routine activities were significantly associated with identity theft victimization, online banking and using email or instant messaging were positively related to it. Also, downloading music, films, or podcasts was a significant predictor of identity theft victimization. He suggested that these online routine activities could have increased the exposure of potential targets to motivated offenders.

In the following study, Reyns and Henson (2016) sought to answer how the three components of routine activities related to identity theft victimization using the Canadian General Social Survey data. They considered banking, booking, purchasing, and social networking as online exposure to motivated offenders, while categorizing posting personal information and visiting risky websites as target suitability. Self-guardianship was measured using whether respondents used antivirus software, deleted emails from unknown senders, and regularly changed the password of their accounts. Interestingly, none of the variables considered for guardianship was significantly associated with identity theft victimization. However, their study could not address the temporal ordering issue, so it is not clear whether target hardening did not work against identity theft victimization. Holtfreter et al. (2015) conducted a study about identity theft victimization among one of the most vulnerable population groups, Internet users aged 60 years and older. They found that low self-control increased the risk of identity theft victimization and, more importantly to the current study, risky remote purchases (buying an item after receiving an unsolicited email from an unfamiliar business) mediated the relationship between low self-control and identity theft victimization. Low self-control predicted risky remote purchases, which subsequently increased the risk of identity theft victimization among the older population.

While the number of studies on identity theft is growing, most of these studies have been focused largely on victims and offenders. However, as Felson and Eckert (2019) noted, crime can happen only when the offender finds "a target without a guardian" (p. 29). Therefore, it is critical to understand the social phenomenon of capable guardianship involving identity theft. Given that cyberspace makes it easier to avoid traditional guardians, from parents to law enforcement, personal guardianship (e.g., taking protective actions against identity theft) is particularly important. However, this area has received relatively less attention from the literature.

Self-protection measures against identity theft

Various efforts have been made to prevent identity theft, including legislative regulations to punish identity thieves and organizational efforts to protect personally identifiable information (Gerard, Hillison, & Pacini, 2004; Piquero, 2018). For example, legislative efforts include the Fair and Accurate Credit Transaction Act of 2003, which grants individuals the right to report fraud alerts to agencies that compile and maintain data on consumers and ask for a credit report from credit reporting agencies. Similarly,

the Identity Theft Penalty Enhancement Act of 2004 enhances criminal penalties for identity thieves (Holtfreter & Holtfreter, 2006). Organizational efforts include services provided by the Federal Trade Commission or the Identity Theft Resource Center, helping victims handle and manage identity theft cases. Unfortunately, government actions are inadequate to prevent all identity theft threats, highlighting the role of potential victims in taking self-protection measures against identity theft.

Personally identifiable information can be easily leaked if individuals are not careful about how they handle their information (Burnes, DeLiema, & Langton, 2020). For example, individuals may not change their passwords for their online and financial accounts or protect them in a secure way (e.g., auto-fill functions). Also, they can heighten the risk of identity theft by being careless about how they take care of the documents that contain personally identifiable information (e.g., using trashcan without shredding them). While some people use security software programs to protect their private information, others are less attentive to this issue. Similarly, individuals can ensure the security of their information by checking banking or credit card statements and credit reports. In short, the risk of identity theft victimization is dependent significantly on potential victims.

Several studies have been conducted to understand patterns of self-protection measures (Gilbert & Archer, 2012; Milne, 2003; Milne, Labrecque, & Cromer, 2009; Ylang, 2020). Gilbert and Archer (2012) used data from 3,017 residents in Canada in their study of identity theft and fraud and found that the experience of credit card theft and fraud shaped consumers' concerns about identity theft victimization, which in turn resulted in changes in detection/protection measures against identity theft victimization. Milne et al. (2009) studied whether different levels of self-protection measures (e.g., virus checker installed on the computer, the use of a combination of letters, numbers, and symbols in password, or upgrading the web browser to the newest version) were associated with perceived privacy threat which is related to the severity of the consequences of the threat. Although the perceived level of privacy threat was an important factor in predicting protective behaviors, perceived likelihood of online threats which is related to how likely that threats can be actualized was not. Risky online behaviors (e.g., saved passwords on computer, saved credit card information in an online store's database, or using unsecured networks) were also significantly related to protective behaviors. However, these studies did not conceptualize the importance of self-protection measures against identity theft victimization as the presence of capable guardianship from the routine activities theory.

Ylang (2020) recently used the routine activities approach to underscore the importance of self-protection measures against identity theft victimization and explored the demographic factors associated with these precautionary measures. Using data from the 2014 Identity Theft Supplement of the National Crime Victimization Survey, she found that the decision to take protection measures was related to gender, previous victimization, and awareness regarding the right to obtain a free credit report. However, no research has been conducted yet to replicate this study using a different dataset. Additionally, no mechanisms have been explored to understand the relationships between demographic factors and identity theft victimization that she found.

Gender differences in Internet-based behaviors

The current study focuses on one specific demographic factor, gender, and investigates how it influences self-protection measures engagement. The relationship between gender and self-protective measures has been observed in Ylang's (2020) study. But it is not clear whether this relationship would be observed in a different study and, if then, why that would be the case. Previous research has yielded conflicting findings regarding the relationship between gender and victimization. While some researchers found that women are more likely to fall victim to identity theft than men (e.g., Anderson, 2006), others discovered that men are more likely to be victims of this type of cybercrime than women (e.g., Reyns, 2013). Still, others have not found any significant relationship between gender and identity theft victimization (Harrell, 2019).

On the other hand, the literature on marketing and information management has shown that men and women are significantly different in some online behaviors (e.g., Bae & Lee, 2011; Bighiu, Manolică, & Roman, 2015; Kimbrough, Guadagno, Muscanell, & Dill, 2013; Van Slyke, Bélanger, Johnson, & Hightower, 2010). For example, men and women exhibit different patterns of presentation in their social networks (Huang, Kumar, & Hu, 2018). Women tend to post content associated with relationships and emotions, while men are more likely to post content associated with status (Griskevicius et al., 2007; Tifferet & Vilnai-Yavetz, 2014). Some research indicated that women are more likely to engage in compulsive buying compared to men and find more satisfaction from online shopping (Koran, Faber, Aboujaoude, Large, & Serpe, 2006; Okazaki & Hirose, 2009).

Some scholars have investigated whether women and men have different perceptions of the risks of online purchasing. The findings have shown that women tend

to perceive more risks in purchasing online (Garbarino & Strahilevitz, 2004). Additionally, women are more likely to be concerned about the loss of privacy through the Internet compared to men (Bae & Lee, 2011; Bartel Sheehan, 1999). Therefore, women may be cautious about using credit cards to make purchases online, which carries financial and credit score risks. Instead, they may try to use debit cards to buy products online. Scholars have also found that men and women process data differently; men tend to put less effort into collecting and evaluating all available information to make purchases online, whereas women tend to gather comprehensive information for their purchasing decision (Kim, 2020; Richard, Chebat, Yang, & Putrevu, 2010).

A fair amount of research indicates that women tend to be more risk-averse when making financial decisions (Almenberg & Dreber, 2015; Charness & Gneezy, 2012; Croson & Gneezy, 2009). Relatedly, women have been shown to exhibit greater discomfort with debt and consider debt less useful than men (Haultain, Kemp, & Chernyshenko, 2010; Meyll & Pauls, 2019). Similar patterns are highlighted in Internet-based behaviors in the literature on gender differences in online behavior and attitudes (Kanwal, Burki, Ali, & Dahlstrom, 2022). For example, men find online shopping more attractive and have higher levels of intention to buy things online than women (Hasan, 2010; Lissitsa & Kol, 2016). In addition, men tend to spend a larger amount of money purchasing items online than women (Liu, Lin, Lee, & Deng, 2013). Also, women tend to report higher levels of concerns about privacy and security issues than men, which subsequently leads them to be less likely to pay online (Faqih, 2016; Midha, 2012). In other words, women exhibit a stronger preference for security and privacy issues in Internet-based behaviors compared to men. As a result, women are less likely to use online financial transactions.

Another important discussion to explain different patterns of Internet-based behaviors between men and women involves the distinction between the use of credit and debit cards (Qureshi, Rehman, & Qureshi, 2018). Banks typically issue debit cards, and individuals can withdraw money using debit cards from automatic teller machines. Customers can also use debit cards electronically to make purchases as long as sufficient money is in their deposit accounts. Although credit cards can be used to make electronic financial transactions, the biggest difference with debit cards is that there is no money needed to be deposited. Instead, credit card customers have a certain credit limit, and they can pay off the statement balance before the end of their billing cycle. Because of high credit card interest rates, if the statement balances are not paid in full every month, credit card users can face a big amount of credit card debt. As noted previously, research

has shown that women are more concerned about possible privacy and security issues, and the consequences of credit cards being misused can be detrimental to their financial situation (Faqih, 2016; Midha, 2012). Therefore, women may be more likely to use debit cards to make financial transactions online compared to men. Surprisingly, the gender disparity in the use of credit and debit cards to make purchases online has not been studied. The current study addresses this issue.

Studies reviewed above suggest that men and women engage in different Internet-based behaviors and different perceptions regarding online shopping. There are three potential ways that Internet-based behaviors may influence individuals' decisions to adopt personal self-protective measures. First, cautious online shopping behaviors (e.g., the use of debit cards to purchase online) can trigger consumers to consider other ways to protect their privacy and sensitive information (e.g., checking credit reports) by increasing the perceived risk of identity theft. Second, it is also possible that the small habit of careful online behaviors helps consumers develop other habits that can prevent security issues, such as adopting more protective measures. People who are already using an identity theft protection service or software are likely to take additional steps to prevent identity theft victimization. Piquero et al.'s (2011) study showed that people who currently subscribed to an identity theft protection service were more willing to pay for the government anti-identity theft programs. Third, Internet-based behaviors may be a behavioral measure of other underlying traits (Gottfredson & Hirschi, 1990; Keane, Maxim, & Teevan, 1993; Ward, Gibson, Boman, & Leite, 2010). For example, using a debit card to purchase online may reflect self-control because those individuals take into account the long-term, adverse outcomes of their decisions. Taken together, it can be argued that gender may be related to different patterns of using personal capable guardianship, which is to take self-protection measures against identity theft.

Current Focus

This study is intended to replicate Ylang's (2020) findings using the 2016 Identity Theft Supplement and identify the factors associated with the use of capable guardianship. This article also explores the mechanisms through which gender is linked to the decision to take self-protection measures. Specifically, Internet-based behaviors (i.e., online shopping, the use of debit cards to make purchases, and the use of credit cards to make purchases) are hypothesized to mediate the relationship between gender

and self-protection measures against identity theft. The following hypotheses will be tested.

H1: There will be a difference in taking protective measures against identity theft between men and women.
H2: There will be difference in internet-based behaviors between men and women.
H3: Internet-based behaviors mediate the relationship between gender and self-protection measures against identity theft.

METHODS

Data

The current study uses the data from the National Crime Victimization Survey collected by the US Census Bureau for the Bureau of Justice Statistics. The NCVS is a nationally representative survey administered to US residents from approximately 90,000 households. All members of the chosen households above 12 years old participate in the survey. Seven interviews are conducted repeatedly over three years to investigate patterns of victimization regarding property and violent crime. Supplemental questionnaires are occasionally accompanied by the NCVS to cover special topics that are not often included in regular surveys.

The current study uses the data from the 2016 Identity Theft Supplement. This survey has been administered in the past three surveys as well (2008, 2012, 2014). The 2016 ITS includes various survey items related to identity theft victimization, the types of accounts that respondents used, and the nature of identity theft victimization (e.g., misuse of an available account or creation of a new account). Additionally, respondents were also asked whether they had adopted seven different types of self-protection measures against identity theft in the past 12 months, such as checking credit reports and changing passwords on financial accounts.

Measures

Dependent variable

The dependent variable reflects respondents' capable guardianship prepared for self-protection. Respondents were asked if they took the following seven types of self-protection measures in the past 12 months: (1) checking credit report, (2) changing passwords on financial accounts, (3) purchasing credit monitoring services or identity theft insurance, (4) destroying documents that contained personally identifying information, (5) checking banking or credit card statements for unfamiliar charges, (6) using security software program on computer to protect it against loss of credit cards/card theft, and (7) purchasing identity theft protection from a company that offers protection services. Replicating Ylang's (2020) study, capable guardianship is operationalized to be a dichotomous variable (0 = took no protective measures, 1 = took protective measures). Some respondents indicated refusal or "don't know" to these questions, so these cases were treated as missing values.

Independent variables

Three types of Internet-based behaviors were used in this study: (1) online shopping, (2) use of credit card for online purchases, and (3) use of debit cards for online purchases. Specifically, respondents were asked how many times they had purchased something online during the past year. The online shopping was recoded (0 = never, 1 = 1–50 times, 2 = 51–100 times, 3 = 101–150 times, 4 = 151-200 times, 5 = 201 and more times). Payment credit was based on the item asking if respondents had used credit cards to complete online purchases (0 = no, 1 = yes). Payment debit was based on the item asking if respondents had used debit cards to complete online purchases (0 = no, 1 = yes). Gender was a dichotomous variable (0 = women, 1 = men).

Control variables

Several demographic measures were included as control variables. They include age (respondents' ages in years), race (0 = White, 1 = Non-White), marital status (0 = not married, 1 = married), income (1 = <$5,000, 2 = $5,000-$7,499, 3 = $7,500-$9,999, 4 = $10,000-$12,499, 5 = $12,500-$14,999, 6 = $15,000-$17,499, 7 = $17,500-$19,999, 8 = $20,000-$24,999, 9= $25,000-$29,999, 10 = $30,000-$34,999, 11 = $35,000-$39,999, 12 = $40,000-$49,999, 13 = $50,000-$74,999 and 14 = >$75,000), education (1= elementary/middle school; 2 = high school; 3 = college, and 4 = advanced degree),

prior identity theft victimization (0 = no victimization related to the misuse of credit/debit/automated teller machine cards and checking/savings accounts, 1 = had experienced victimization), credit card (0 = no credit card, 1 = at least one credit card), bank account (0 = no bank account, 1 = at least one bank account), and awareness (0 = do not know where to get a free credit report from the National Credit Bureau, 1 = know where to get a free credit report from the National Credit Bureau). These measures were used as control variables for several reasons. First, previous research has shown that age, gender, and household income are important variables in understanding identity theft victimization as well as consumers' use of self-protection measures (Gilbert & Archer, 2012; Reyns, 2013). Second, although research on anti-identity theft measures is nascent, there are several variables that would be critical in understanding capable guardianship against identity theft. For example, prior victimization may prompt consumers to be more cautious about their future victimization, and this connection could also be drawn from criminological research on fear of crime (Lane, Rader, Henson, Fisher, & May, 2014). Those who have been victimized tended to be more afraid of their future victimization (Bachman, Randolph, & Brown, 2011; Choi & Merlo, 2021; Choi, Yim, & Lee, 2020; Ferguson & Mindel, 2007). Similarly, identity theft victimization may also make consumers more vigilant about additional victimization and take self-protective measures. Lastly but equally important, the primary goal of this study was to replicate Ylang's (2020) findings using a more recent dataset. To properly replicate her study, it was critical to include the variables Ylang (2020) used in her statistical model. Her logistical regression models revealed that age, marital status, sex, education, prior misuse, bank account, credit card, and awareness were found to be significantly associated with capable guardianship against identity theft. Table 1 provides the weighted descriptive statistics of the variables used in the current study to present population estimates.

Table 1. Weighted Sample Descriptive Statistics

Variable	Obs	M or %	SD	Minimum	Maximum
Capable guardianship against identity theft (1 = Yes)	93,111,963	87.50	—	0	1
Gender (1 = Men)	124,518,834	47.94	—	0	1
Age	119,083,670	46.91	18.62	16	90
Race (1 = Non-White)	124,567,603	20.36	—	0	1
Marital status (1 = Married)	123,638,376	59.63	—	0	1

Variable	Obs	M or %	SD	Minimum	Maximum
Income	93,171,501	11.28	3.52	1	14
Education	121,776,186	2.39	1.03	1	4
Prior identity theft victimization (1 = Yes)	94,164,571	12.09	—	0	1
Credit card (1 = Yes)	94,337,760	71.88	—	0	1
Bank account (1 = Yes)	94,354,743	88.48	—	0	1
Awareness (1 = Yes)	93,908,093	69.56	—	0	1
Online shopping	53,729,509	1.18	0.62	1	5
Payment credit (1 = Yes)	55,323,728	71.63	—	0	1
Payment debit (1 = Yes)	55,300,721	45.75	—	0	1

Abbreviation: M = Mean, SD = Standard deviation

Analytic Strategy

The analyses proceeded in three steps. First, a crosstabulation was computed with the Pearson chi-square test to examine whether there was a significant difference in taking protective action between men and women. Second, a series of bivariate analyses were performed to identify patterns of Internet-based behaviors between men and women. Finally, two logistic regression models were estimated to assess the impact of gender on adopting self-protective measures against identity theft and whether the Internet-based behaviors mediated this relationship. NCVS-supplied weights were considered in these analyses.

RESULTS

Table 2 provides the results from the crosstab for capable guardianship by gender. As predicted, there was a significance difference between men and women in taking protective actions against identity theft, χ^2 (1, n = 94,906) = 36.32, $p < 0.001$. More bivariate analyses were followed to see if gender disparity was observed in different Internet-based behaviors. Table 3 indicates that no significant difference was found in online shopping between women (M = 1.180, SD = 0.003) and men (M = 1.184, SD = 0.004; t (55,337) = -0.758, p = 0.448). Men and women did not show any difference in their use of credit cards to make purchases online, χ^2 (1, n = 56,757) = 0.23, p = 0.630 (See Table 4). However, a significant difference in the use of debit card payments to

make purchases online was observed between men and women. Women were more likely to use debit cards to buy things online compared to men, χ^2 (1, n = 56,736) = 67.751, $p < 0.001$ (See Table 5).

Table 2. A crosstab for capable guardianship by gender

		Female	Male	Total
Capable guardianship	No	5,593	5,472	11,065
	% Within gender	11.07	12.33	
	Yes	44,929	38,912	83,841
	% Within gender	88.93	87.67	
Total		50,522	44,384	94,906

Note: There was a significant difference between men and women on whether they engaged in self-protection measures (χ^2 = 36.32, p < 0.001).

Table 3. Independent-samples *t*-test for online shopping by gender

Variable	Female		Male		t value
	M	SD	M	SD	
Online Shopping	1.180	.003	1.184	.004	-0.758

Note: There was no significant difference between men and women on how frequently they do online shopping (t (55,337) = -0.758, p = 0.448).

Table 4. Crosstabs for credit card payment by gender

		Female	Male	Total
Credit card payment	No	8,852	7,316	16,168
	% Within gender	28.57	28.39	
	Yes	22,132	18,457	40,598
	% Within gender	71.43	71.61	
Total		30,984	25,773	56,757

Note: There was no significant difference between men and women on whether they use credit cards to make purchases online (χ^2 = 0.23, p = 0.630).

Table 5. Crosstabs for debit card payment by gender

		Female	Male	Total
Debit card payment	No	16,410	14,544	30,954
	% Within gender	52.99	56.44	
	Yes	14,559	11,223	40,598
	% Within gender	47.01	43.56	
Total		30,969	27,767	56,736

Note: There was a significant difference between men and women on whether they use debit cards to make purchases online (χ^2 = 67.751, $p < 0.001$).

Model 1 in Table 6 displays the results from the logistic regression model that includes all the variables but internet-based behaviors. The model was statistically significant, χ^2 (10, 74,599) = 8618.40; $p < 0.001$. The model accounted for about 30.51% of the variance in taking self-protection measures against identity theft. As predicted, men were less likely to adopt self-protective measures compared to women (Odds Ratio = 0.848, $p < 0.001$). Older individuals were more prepared for potential identity theft (Odds Ratio = 1.002, $p < 0.05$). Non-Whites were less likely to engage in self-protective measures compared to Whites (Odds Ratio = 0.748, $p < 0.001$). Higher income was associated with higher levels of capable guardianship (Odds Ratio = 1.024, $p < 0.001$), and education level was positively and significantly related to guardianship (Odds Ratio = 1.297, $p < 0.001$). Prior victimization was one of the most important factors that influenced the adoption of self-protective measures, increasing individuals' levels of guardianship (Odds Ratio = 4.122, $p < 0.001$). Respondents who had the previous victimization experience were 4.1 times as likely to take self-protective measures compared to those without prior victimization experience. Having a credit card and bank account was significantly and positively associated with guardianship (Odds Ratios = 1.297 and 5.955, respectively, $p < 0.001$). Awareness was related to the increased exercise of capable guardianship against identity theft (Odds Ratio = 3.014, $p < 0.001$).

Three variables were added to Model 1 in Model 2 in Table 6. All of the variables retained their statistical significance except for gender. Older individuals were more prepared for potential identity theft (Odds Ratio = 1.026, $p < 0.001$). Non-Whites were less likely to engage in self-protective measures compared to Whites (Odds Ratio = 0.697, $p < 0.001$). Higher income was associated with higher levels of capable guardianship (Odds Ratio = 1.033, $p < 0.001$), and education level was positively and significantly related to guardianship (Odds Ratio = 1.297, $p < 0.001$). Prior victimization was positively and significantly associated with individuals' levels of guardianship (Odds Ratio = 2.789, $p < 0.001$). Having a credit card and bank account was significantly and positively associated with guardianship (Odds Ratios = 2.789 and 4.751, respectively, $p < 0.001$). Awareness was related to the increased exercise of capable guardianship against identity theft (Odds Ratio = 2.731, $p < 0.001$).

Once the Internet behaviors were considered, the statistically significant relationship between gender and capable guardianship disappeared, indicating the mediating role of Internet-based behaviors. Marital status became statistically significant (Odds Ratio = 0.869, $p < 0.05$). Online shopping and the use of debit cards to pay online were statistically significant in predicting capable guardianship (Odds

Ratios = 1.573 and 1.607, respectively, $p < 0.001$).

Table 6. Logistic regression predicting capable guardianship

Variable	Model 1		Model 2	
	Odds Ratio	SE	Odds Ratio	SE
Gender (1 = Men)	0.848***	0.028	0.930	0.062
Age	1.002*	0.001	1.026***	0.003
Race (1 = Non-White)	0.748***	0.029	0.697***	0.054
Marital status (1 = Married)	0.963	0.034	0.869*	0.062
Income	1.024***	0.005	1.033***	0.010
Education	1.297***	0.023	1.297***	0.045
Prior identity theft victimization (1 = Yes)	4.122***	0.363	2.582***	0.362
Credit card (1 = Yes)	3.290***	0.128	2.789***	0.270
Bank account (1 = Yes)	5.955***	0.218	4.751***	0.399
Awareness (1 = Yes)	3.014***	0.101	2.731***	0.189
Online shopping	—	—	1.573***	0.203
Payment credit (1 = Yes)	—	—	0.952	0.090
Payment debit (1 = Yes)	—	—	1.607***	0.127
N		74,599		45,785
Pseudo R^2		0.305		0.219

Note. SE = standard error
*$p < .05$; ***$p < .001$ (two-tailed tests).

DISCUSSION

Only a limited amount of research has been conducted to identify the factors associated with capable guardianship against identity theft. However, capable guardianship is an important element that can substantially reduce the increasing number of identity theft victims. The current study was intended to replicate Ylang's (2020) findings using a more recent dataset and investigate the mechanisms that may account for the gender disparity in taking protective measures against identity theft. Using data from a large sample of US residents, the study revealed three major findings.

First, a significant difference in capable guardianship between men and women was observed. Men were less likely to take precautions to prevent identity theft victimization. This pattern was consistent with the findings from Ylang's (2020) study. Internet-based behaviors were identified as a potential mechanism that can help unpack the relationship between gender and precautionary measures.

Second, three different types of Internet-based behaviors were examined, but only one variable, the use of debit cards to make purchases online, was significantly different

between men and women. Using a debit card instead of a credit card may reflect individuals' levels of self-control because individuals may be aware of the negative outcomes of credit cards misused by identity thieves and consider this possibility in their decision-making (Gottfredson & Hirschi, 1990; Holtfreter, Reisig, & Pratt, 2008; Reyns, Fisher, Bossler, & Holt, 2019; Turanovic & Pratt, 2014). However, the use of debit cards may represent individuals' sensitivity to potential risks of identity theft victimization. Women may be more sensitive to the danger of identity theft compared to men. Previous research has shown that women may perceive higher levels of risk related to crime and express higher levels of fear of crime, whether it be a street crime or cybercrime (Choi et al., 2021; Roberts et al., 2013; Yu, 2014).

Third, the relationship between gender and self-protective measures disappeared once the Internet-based behaviors were entered into the logistic regression model. This may imply that Internet-based behaviors mediated the relationship between gender and capable guardianship. Specifically, online shopping was positively and significantly associated with taking self-protective measures against identity theft, and the use of debit cards predicted higher levels of capable guardianship. If additional research supports the current findings, policymakers should consider gender an important component in designing programs to change Internet-based behaviors. For example, programs to encourage the use of debit cards to make purchases online can be more geared toward men compared to women.

The results from the current study largely support Ylang's (2020) findings, showing that some demographic factors are critical in understanding the decisions to take precautionary actions by individuals. Routine activities theory suggests that crime can be prevented even when one of the three conditions (i.e., motivated offenders, suitable targets, and capable guardianship) is effectively managed (Cohen & Felson, 1979; Felson & Eckert, 2019). Nonetheless, most studies regarding identity theft have been focused on either the factors associated with suitable targets or those related to motivated offenders (Bureau of Justice Statistics, 2020; Holtfreter et al., 2015; Irvin-Erickson & Ricks, 2019; Marcum et al., 2015; Navarro & Higgins, 2017; Reyns, 2013). Additionally, it has not been adequately studied why men and women show different patterns regarding the use of self-protective measures against identity theft. The present study suggests that there may be different mechanisms to account for this gender disparity in identity theft self-prevention, with examples being self-control or risk sensitivity.

Limitations

Despite its contributions to the literature, there are several noteworthy limitations of this study. First, key variables that would have been critical in understanding capable guardianship were not included in our statistical models because we used secondary data from NCVS. Identity theft researchers can create and administer surveys that capture major theoretical variables, such as self-control and perceived risk of identity theft victimization (Brands & van Wilsem, 2019; Roberts et al., 2013). While the findings from our study helped unpack the relationship between gender and engagement in self-protection measures, specific cognitive processes involved in Internet-based behaviors could not be investigated in our study. Data that can capture respondents' thoughts and feelings can clarify these psychological processes behind different internet-based behaviors. Second, the current study has focused on capable guardianship exercised by potential victims. However, previous research has shown that online guardianship is not solely dependent on potential victims but on people around them (Doty, Gower, Sieving, Plowman, & McMorris, 2018; Khurana, Bleakley, Jordan, & Romer, 2015). For example, significant others can monitor potential victims' online activities and intervene in their use of online devices. Thus, future research can explore the factors related to capable guardianship not only adopted by potential victims but also by their significant others around them. Finally, it is important to acknowledge that the data we used were cross-sectional, making it hard to conclude the causal relationships between some key variables. For example, it is unclear whether Internet-based behaviors considered mediators in this study precede the adoption of self-protection measures. More research should be conducted with longitudinal or experimental data to ensure the internal validity of the relationship explored here.

CONCLUSION

The current study showed that taking personal guardianship against identity theft is not a random phenomenon. There were some significant gender differences in online behaviors, including the use of debit cards to purchase online and taking self-protection measures. The specific cognitive or psychological mechanisms regarding how gender is related to capable guardianship remain unclear, but some Internet-based behaviors may be indirect measures that capture different predispositions, such as self-control and perceived risk. Our analyses using Internet-based behavioral measures suggest a

mediating mechanism between gender and capable guardianship. However, it could not specify what types of affection (e.g., trust in online financial transactions), cognition (e.g., the likelihood of identity theft risk), or disposition (e.g., risk aversiveness) underlies the use of debit cards to make purchases. Identifying these underlying mechanisms would be helpful in developing policies and programs to improve capable guardianship, and this study can be a steppingstone for this future avenue.

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