



Not naive, just gullible: psycho-cognitive vulnerability and fraud victimization in Italy

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ABSTRACT

Fraud represents a growing and complex threat in contemporary societies, with consequences that extend beyond economic losses. Despite increasing international evidence, limited research has examined the psychological and cognitive factors associated with fraud victimization in the Italian context, particularly in relation to online scams. This study examines individual differences and fraud experiences among 600 Italian adults through an online survey assessing sociodemographic characteristics, fraud experiences, personality traits, gullibility, financial literacy, and financial self-efficacy. Results revealed that more than half of the sample ($n = 416$) reported exposure to scam attempts, most of which occurred through remote channels (either exclusively online or in combination with offline channels). A smaller subset ($n = 115$) reported actual fraud victimization. A binomial logistic regression was conducted to identify individual factors associated with fraud victimization among exposed individuals. Gullibility emerged as the only statistically significant predictor, indicating that higher gullibility was associated with a greater likelihood of victimization, whereas sociodemographic characteristics, personality traits, financial literacy, and financial self-efficacy were not significantly associated with victimization. These findings highlight that fraud prevention strategies may benefit from considering psycho-cognitive vulnerability factors alongside traditional financial and digital literacy initiatives.

1. Introduction

Fraud and scams represent an increasingly pervasive and rapidly evolving phenomenon in contemporary societies (INTERPOL, 2026). Contrary to the common belief that fraud primarily affects only particularly vulnerable or careless individuals, the literature suggests that fraud victimization is shaped by a complex interaction between type of deception, individual factors, situational elements, and the communication channel (online vs offline) through which fraud is carried out (Dadà et al., 2025; Norris et al., 2019; Williams et al., 2017). The scale of this phenomenon has grown dramatically in recent years, driven largely by the rapid digitalization of fraud. Recent evidence highlights the predominance of online channels in facilitating fraudulent activity (Houtti et al., 2024). Most fraud incidents and approximately three-quarters of attempted scams occur exclusively via digital

platforms, such as social media, email, and messaging applications (Junger et al., 2023). Similar dynamics are observed in Italy: the 2024 Postal Police report documented a 15% increase in online fraud cases compared to the previous year, with financial losses rising by 32% from €137 million to over €181 million (Italian Postal Police, 2025). Recent developments in generative artificial intelligence, including deepfakes, and highly personalized scam content, have further increased the sophistication, credibility, and persuasive power of cyber-enabled fraud (Treleaven et al., 2023). Contemporary scams therefore represent not only technological threats but also sophisticated forms of socio-cognitive manipulation targeting trust, judgment, decision-making processes, and emotional responses.

Alongside its growing prevalence, fraud carries substantial psychological consequences (Modic & Anderson, 2015). Beyond economic losses, victims often suffer stress, anxiety, depression, and social

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isolation, with severe cases even culminating in suicidal ideation (Balcombe, 2025; Skidmore et al., 2026). At a broader level, fraud undermines not only individual well-being but also interpersonal trust and digital resilience, thereby eroding confidence in institutions and financial systems (Brenner et al., 2020; Rey-Ares et al., 2024). Notably, the European Commission (2020) reports that most victims perceive emotional harm as more severe than financial loss, further supporting evidence that the consequences of fraud extend far beyond financial damage alone (Alashwali et al., 2024; Brenner et al., 2020; Parti & Tahir, 2023; Whitty, 2020).

Given its growing scale and its severe consequences, understanding the individual characteristics that differentiate those who ultimately become victims after exposure from those who do not has become a pressing research priority, with direct implications for effective prevention and intervention strategies. This distinction is particularly important because factors associated with exposure to fraud may differ from those associated with victimization once exposure has occurred (Fan & Yu, 2022; Koning et al., 2024; Yaskewich, 2026; Yu et al., 2023). However, advancing this understanding is complicated by a fundamental challenge: the widespread underreporting of fraud (Houtti et al., 2024). Barriers such as uncertainty about reporting procedures and the stigma of shame significantly limit the authorities' ability to assess the true extent of the phenomenon (Fonseca et al., 2022; Kemp, 2022), meaning that official statistics inevitably underestimate the number of victims and constrain the development of evidence-based responses. Moreover, existing research has frequently focused on demographic variables or financial knowledge alone, while psychological research on the individual factors associated with fraud vulnerability remains limited (Hanoch et al., 2026). This limitation is particularly evident in the Italian context, where empirical evidence remains largely confined to institutional reports, and where a recent cross-national study suggests elevated rates of victimization for specific fraud types, such as phishing and credit card fraud (Ruiz, 2026). To address this gap, the present study investigates, through an online survey, the role of personality traits, gullibility, financial literacy, and financial self-efficacy in fraud victimization among Italian adults.

The remainder of this paper is structured as follows. The next section presents the theoretical background, reviewing key concepts and frameworks from the literature on fraud. We then describe the present study and its methodology. This is followed by the analyses and presentation of the results. Finally, we discuss the main findings, highlighting the study's contributions, practical implications, and directions for future research.

2. Conceptualizing fraud risk

2.1. A two-stage framework for fraud

Fraud and scams can be defined as intentional acts of deception aimed at obtaining financial gain through false statements or the strategic omission of relevant information (Parti, 2022). A useful framework for conceptualizing fraud risk and vulnerability is offered by Fan and Yu's (2022) two-stage model, which distinguishes between exposure and victimization. During the exposure phase, fraudsters retain primary strategic control, shaping the interaction, and presenting deceptive cues. Victimization, however, requires an additional step: some degree of active cooperation by the target, such as disclosing personal information or authorizing a financial transaction. This distinction is particularly relevant because victimization does not merely depend on encountering a scam attempt, but also on how individuals cognitively, emotionally, and behaviorally respond to deceptive situations.

Exposure and victimization are driven by overlapping but distinct risk factors (Rey-Ares et al., 2024). For example, certain groups may be less frequently exposed to fraud attempts yet more vulnerable once exposed (Xu et al., 2025). This distinction is particularly evident in the case of older adults, who are often considered at higher risk of fraud

victimization (DeLiema et al., 2024; Shao et al., 2019; Whitty, 2019), although empirical evidence remains mixed (Ross et al., 2014; Sarno et al., 2023). Risk profiles also vary by fraud type: men may be disproportionately affected by investment fraud (Bar Lev et al., 2022; DeLiema et al., 2020; Singh & Misra, 2022), whereas women are more frequently victims of online romance scams (Coluccia et al., 2020; Whitty, 2018). Similarly, younger individuals, due to their higher levels of digital engagement, may face greater exposure to online-specific frauds such as phishing and social network-based scams (Kirwan et al., 2018; Klütsch et al., 2024). The same individual characteristics can have opposing effects across the two stages. Education illustrates this tension well: lower levels of formal education are associated with greater vulnerability to certain fraud types, such as mass marketing scams, whereas higher education appears to reduce engagement with scammers (Wood et al., 2018). More highly educated individuals tend to be more active in digital environments, which may increase their exposure to fraudulent attempts while also making them better equipped to recognize and resist them (Whitty, 2019). Income follows a similar pattern. Greater financial resources may increase exposure to fraud through higher participation in financial markets and access to complex investment products (Titus & Gover, 2001), whereas lower income has been associated with heightened vulnerability to victimization, particularly under conditions of financial strain, although findings on this relationship remain mixed (Whitty, 2019; Williams et al., 2017).

Overall, these findings suggest that fraud vulnerability cannot be understood as a unitary phenomenon. Some factors primarily shape opportunities for exposure, whereas others influence the likelihood that individuals will comply with or fall victim to fraudulent requests once exposed. Although closely related, exposure and victimization therefore represent analytically distinct processes that should be examined separately. This distinction provides the conceptual foundation for the present study, which focuses specifically on fraud victimization. Building on this framework, the following sections introduce decision-making and vulnerability perspectives (Pelawi et al., 2025), including personality traits, gullibility, financial literacy, and financial self-efficacy, to further explain why some exposed individuals become victims whereas others successfully recognize and resist fraudulent attempts.

2.2. Cognitive and affective processes in fraud victimization

The decision-making framework offers a valuable perspective for analyzing individuals' responses to deception. During an attempted fraud, decision-making is often dominated by System 1, which operates quickly and automatically, increasing the likelihood of judgment errors and impulsive actions (Colautti et al., 2022; Kahneman, 2011; Pelawi et al., 2025). Empirical evidence shows that heuristic processing heightens susceptibility to phishing and similar scams, whereas reliance on System 2, which is more analytical and deliberative, promotes skepticism and resistance to deception (Vishwanath et al., 2018; Xu et al., 2025). This perspective aligns with the Elaboration Likelihood Model (ELM), which suggests that fraud messages processed heuristically via the peripheral route are more persuasive than those processed systematically (DeLiema et al., 2023; Petty & Cacioppo, 1986). Under heuristic processing, individuals tend to rely on peripheral cues such as authority, urgency, familiarity, or scarcity rather than critically evaluating message content (Cialdini, 2001; Ferreira et al., 2015; Williams et al., 2017). Fraudulent communications are particularly effective because they frequently exploit emotionally charged states, such as fear, urgency, reward anticipation, or social pressure, which may reduce critical evaluation and increase compliance with deceptive requests. Research demonstrates that emotional states strongly influence how individuals interpret information and respond to persuasive messages in fraudulent communications (Norris & Brookes, 2021). Moreover, experimental studies indicate that high emotional arousal, whether positive or negative, amplifies engagement with deceptive offers, further increasing susceptibility to fraud (Kircanski et al., 2018).

Certain individual factors directly modulate cognitive and emotional responses during fraudulent interactions, amplifying susceptibility in the moment. For instance, impulsivity increases the likelihood of acting quickly without reflection, enhancing the impact of peripheral cues (Du et al., 2025). Similarly, reduced self-control is associated with prioritizing immediate rewards and engaging in riskier decision-making, which can limit careful evaluation of information and attention to warning signals (Holtfreter et al., 2010; Koning et al., 2024; Van Wilsem, 2013). Sensation seeking follows a comparable pattern, with higher levels increasing the likelihood of complying with risky or deceptive offers (Jones et al., 2019; Modic & Lea, 2012).

Although cognitive and affective processes create conditions that heighten fraud vulnerability, individual responses vary. This variability underscores the importance of stable vulnerability factors, which will be explored in the following section.

2.3. Factors of vulnerability to fraud victimization

Vulnerability perspectives in the literature emphasize that stable personal characteristics interact with situational cues to influence who ultimately fall victim (Norris & Brookes, 2021; Pelawi et al., 2025). Accordingly, the present study focuses on a specific set of characteristics (i.e., personality, gullibility, financial literacy, and financial self-efficacy) that have been empirically linked to fraud victimization. Together, these factors capture cognitive, dispositional, and self-regulatory dimensions that may influence how individuals interpret, evaluate, and respond to potentially fraudulent situations. Examining these factors allows us to directly assess how enduring predispositions contribute to fraud risk, providing a clear bridge between theoretical models and measurable constructs.

2.3.1. Personality traits

Research has largely focused on personality traits, particularly the Big Five (Costa & McCrae, 1992), to determine whether they can increase the likelihood of fraud victimization. Conscientiousness has consistently emerged as a protective factor, as conscientious individuals tend to evaluate information more carefully and critically before accepting it (Dadà et al., 2025; Modic & Lea, 2012; Tjondro et al., 2025; van de Weijer & Leukfeldt, 2017). Extraversion shows a more mixed pattern: while some studies link it to greater fraud susceptibility due to higher social engagement and trust in others (López-Aguilar et al., 2025; Sarno et al., 2023), others suggest that the assertive and socially confident dimension of extraversion may help individuals question suspicious requests (Gordon & Russ-Eft, 2024). Similarly, the role of openness to experience remains inconclusive: some studies report increased vulnerability associated with higher openness (Tjondro et al., 2025), whereas others suggest that intellectual curiosity and critical thinking associated with this trait may serve as a buffer against deception (Sarno et al., 2023). Neuroticism has been identified as a risk factor in several studies, as emotional instability and anxiety may increase susceptibility to emotionally manipulative fraud tactics (Gordon & Russ-Eft, 2024; van de Weijer & Leukfeldt, 2017), although some studies find no significant association (Modic & Lea, 2012). Agreeableness, instead, shows a more heterogeneous and context-dependent pattern. On the one hand, high agreeableness may increase vulnerability to phishing attacks by fostering trust, compliance, and the tendency to avoid interpersonal conflict, thereby reducing a critical analysis of suspicious messages (Judges et al., 2017; López-Aguilar et al., 2025). On the other hand, other studies suggest a protective role, arguing that agreeable individuals may also be more cooperative with legitimate authority cues and more responsive to security advice, which can reduce susceptibility to deception (Xing et al., 2020). Overall, the evidence on personality traits and fraud victimization remains heterogeneous, with inconsistent findings across studies, fraud types, and populations, highlighting the need for further empirical investigation.

2.3.2. Gullibility

Gullibility is defined as a relatively stable psycho-cognitive trait reflecting the propensity to accept false premises despite cues signaling untrustworthiness (Bar-Lev et al., 2022; Teunisse et al., 2020). It comprises two interrelated components: a vulnerability to being deceived, referred to as “persuadability”, and a reduced ability to detect or resist deceptive social signals, known as “insensitivity to cues of untrustworthiness” (Barnby et al., 2022; Teunisse et al., 2020). For these reasons, gullibility has emerged as a robust predictor of fraud victimization (Greenspan & Woods, 2016; Laroche et al., 2019; Prabowo, 2024; Shao et al., 2019).

Importantly, gullibility is conceptually distinct from generalized trust. Trust is a dyadic process grounded in the belief that another party will not engage in opportunistic or exploitative behaviors to the detriment of the individual (Hamby et al., 2022). In contrast, gullibility can be understood as a failure of epistemic and social-cognitive monitoring, whereby individuals passively accept others' claims due to a lack of epistemic initiative and insufficient reflective trust in their own judgmental capacities (Zhao & Hu, 2024).

From a cognitive perspective, gullibility may reflect a tendency toward System 1 processing, whereby individuals fail to engage the analytical evaluation that would allow them to recognize deceptive cues (Kelley et al., 2023; Xu et al., 2025), consistent with the ELM (Petty & Cacioppo, 1986). This is further supported by theoretical models proposing that fraud victimization emerges from a dynamic interaction between internal factors, such as personality and cognition, and external factors related to the situation and the fraudster's tactics (Greenspan & Woods, 2016; Laroche et al., 2019). Notably, gullibility has also been linked to susceptibility to misinformation, fake news and conspiracy theories (Forgas, 2019; Mercier, 2017; van Prooijen et al., 2022), suggesting that it reflects a general vulnerability to misleading claims in various deceptive contexts and emphasizing its importance as a key individual-difference variable associated with risk of deception.

2.3.3. Financial literacy and financial self-efficacy

Given that most fraud targets financial decisions, individual financial literacy and financial confidence are assumed to be crucial. Financial literacy, defined as the ability to process economic information and make informed decisions (Sorgente et al., 2025), has been widely studied in relation to fraud vulnerability, with contradictory results. Some studies report a protective role, finding that higher financial literacy is associated with a lower risk of fraud victimization and higher ability to detect fraudulent schemes (Engels et al., 2019; Ibrushi et al., 2026; Isaia et al., 2024; Nicolini & Leonelli, 2021; Petroccione & Graziano, 2026; Sirohi & Misra, 2024). Indeed, brief educational interventions designed to improve financial knowledge have been shown to significantly reduce individuals' susceptibility to fraud (Burke et al., 2022). However, there is conflicting evidence regarding the protective role of financial literacy. Some studies have found no significant association between financial literacy and fraud victimization (Rey-Ares et al., 2024; Ruiz, 2026), while others report a paradoxical positive relationship, whereby higher financial literacy is associated with a higher risk of fraud (Du et al., 2025; Yu et al., 2023).

Moreover, it is important to examine not only what individuals know, but also how they perceive their ability to make financial decisions. Financial self-efficacy refers to the perceived capability to successfully manage financial tasks and make effective decisions (Lown, 2011). It influences behavioral responses to risk by affecting how individuals act upon their knowledge and evaluate potentially deceptive offers, although empirical findings remain mixed (Engels et al., 2019; Rey-Ares et al., 2024). Importantly, financial knowledge and perceived competence do not necessarily translate into adaptive decision-making; when individuals feel overconfident in their own abilities or knowledge, this may itself represent a significant risk factor for fraud victimization, as it can lead them to underestimate risks and lower their guard (DeLiema et al., 2020; Isaia et al., 2024; Nicolini & Leonelli, 2021; Xiao

et al., 2022). Overconfident individuals are more likely to increase their exposure to fraudulent solicitations, thereby increasing the likelihood of becoming victims (DeLiema et al., 2023; Du et al., 2025; Xiao et al., 2022; Yu et al., 2023).

Taken together, these findings highlight that fraud vulnerability is likely to emerge from the interaction between individual characteristics and deceptive situational contexts. Building on this theoretical background, the present study empirically investigates whether personality traits, gullibility, financial literacy, and financial self-efficacy differentiate individuals who, once exposed, ultimately become victims from those who do not.

3. The present study

Building on previous research, this study adopts a multidimensional framework that distinguishes between exposure to fraud and victimization, conceptualizing them as related but analytically distinct processes shaped by different individual characteristics, contextual factors and types of fraud (Dadà et al., 2025; Williams et al., 2017). Although a growing body of international research has examined scam exposure and victimization (DeLiema et al., 2023; Rey-Ares et al., 2024), empirical evidence focusing on the Italian context remains limited. In addition, few studies have examined these factors simultaneously within a single analytical framework (Zhang & Ye, 2022). To fill this gap, an online survey was conducted to explore individual characteristics associated with fraud victimization among Italian adults.

In line with the existing literature, the main objective of this study is to examine whether individuals exposed to scams who were ultimately defrauded differ from those who were exposed but not victimized, in terms of sociodemographic characteristics, personality traits, gullibility, financial literacy, and financial self-efficacy. A secondary objective, which appears particularly relevant given the limited number of studies on this issue, especially in the Italian context, is to provide a descriptive characterization of fraud experiences among victimized individuals.

Based on previous findings, we hypothesize that (H1) victims will report higher levels of gullibility compared to exposed but non-victimized individuals (Greenspan & Woods, 2016; Laroche et al., 2019; Prabowo, 2024; Shao et al., 2019). Given the mixed evidence on the relationship between financial literacy and fraud victimization (e.g. Isaia et al., 2024; Nicolini & Leonelli, 2021; Ruiz, 2026; Yu et al., 2023) we aim to explore the potential role of financial literacy in distinguishing victims from non-victims (H2). Finally, given the mixed and sometimes inconsistent evidence regarding personality traits and financial self-efficacy, no directional hypotheses were formulated for these variables, and their potential role in fraud victimization was explored in an exploratory manner.

4. Methods

4.1. Population and sample

Participants were recruited through the Prolific platform. Inclusion criteria were: being at least 18 years of age, residing in Italy, having provided informed consent online, having completed the questionnaire in full (100% completion rate), and having met the minimum response time threshold established by Prolific to ensure data quality. The a priori power analysis performed with G*Power (Faul et al., 2007) indicated a minimum sample size of 178 participants to detect a medium effect size ($f^2 = .15$) with a statistical power of .95 and $\alpha = .05$ for a multiple regression analysis with 11 predictor variables. The study sample was composed of 600 Italian adults, aged 18–85 years ($M = 34.5$, $SD = 11.6$). Of these, 69.33% ($n = 416$) of participants reported having been exposed to at least one scam attempt. Within the exposed subsample, 72.36% ($n = 301$) of individuals reported no financial loss (non-victims), whereas 27.60% ($n = 115$) participants reported having fallen victim to a scam. The present analyses were conducted on the exposed subsample

($n = 416$), as the study focuses specifically on individual differences between those who, despite being exposed to fraud, were not victimized and those who ultimately became victims. The final sample is balanced in terms of gender (47.6% women and 52.4% men) with a mean age of 34.65 ($SD = 11.65$) and an average of 17.21 years of education ($SD = 2.95$). Among victimized individuals, the majority of scams occurred remotely (75.6%). Moreover, 65.2% of the victims ($n = 75$) did not report the fraud to the authorities. Detailed information on fraud types, channel of victimization, time since the fraud, reporting behavior, and social support sought among victims is provided in Table 1.

4.2. Procedure

The present study was approved by the Ethics Committee of the Università Cattolica del Sacro Cuore (approval code 164/24), and all procedures were conducted in accordance with the ethical standards of the institutional and national research committee and with the 1964 Declaration of Helsinki and its later amendments. Participants were invited to take part in the study via the Prolific platform. The online survey was administered via Qualtrics. Prior to participation, all respondents provided informed consent. Responses were collected anonymously. To ensure a balanced sample across socio-demographic characteristics, quotas were applied based on age, gender, and geographic location within Italy. Participants received monetary compensation for their participation.

4.3. Measures

4.3.1. Sociodemographic characteristics

Sociodemographic characteristics were assessed through self-report items including gender, age, and educational level.

4.3.2. Fraud experience

Fraud experience was assessed through a set of questions measuring exposure to deception, victimization status, and type of scam. Items

Table 1
Fraud victimization experiences among victimized respondents (N = 115).

	Frequencies (n)	%
Fraud category (multiple responses allowed)		
Online shopping, advertising, and auction scams	35	30.4%
Computer-related scams	31	27.0%
Bank, credit card, and online account fraud	20	17.4%
Advance fee fraud	16	13.9%
Health and charity scams	15	13.0%
Employment and job-related scams	14	12.2%
Romance and dating scams	6	5.2%
Small business scams	2	1.7%
Lottery, prize, or competition scams	2	1.7%
Other	21	18.3%
Channel of Fraud Victimization		
Remotely	74	64.3%
In person	28	24.3%
Both	13	11.3%
Time since Fraud		
Less than one year ago	27	23.5%
More than one year ago	36	31.3%
More than five years ago	48	41.7%
Other	1	.9%
I do not remember	3	2.6%
Reported Fraud to Authorities		
Yes	40	34.8%
No	75	65.2%
Sought Social Support		
Yes	55	47.8%
No	60	52.2%

Note: Percentages are calculated based on the total number of respondents (N = 115). The total exceeds 100% due to the multiple-choice nature of the question.

assessing scam experiences were adapted from previous research (Teunisse et al., 2020) and supplemented with newly developed items designed to capture participants' personal experiences with fraud and scams. The following definitions were shared with participants: exposure was defined as “a scam attempt in which you were exposed to the risk of losing money, valuables or personal details due to a fraudster's deception, but this did not ultimately occur”, while victimization was defined as “the actual material loss resulting from believing the fraudster's deception, and providing them with money, objects or personal data”. Participants were asked to indicate the channel through which the scam occurred (remote, in-person, or both), whether the incident was reported to authorities or institutions, and the time elapsed since the episode. Respondents could also select one or more types of fraud experienced. Characteristics of fraud reported by victims are presented in Table 1, and full definitions of each fraud category are provided in the Supplementary Materials (S1).

4.3.3. Personality traits

Personality traits were measured using the Italian adaptation of the Big Five Inventory (BFI; John et al., 1991; Italian version: Ubbiali et al., 2013). The BFI consists of 44 items assessing the five core dimensions of personality: Extraversion ($\omega = .900$; e.g., “I see myself as someone who is talkative”), Agreeableness ($\omega = .760$; e.g., “I see myself as someone who is helpful and unselfish with others”), Conscientiousness ($\omega = .904$; e.g., “I see myself as someone who does a thorough job”), Neuroticism ($\omega = .896$; e.g., “I see myself as someone who worries a lot”), and Openness to Experience ($\omega = .873$; e.g., “I see myself as someone who is curious about many different things”). Participants responded on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

4.3.4. Gullibility

Gullibility was assessed using the 12-item bidimensional Gullibility Scale (Teunisse et al., 2020; Italian version: Sciacca et al., 2021), which measures two factors: *persuadability* ($\omega = .876$) and *insensitivity to cues of untrustworthiness* ($\omega = .881$). Participants indicated their agreement with each statement on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). Sample items include “My family thinks I am an easy target for scammers” and “I'm pretty good at working out when someone is trying to fool me”. For analytic purposes, a single composite score ($\omega = .866$) was computed by summing all items to capture overall perceived susceptibility to scams, consistent with the approach adopted by Teunisse et al. (2020).

4.3.5. Financial literacy

Financial literacy was measured using three objective knowledge questions developed by Lusardi and Mitchell (2011), which are widely used to assess individuals' understanding of basic economic and financial concepts: interest rate, inflation, risk diversification. For example, participants were asked: “Suppose you had €100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account?” Responses were coded as correct or incorrect and summed to create an index of financial literacy. These questions have been widely used in studies on fraud victimization (Ruiz, 2026; Yu et al., 2023), including Italian samples (Isaia et al., 2024; Nicolini & Leonelli, 2021).

4.3.6. Financial self-efficacy

Financial self-efficacy was assessed using the Financial Self-Efficacy Scale (Lown, 2011). This measure consists of six items ($\omega = .802$) rated on a 4-point Likert scale ranging from 1 (not at all true) to 4 (very true). Although a formal Italian validation of this scale is not available, the items were translated into Italian following a translation and back-translation procedure (Cruchinho et al., 2024). Sample items include “I lack confidence in my ability to manage my finances”.

The complete questionnaire, in both Italian and English is available in the Supplementary materials (S2)

4.4. Data analysis

Prior to the main analysis, one-way ANOVAs and chi-square tests (used for the categorical variable of gender) were conducted to explore preliminary differences between victimized and non-victimized individuals across the variables of interest. Pearson correlations among all continuous variables were also computed on the exposed subsample ($n = 416$). The analytical strategy then consisted of a generalized linear model. Specifically, after checking for collinearity issues, a binomial logistic regression was performed to identify factors associated with fraud victimization among exposed individuals. Socio-demographic characteristics (i.e., gender, age, and education), gullibility, Big Five personality traits (i.e., extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience), financial literacy, and financial self-efficacy were included in the model as antecedents of fraud victimization. All analyses were conducted using jamovi (The jamovi project, 2022).

5. Results

Preliminary group comparisons and descriptive statistics of the variables included in the model are reported in Table 2. Notably, gullibility showed a significant difference between victimized and non-victimized individuals ($p < .001$). Agreeableness ($p = .048$) and Financial self-efficacy ($p = .009$) also differed significantly between groups, while no significant differences emerged for the remaining variables, including financial literacy ($p = .894$).

Correlations among the variables are reported in Table 3.

The overall Generalized Linear Model was statistically significant, $\chi^2(11) = 37.52, p < .001$, also explaining a moderate amount of variance in the outcome ($R_N^2 = .13$). Specifically, the findings showed that the

Table 2
Characteristics of victimized and non-victimized respondents.

Variable	Total (N = 416)	Victimized (n = 115)	Non- victimized (n = 301)	
Gender				$\chi^2(1) = .148$, $p = .701$
Men	52.4%	50.9%	53%	
Women	47.6%	49.1%	47%	
Age	34.61 (11.72)	34.67 (12.85)	34.58 (11.29)	$F(1, 414) = .042$, $p = .838$
Education (years)	17.21 (2.95)	17.03 (2.96)	17.28 (2.94)	$F(1, 414) = .613$, $p = .434$
Gullibility	28.48 (12.21)	34.04 (14.76)	26.36 (10.34)	$F(1, 414) = 35.730$, $p < .001$
Extraversion	30.25 (9.77)	29.96 (10.42)	30.36 (9.53)	$F(1, 414) = .141$, $p = .708$
Agreeableness	42.11 (7.68)	43.32 (7.34)	41.65 (7.76)	$F(1, 414) = 3.941$, $p = .048$
Conscientiousness	43.32 (9.92)	42.41 (10.29)	43.67 (9.76)	$F(1, 414) = 1.343$, $p = .247$
Neuroticism	32.80 (9.89)	33.84 (9.41)	32.41 (10.05)	$F(1, 414) = 1.763$, $p = .185$
Openness to experience	50.05 (9.79)	49.18 (11.19)	50.38 (9.20)	$F(1, 414) = 1.250$, $p = .264$
Financial literacy	2.58 (.68)	2.59 (.63)	2.58 (.70)	$F(1, 414) = .018$, $p = .894$
Financial self-efficacy	13.11 (3.55)	13.84 (3.79)	12.83 (3.42)	$F(1, 414) = 6.827$, $p = .009$

Table 3

Correlation matrix of key individual-difference variables (N = 416).

	1	2	3	4	5	6	7	8	9
1. Gullibility	—								
2. Extraversion	-.267***	—							
3. Agreeableness	.050	.346***	—						
4. Conscientiousness	-.421***	.402***	.174***	—					
5. Neuroticism	.249***	-.433***	-.232***	-.456***	—				
6. Openness	-.276***	.345***	.219***	.234***	-.138***	—			
7. Financial literacy	-.091	.060	-.026	.095	-.124*	.044	—		
8. Financial self-efficacy	.329***	-.225***	-.025	-.368***	.390***	-.146***	-.210***	—	
9. Age	-.011	.202***	.153**	.308***	-.260***	.076	.038	.007	—
10. Education	.074	.054	.001	.009	.026	-.002	.056	-.039	-.140**

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

only variable that distinguishes victims from non-victims was gullibility ($\beta = -.670$, $p < .001$), while the other determinants were not significantly associated with experiencing scam or not. Specifically, a 1-unit increase in gullibility increases the odds of fraud victimization by 48.8%, confirming H1. Concerning H2, financial literacy did not emerge as a significant factor in the multivariate model ($p = .162$). The results are summarized in Table 4.

Finally, regarding the channel of victimization, a one-way ANOVA revealed no significant differences across groups (remote: $M = 33.3$, $SD = 14.3$; in person: $M = 37.5$, $SD = 16.9$; both: $M = 30.7$, $SD = 11.7$; $F(2, 31.8) = 1.15$, $p = .328$). No significant differences in gullibility also emerged as a function of the time elapsed since the fraud episode (less than one year: $M = 36.8$, $SD = 14.3$; more than one year: $M = 35.8$, $SD = 14.7$; more than five years: $M = 31.6$, $SD = 14.9$; other: $M = 29.8$, $SD = 16.7$; $F(3, 14.0) = .937$, $p = .449$).

6. Discussion

The present study examined individual differences between exposed but not-victimized individuals and victims of different types of fraud among Italian adults, with the ultimate aim of understanding which individual characteristics are associated with fraud victimization. Importantly, the study focused not on exposure to fraud per se, but on the transition from exposure to victimization. Our findings suggest that only gullibility was confirmed as significant in the multivariate model, thus suggesting that it represents the most robust vulnerability factor distinguishing individuals who become victims from those who do not once exposure has occurred. Respondents who had been victims of fraud reported significantly higher levels of gullibility than non-victim respondents, confirming hypothesis H1. This finding extends the results of

previous literature to the Italian context (Shao et al., 2019; Teunisse et al., 2020) and supports gullibility as a central factor in fraud victimization, across different types of fraud, channels and age groups. Several reflections emerge from this result. First, this suggests that victims tend to believe the fraudster, ignoring warning signs, and failing to seek confirmation or engage in critical evaluation. Consistent with previous literature, this goes beyond a mere individual trait, possibly reflecting a dynamic interaction between internal factors, such as personality and cognition, and external factors linked to the situation and the fraudster's tactics (Greenspan & Woods, 2016; Laroche et al., 2019). Second, from a cognitive perspective, gullibility may reflect a failure to detect deceptive cues, consistent with evidence showing that heuristic processing increases susceptibility to fraud while analytical thinking reduces it (Kelley et al., 2023; Xu et al., 2025), in line with ELM (Petty & Cacioppo, 1986). Under this interpretation, victimization may depend less on possession of knowledge and more on the ability to recognize, attend to, and critically evaluate warning signals embedded within deceptive situations. Third, another aspect to consider is that gullibility, as measured in the present study, reflects individuals' self-perceived susceptibility to deception. Accordingly, the observed association may partly reflect individuals' awareness of their own vulnerability to manipulation and deception. However, it remains unclear whether gullibility precedes victimization or results from it. If victimization were to influence self-perceptions, a similar pattern would be expected for other variables (e.g. agreeableness). Moreover, gullibility levels did not differ significantly as a function of time since the fraud episode, providing indirect evidence that gullibility does not represent only a reactive response to victimization. This interpretation is further supported by Teunisse et al. (2020), who demonstrated that higher gullibility scores predicted higher susceptibility to phishing emails in an experimental setting, suggesting that gullibility operates as an antecedent of fraud rather than a consequence of it. Further findings emerged from the correlation matrix, concerning the association between gullibility and other variables relating to individual differences. Gullibility showed significant negative correlations with extraversion, openness to experience and conscientiousness, a trait often associated with low fraud vulnerability (Dadà et al., 2025; Ge et al., 2021; Judges et al., 2017). Interestingly, gullibility was also positively correlated with financial self-efficacy, a result that warrants further investigations. These associations suggest that vulnerability to deception may form part of a broader personality profile. Furthermore, gullibility levels were consistent across different channels, supporting the interpretation that gullibility represent a stable vulnerability factor across context.

Turning to financial literacy (H2), no statistically significant differences emerged between the two groups, consistent with the mixed evidence available in literature (Du et al., 2025; Engels et al., 2019; Rey-Ares et al., 2024). While previous research has often identified financial literacy as a protective factor against fraud victimization (Ibrushi et al., 2026; Isaia et al., 2024; Sirohi & Misra, 2024), our results are more consistent with evidence suggesting that traditional financial literacy may not be sufficient to protect individuals against fraud in line

Table 4

Results of the binomial logistic regression model for fraud victimization among exposed individuals.

Variable	VIF	β	SE	Z	p	Odds ratio
Intercept		1.060	.170	6.229	< .001	2.887
Gender ¹	1.190	-.003	.254	-.012	.991	.997
Age	1.256	.096	.130	.737	.461	1.100
Education (years)	1.074	.188	.123	1.524	.127	1.206
Gullibility	1.429	-.670	.142	-4.703	< .001	.512
Extraversion	1.592	-.110	.148	-.739	.460	.896
Agreeableness	1.215	-.179	.135	-1.323	.186	.836
Conscientiousness	1.750	-.221	.157	-1.407	.159	.802
Neuroticism	1.686	-.107	.155	-.691	.490	.898
Openness to experience	1.203	-.012	.130	-.091	.928	.988
Financial literacy	1.106	-.185	.133	-1.399	.162	.831
Financial self-efficacy	1.350	-.150	.138	-1.091	.275	.861

Note. VIF = Variance Inflation Factor; SE = Standard Error; Standardized estimates are reported. Victimized individuals are the reference group. ¹Men are the reference group.

with Ruiz (2026), who found no significant protective effect of financial literacy across different fraud (i.e., Ponzi schemes, phishing attacks and unauthorized credit card use) in a large European sample including Italy. A possible explanation for this pattern is offered by Ahmad (2025), who found that bias-induced gullibility fully mediates the relationship between financial literacy and investment scam victimization, suggesting that psycho-cognitive vulnerability may explain why literacy alone does not protect individuals from fraud.

Financial self-efficacy also did not emerge as a significant factor in the multivariate model. Given the exploratory nature of this variable and the scarcity of research on the subject, it is possible that its relationship with fraud victimization is more complex and warrants further investigation. Similarly, none of the Big Five dimensions was significantly associated with victimization. Although previous research has suggested links between specific traits and fraud susceptibility (Dadà et al., 2025; López-Aguilar et al., 2025), these effects may operate indirectly, for instance through their influence on gullibility, or may vary depending on the specific type of fraud considered, rather than constituting general and direct vulnerability factors. Finally, no significant associations emerged for sociodemographic characteristics, consistent with recent research suggesting that there are no specific vulnerability profiles based exclusively on demographic factors (Hanoch & Wood, 2021; Koning et al., 2024). This indicates that anyone can potentially become a victim of fraud, regardless of their age, gender, or educational background (Hanoch et al., 2026).

Beyond the individual antecedents examined, this study also provides a descriptive picture of fraud experiences in the Italian context. As detailed in Table 1, the two most prevalent forms of fraud victimization among respondents were online shopping, advertising, and auction scams (30.4%), followed closely by computer-related scams (27.0%), indicating that the vast majority of fraudulent activities reported by the sample take place within the digital ecosystem. This is consistent with the broader trend of fraud digitalization documented internationally (Houtti et al., 2024). In particular, sophisticated technologies such as generative AI and deepfakes (Treleaven et al., 2023) may further amplify vulnerability to fraud by reducing the availability of non-verbal and contextual cues, making it even harder for individuals to detect signals of untrustworthiness. Moreover, 65.2% of victims did not report the fraud to the authorities, consistent with the widespread under-reporting documented in the international literature (Fonseca et al., 2022; Houtti et al., 2024; Kemp, 2022). This underreporting poses a significant challenge for research, as it makes it difficult to ascertain the true extent of fraud victimization, as well as to reach and support victims effectively. Overall, these findings offer a preliminary empirical picture of fraud in Italy, a context where available evidence remains largely confined to institutional reports.

6.1. Practical implications

This work provides a preliminary evidence base for fraud prevention strategies in the Italian context. The results suggest that prevention approaches based largely on the dissemination of information and financial literacy may not be sufficient when considered in isolation. Beyond knowledge acquisition, interventions should also address psychological vulnerability factors, and in particular gullibility. In this regard, fraud should be understood not only as a consequence of insufficient knowledge, but also as a strategic process in which offenders actively study and design persuasive environments that exploit cognitive shortcuts, trust, emotional reactions, and individual vulnerabilities, what Prabowo (2024) terms “the gullibility production”. From this perspective, prevention efforts should not only aim to inform potential victims, but also to strengthen their awareness and ability to recognize and resist these manipulation strategies, effectively countering the techniques developed by criminals. Furthermore, given that gullibility emerged as a significant factor across types of fraud and channels in our sample, interventions targeting perceived gullibility may contribute to

the development of prevention strategies in the domain of misinformation and fake news.

6.2. Limitations and future directions

While the study provides new evidence on fraud victimization in Italy, several limitations should be considered when interpreting the findings. First, the cross-sectional design limits causal inference, leaving the direction of the relationship between gullibility and fraud victimization unresolved. It is therefore unclear whether gullibility increases vulnerability to fraud or whether victimization shapes individuals' self-perceptions of gullibility. Longitudinal studies are needed to address this important issue. Second, although overall sample demonstrated adequate statistical power, the imbalance between victimized and non-victimized respondents should be considered, as it may have affected the stability and robustness of the multivariate model. Third, self-report measures may be subject to recall and social desirability bias, which could have influenced the observed associations. Future research could complement survey data with qualitative approaches to better capture the psychological mechanisms underlying victimization. A further limitation concerns the measurement of financial literacy. The three-item scale by Lusardi and Mitchell (2011), while widely used, captures only basic financial knowledge and may not fully reflect the specific competencies needed to recognize and resist fraud, particularly in digital contexts. Future research should consider more comprehensive measures that also capture fraud-specific and digital dimensions of financial literacy. Finally, the use of an online panel recruited in Italy may limit generalizability due to potential self-selection effects, as participants who engage in surveys on fraud may differ systematically from the broader population. Cross-national studies are also needed to assess the generalizability of these patterns to other cultural contexts.

7. Conclusion

Given the increasing severity and prevalence of fraud, alongside ongoing digitalization and its psychological consequences for victims, it is essential to develop prevention strategies based on empirical data. This study provides first evidence on individual characteristics of fraud victimization in Italy, highlighting self-reported gullibility as a key vulnerability factor in fraud victimization. The results also call into question the protective role of financial literacy in reducing susceptibility to fraud and require the adoption of prevention strategies that integrate different individual dimensions of vulnerability.

CRedit authorship contribution statement

Chiara Barbara Dadà: Writing – review & editing, Writing – original draft, Investigation, Conceptualization. **Laura Colautti:** Writing – review & editing, Methodology, Investigation, Conceptualization. **Matteo Robba:** Writing – review & editing, Methodology, Formal analysis, Data curation. **Alessia Rosi:** Writing – review & editing, Supervision, Conceptualization. **Elena Cavallini:** Writing – review & editing, Supervision, Conceptualization. **Paola Iannello:** Writing – review & editing, Supervision, Methodology, Investigation, Conceptualization.

Ethics declaration

Written informed consent to take part in the study and to publish the article has been obtained from all participants or their legal representatives. The privacy rights of participants have been observed.

This study was performed in compliance with relevant laws, regulatory frameworks and guidelines where the research took place. This study was approved by the Università Cattolica del Sacro Cuore, Milan. (Approval No. 164/24)

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Chiara Barbara Dadà reports financial support was provided by UnipolSai Assicurazioni SpA & Banca d'Italia. Laura Colautti reports financial support was provided by UnipolSai Assicurazioni SpA & Banca d'Italia. Paola Iannello reports financial support was provided by UnipolSai Assicurazioni SpA & Banca d'Italia. Given their role as Guest Editors of this special issue, Chiara Barbara Dadà, Laura Colautti, Paola Iannello and Elena Cavallini had no involvement in the peer review of this article and had no access to information regarding its peer review. Full responsibility for the editorial process for this article was delegated to another journal editor. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.chb.2026.109203>.

Data availability

Data will be made available on request.

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