Does personalized advertising have their best interests at heart? A quantitative study of narcissists' SNS use among Generation Z consumers

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ABSTRACT

Artificial intelligence (AI)-enabled technology has generated a new dynamic that empowers the advertising business and social networking environment. In terms of convenience, consumers benefit from the generation of customized ad content through their activities on social network sites (SNS). However, concerns about data privacy and impaired well-being remain, notably in relation to Generation Z consumers, who are considered tech-savvy, narcissistically-oriented, and vulnerable in their SNS usage. Drawing on cognitive dissonance theory, we show how a dilemma of convenience vs. privacy drives their technology dissonance and their dependence on SNS. Our empirical study in the US demonstrates the trade-off between convenience and privacy that results from the customizability of technology, the opposite functions of these facets in technology dissonance, and the negative impact on SNS dependence. When the key role of the ego in the dissonance in Generation Z's SNS behavior is recognized, vulnerable narcissism is found to show nuances of psychological dissonance induced by privacy concerns. Our findings enhance the discussion on the customizability of AI-enabled technology by indicating how advertisers can improve targeted marketing and ensure the well-being of Generation Z consumers.

1. Introduction

According to Statista (2022), approximately 59 % of the global population are social media users, and Generation Z accounts for over 10 % of users in the United States. Extensive usage of social network sites (SNS) has allowed individuals to share their views and daily life activities rapidly, and in real-time, with the entire network. Unlike anonymous online platforms, many SNS servers require disclosure of personal information (Eftekhar et al., 2014), generating even more data outputs, which are then exploited, mostly covertly, for advertisement embedment enabled by AI algorithms. Huang and Rust (2021) claimed that the most common AI applications in marketing are the various ad recommendations that provide customers with personalized content at the right stage of their online shopping journey (Agrawal et al., 2021). This content affords great convenience, which fulfills the needs of individuals (e.g., Cho & Sundar, 2022), such as retrieving desired information (Dellermann et al., 2021) and reducing information search costs (Huang & Rust, 2021). An example would be a local bridal shop sending ads to

women whose relationship status on Facebook is "engaged." However, this convenience opens the door for the most inevitable trade-off cost of technology: potential loss of privacy (Liu & Mattila, 2017). The ForgeRock 2021 Breach Report revealed that attacks that aim to obtain consumers' registration details (e.g., usernames or passwords) increased by 450 % from 2019 to 2020, and consumers have become more skeptical and anxious about their private data being collected and shared. In fact, research indicates that privacy concerns could lead to serious behavioral outcomes regarding SNS engagement, such as discontinued usage of SNS (e.g., Cao & Sun, 2018; Cao et al., 2021), unwillingness to engage with SNS activities (e.g., Kim et al., 2019; Maier et al., 2015), and resistance towards the firms involved (e.g., Oghazi et al., 2020; Olsen & Pracejus, 2020). However, research findings are inconsistent in respect of the negative influence of privacy concerns on consumers' online engagement (e.g., Ameen et al., 2022). For example, Parasuraman et al. (2005) found that consumers continue to disclose personal data through online social activities at the same time as their concern over data privacy increases. One of the reasons suggested for these

discrepant results is a lack of clarity about consumers' actual psychological states that are shaped by the trade-offs between privacy concerns and the technological convenience of SNS encounters. For example, in research to date, the benefits consumers enjoy from data disclosure have been largely neglected (Beke et al., 2022).

The psychological consequences of increasing privacy concerns have been studied in the fields of information systems, public policy, and, more recently, in the marketing literature, where it falls into the following categories:

(1) anxiety towards technology because of unknown consequences or potential harm (e.g., Gelbrich & Sattler, 2014; Pierce, 2009; Troisi et al., 2022);
(2) fear of losing control of personal information (e.g., Oghazi et al., 2020; Olsen & Pracejus, 2020);
(3) risk of financial loss (e.g., Hille et al., 2015) and social embarrassment (e.g., Acquisti et al., 2015).

However, a comprehensive concept that defines consumers' states of mind when facing both the convenience and the concerns that stem from technological encounters has been lacking. Originating from the theory of cognitive dissonance, the term "dissonance" has notably been used to construct the conflicted psychological state caused by an unexpected (negative) behavioral outcome and a presumed value offered by goods or a service. The current study introduces a synthesized conceptualization of technology dissonance with reference to consumers' overall psychological state under AI-enabled customizability. How such a state is shaped by both the benefits and the tensions enabled by this AI technological feature, and how it affects SNS usage, are the main questions to be addressed.

The phenomenon under discussion is most prominent among Generation Z, defined as individuals born between 1995 and 2009, which is the youngest and largest consumer group for the period from 2017 to 2030 (Euromonitor, 2018). Members of this generation are known to be innovative, pragmatic, narcissism-oriented, and averse to negative events; they tend to have a strong focus on praise and a high level of social approval (Priporas et al., 2017). Most importantly, they are known as technology-savvy digital natives, the first generation to be born into an entirely digital world (Bernstein, 2015), and thus they have grown up developing relationships with digital technologies extensively. From a marketing perspective, their great dependence on SNS plays a significant role in generating sales and revenue (Statista, 2021), especially under the economic disruption of the Covid-19 pandemic.

Despite the huge market potential of this group, scholars and policymakers should pay attention both to the vulnerability brought about by their uniqueness (e.g., the age group to which they belong) and to the need to care for their well-being. Given the convenience vs. privacy dilemma, this segmentation is recognized as convenience-seeking (Gabrielova & Buchko, 2021) and as particularly sensitive to privacy (i.e., what personal data is collected by which entity and for what purpose). In addition, its ego-oriented narcissistic tendencies are demonstrated and reinforced with the explosion of SNS use (e.g., posting selfies) among this generation (Statista, 2021). Therefore, the convenience brought about by customized technology, the potential privacy risks, and the desire for self-presentation on SNS could easily lead to psychological conflict in the form of dissonance, which is generally associated with negative psychological states such as anxiety, guilt, or regret. This psychological discomfort can cause withdrawal behavior, especially among individuals with emotional instability (Wilfong, 2006), when an individual encounters inconsistency between technology performance and their internal norms (Vaghefi & Qahri-Saremi, 2017), or when the dark side of the technology makes users doubt whether they should be using the technology at all (Connolly and Zeelenberg, 2002). Accordingly, our study aims to address two questions: how Generation Z leverages SNS usage when customized ads are introduced, and how they respond to privacy concerns and convenience orientation for well-being purposes while holding a narcissistic personality trait.

In addressing these aims, we contribute to the literature in three ways. First, this study expands the understanding of the relationship between AI technology and well-being in the advertising context by providing a clearer picture of the impact of customizability on convenience/privacy tensions and technology dissonance among Generation Z. Second, it is the first study to provide theoretical insights into the antecedents and consequences of cognitive dissonance in AI-driven new technology applications. Third, the study advances our understanding of how concerns about convenience vs. privacy, and subsequent dissonance with SNS usage, can become either salient or weakened in terms of different narcissistic orientations. Thus, it provides empirical evidence concerning the need for both Generation Z users and policymakers to moderate their behavior and avoid adverse effects from the negative personal consequences of overuse of SNS, as well as recommendations for advertisers seeking to improve targeted marketing policies and to take care of the well-being of Generation Z users.

2. Theoretical background and hypothesis development

2.1. Technology customizability in the advertising context

In the advertising context, customizability appears as an AI algorithm-based technology that allows individuals or information systems to tailor their information environment, and enables the use of unwanted resources automatically and systematically while generating the preferred ad recommendations efficiently and effectively (Dylko, 2016). Such customized advertising can be user-driven, where consumers take control of their online environment based on their predispositions (Bozdag, 2013), or system-driven, where a user's information environment is created by soft codes (Beam, 2014; Sundar & Marathe, 2010). Traditional online customized advertising has been acknowledged as an important phenomenon in consumer and marketing research (e.g., Awad & Krishnan, 2006; Xu et al., 2011), not least in relation to the various issues associated with manufacturers and retailers. The quality may depend on machine customization levels, processes, and methodologies (Da Silveira et al., 2001). The rapid development of machine learning and AI has enriched the traditional connotations of "customization" and made it the most prominent feature of the online advertising environment, serving the purposes of predicting consumer demand, enhancing engagement, and encouraging sales (Olsen & Pracejus, 2020; Zhang & Sundar, 2019). However, there is a lack of research on the relationship between the customizability of technology and consumers' psychological responses in the digital era.

The core of technology customizability lies in the abundant acquisition, storage, and analysis of data that is disclosed by consumers themselves through various online activities. By building individual profiles to inform market needs and provide customized ads through the adoption of advanced algorithms, companies can optimize profits (Lin et al., 2012). For example, accurate forecasting can be produced via unsolicited tracking of consumer data (Knijnenburg et al., 2012). Related commercial recommendations can be shared with third-party platforms based on a consumer's navigation, browsing, and transaction history (Baglioni et al., 2003). Companies can then allocate personalized ads at the right time and in the right place (Mayer & Mitchell, 2012). Nevertheless, such practices go against consumers' rights to protection of their data privacy and cause concern about technological use (Xu et al., 2011). The present study facilitates understanding of matters that previous studies of technology customizability have failed to address, namely the explicit trade-offs and psychological responses with regard to technology customizability in advertising contexts,.

2.2. Perceived convenience

Technology customizability in advertising usage helps consumers retrieve the information they want, reduces information search costs (Deng et al., 2019), and promotes consumers' click-through rates (Gai & Klesse, 2019), bringing greater convenience to their lives. Perceived convenience is considered as the capability to reduce one's non-monetary costs (e.g., time, energy, and effort) when consuming certain services (Berry et al., 2002; Brown, 1989); it has mainly been studied in the online transactional and service literature. For example, the convenience offered by online payments was identified as the basis of preference over traditional payment tools (e.g., de Kerviler et al., 2016; Kim et al., 2010). Knijnenburg et al. (2012) suggested that convenience can be drawn from perceived ease of use to the extent that a system, or the use of a machine, is effortless. Most importantly, convenience has been captured as the principal goal of new technology adoption, especially for Generation Z (Leung et al., 2021), with the aim of making their lives easier by simplifying difficulties with common tasks (Kim et al., 2010). As part of the penetration of new technology, technology customizability in ad contexts can be seen as of great value to this generation, since it promotes user-oriented convenience that largely fulfills their needs. For example, it reduces cognitive overload when searching for information and facilitates the consumer decision-making process through automatically generated tailed ads (Knijnenburg et al., 2012). As a technological tool, customizability generates convenience by helping individuals realize their goals and amplifying their pre-existing tendencies for information choice, thereby facilitating their online engagement to a great extent. Hence, we propose the first hypothesis:

H1. Among Generation Z, technology customizability is positively associated with perceived convenience.

2.3. Concern for privacy

According to Kim et al. (2019), personalized advertising backfires if privacy concerns are heightened. Alongside the convenience brought about by customized advertising content, studies involving consumers' attitudes towards privacy have paid significant attention to the online environment (Aguirre et al., 2015; Liu & Mattila, 2017). Although a clear definition of privacy is difficult to find in the literature, Stewart (2016) considers privacy as equal to being left alone, as this enables an individual to decide what constitutes an invasion of privacy. Privacy concerns indicate the perceived risks associated with loss of control regarding both the process and consequences, namely procedural and distributive justice (Milne et al., 2017). Research in consumer and advertising research has studied privacy concerns from diverse angles. Examples include the relationship between privacy, consumer trust (Martin, 2018), and firm performance (Martin et al., 2017). Among the antecedents of privacy concern that have been studied, the concept of customization is especially relevant in advertisement settings due to the disclosure of personal data (e.g., Martin, 2018; Martin et al., 2017). However, given the ill-defined concept of personalization and contextual features, findings in relation to privacy concern and personalized content have been rather heterogeneous. For example, Aguirre et al. (2015) illustrated varied consumer attitudes towards personalized advertising content, while Martin et al. (2017) studied privacy under the adoption of personalized devices. In this study, we look specifically at the impact of technology customizability on privacy concerns while increasing convenience to the younger generation, who are especially sensitive to privacy issues. Because technology customizability mainly generates content based either on previously disclosed information or on consumers' online behavioral traces, there has been increasing concern about data breaches, perceived fairness (Krishen et al., 2017), and other legal and ethical aspects of intrusion of privacy (e.g., Kolotylo-Kulkarni et al., 2021; Nill & Aalberts 2014); that is, the more customized the

technology, the greater the potential risk associated with data privacy. Therefore, we propose the second hypothesis:

H2. Among Generation Z, technology customizability is positively associated with privacy concerns.

2.4. Technology dissonance

Cognitive dissonance theory has been a cornerstone of consumer research for decades. It emphasizes the influence on the decision-making process of the psychological discomfort induced by disconfirmed expectations, triggered by cognitive discrepancies, and associated with negative emotions, such as guilt, anxiety, and regret, (e.g., Park et al., 2019; Sweeney et al., 2000). In consumer studies, cognitive dissonance has been used to explain consumers' responses when they face a disparity between pre-purchase expectations and actual product performance (e.g., Park et al., 2015). Prior research, while demonstrating the benefits of customized strategies (e.g., Koch & Benlian, 2015), has also raised potential concerns over the online environment. As technologies inevitably become more personal, ubiquitous, and pervasive, privacy concerns and other potential issues (e.g., perceived trustworthiness, uncertainty, and vulnerability; Wünderlich et al., 2020) can create psychological barriers from risks associated with negative emotional responses. In this study, psychological discomfort empowered by new AI-driven technology features is termed technology dissonance (TD). In fact, this concept is rather new and only began to arouse academic interest in the information systems (IS) literature when discussing technology adoption (see Table 1). Ameen et al. (2022) pointed out that Generation Z users prefer not to give up their privacy for a more customized experience, since they are uncomfortable with the idea of being tracked, and they worry about to whom their data may be sold, and whether such a process is legal, especially when their personal information is collected without them being informed (Joinson & Paine, 2007). Such experiences make them feel threatened and not in control, leading to psychological discomfort. In contrast, technology customizability is considered mainly to bring convenience to the lives of individuals and increase their perceived fulfillment. Various studies have confirmed a strong correlation between perceived convenience and a positive consumer affect (e.g., Shin & Park, 2019), which might diminish the discomfortable states created by the potential risks for Generation Z. Therefore, we hypothesize that the two polarized functions discussed above are counterproductive in the formation of the consumer's psychological response.

H3. Among Generation Z, perceived convenience is negatively associated with technology dissonance.
H4. Among Generation Z, information privacy concerns are positively associated with technology dissonance.

2.5. Dependence on social networking sites

SNS are online platforms that enable individuals to construct social relationships, facilitate interactions with those who share interests and backgrounds, and enhance social capital and ties (Cachia et al., 2007; Eftekhar et al., 2014). Increasing dependence on SNS has profoundly transformed consumers' lifestyles in terms of managing their self-presentation and constructing or controlling self-expressions strategically (Lee et al., 2015). It is reported that more than 10 % of US social media users are Generation Z, who have grown up developing dependency with SNS (Statista, 2022). SNS dependency can be conceptualized as the perceived extent to which SNS are able to fulfill a range of the consumer's personal goals in daily life (Tai & Sun, 2007). However, previous research has mostly focused on the situational factors that influence SNS usage, such as SNS features (Joinson, 2008) and mutual connections among SNS users (Nagle & Singh, 2009), rather than on consumers' psychological antecedents associated with technology

Table 1
Overview of research on technology dissonance (TD).

Study	Antecedents	Research context	Research focus	Research method	Definition	Research gap and relevance to current study
Marikyan et al., 2020	Based on the expectation-disconfirmation frame: the comparison of pre-service and post-service performance of technology	Smart home usage	a) How TD can be transformed into positive outcomes b) How negative emotions (e.g., anger, guilt, regret) activate dissonance reduction strategies	Cross-sectional design	Induced by disconfirmed expectations, a psychological state associated with negative emotions and discomfort	Does not emphasize how specific new technological features interact or result in TD; rather it examines the antecedents and coping mechanisms associated with cognitive dissonance theory.
Balakrishnan et al., 2021	Based on the technology acceptance model: the sunk costs of technology usage	Adoption and resistance of an AI voice assistant	Investigates the relationship between the status quo factors and resistance towards adoption of an AI voice assistant	Survey	An intervening variable between sunk costs associated with existing technology and resistance to change	Instead of investigating TD as a construct, TD is applied as a psychological mechanism to understand how technological costs influence psychological resistance and induce TD coping.
Turja et al., 2019	Drawing on technology acceptance theories: the incompatibility with ethical or instrumental value of a new technology	Robot adoption welfare services	Proposes a model that adds a principled approach to the intention to use a care robot, wherein TD is considered as a psychological barrier that hinders adoption	Survey	A cause of technostress, which appears when workers are unable to adapt to using technology	Uses the framework of cognitive dissonance in a new technology adoption setting to rationalize how individuals are resistant towards tech usage; however, the investigation of TD (antecedents & consequence) is insufficient.
Kim & Jang 2022	The gap between pre-service evaluation and actual service performance: customer-induced self-service technology (SST) failures	SST in hospitality	Examines the interaction effect among the subjective social class, service level, and recovery type on post-failure service evaluations	Experiment	Psychological discomfort when consumers receive counter-attitudinal information	Considers the TD framework as an internal coping mechanism when technology products failed to meet consumers' expectations; the specific technological features and direct consequences of TD on technology usage are not discussed.
Bejar et al., 2023	1) Threat to tech self-esteem, tech inertia Perceived switching costs	Smartphone service	Proposes a threat to the tech self-esteem construct and offers a unified explanation for oppositional intentions	Survey	Psychological tension caused by threats to self-esteem, tech inertia, and switching costs	Takes a first glance at the potential effects of the threat to tech self-esteem on opposing intentions in the smartphone platform context, wherein TD serves as a considerable framework; however, the paper pays insufficient attention to TD.
This study	Technology customizability, information privacy concerns, convenience	Social network site usage	Investigates the antecedents and consequences of cognitive dissonance in AI-driven new technology application	Survey	Psychological discomfort and negative emotional responses empowered by new AI-driven technology features (e.g., perceived trustworthiness, uncertainty, and vulnerability)	Demonstrates the potential trade-off between the benefits of convenience and concerns over privacy resulting from technology customizability; these two facets have opposite functions in TD with a negative impact on SNS dependence; vulnerable narcissism shows nuances of psychological dissonance induced by privacy concerns.

features. Although studies have identified the negative impacts of online privacy (Joinson et al., 2010) and the security risks (Johnson et al., 2018), the underlying psychological mechanism has not been clearly addressed. Bhattacherjee (2001) suggested that continuous intentions to adopt a particular type of technology are determined by the affective state of the individual. For example, cognitive dissonance theory suggests that, when dissonance occurs, individuals are internally motivated to undertake different behavioral or intentional responses (e.g., attitude change, confirmative information seeking, or behavioral change; Harmon-Jones & Harmon-Jones, 2007) to reduce their psychological discomfort. These responses fall into two categories: approaching or avoidance. Therefore, when TD occurs, consumers are likely to become more resistant and expose themselves less towards the tech products to eliminate their psychological tension and restore their inner balance. Generation Z are characterized as having particularly proactive and responsive behavioral patterns (Olson & Ro, 2021). Therefore, we

expect that for them, the higher the dissonance level, the lower the dependency on SNS, and we propose the following hypothesis:

H5. Among Generation Z, technology dissonance is negatively associated with dependence on SNS.

2.6. Grandiose narcissism vs. Vulnerable narcissism

It has been suggested that individuals' inherent traits play an important role in the prediction of SNS behavior, since personality characteristics demonstrate regular patterns of thinking and behaving (Liu & Arnett, 2002; Nosko et al., 2010). One of the major traits of Generation Z that is being shaped and reinforced by SNS activities is a narcissistic tendency, predominantly in relation to self-expression and self-promotion (Kong et al., 2021). As originally conceptualized by Wink (1991), there are two forms of narcissism, grandiose and vulnerable,

which share common traits, such as the tendency to display grandiose self-related fantasies, entitlement driven by materialistic values, and disrespect of others (Besser & Priel, 2010). However, between these distinctions lie unique motivations and characteristics; that is, although the behavioral responses are similar, the psychological rationales and interaction with external stimuli may differ. To date, we have identified only two studies that link narcissism with SNS behavior, those of Fossati et al. (2009) and Stone and Bartholomay (2019). Both studies investigate the sensitivity of narcissism to external judgment or social rejection, neglecting the internal psychological process of narcissists, which merits significant research attention in the context of SNS.

Grandiose narcissism is mainly connected with exhibitions of self-importance that demonstrate aggressive and dominant tendencies in consumers' behavior (Miller et al., 2011). It is associated with grand superiority, arrogance, and extraversion (Fastoso et al., 2018), which motivates individuals to seek self-promoting opportunities actively regardless of potential psychological concerns over privacy or other risks. Grandiose narcissists also tend to be emotionally retarded and overly confident when facing potential threats and do not always feel discomfort (Neave et al., 2020). It has been argued that grandiose narcissists are more tolerant of privacy risks than of simply losing the attention of their audience (Lasch, 2018), not to mention the perceived benefits they gain from SNS usage. As a result, these individuals are less vigilant and less sensitive about the disclosure of their personal information associated with potential risks. Because of their insensitivity and lack of emotional clarity, grandiose narcissists do not tend to encounter uncomfortable feelings when faced with the benefits and risks. Thus, we propose the following hypothesis:

> **H6a.** Among Generation Z, grandiose narcissism negatively moderates the relationship between concern for information privacy and technology dissonance.
>
> **H6b.** Among Generation Z, grandiose narcissism positively moderates the relationship between perceived convenience and technology dissonance.

In contrast, vulnerable narcissism is closely associated with hypersensitivity, fragility, insecurity, and defensiveness (Dickinson & Pincus, 2003; Miller et al., 2011). Although the interpersonal behavioral tendency is similar to that displayed by grandiose narcissists, the psychological rationales differ. For example, vulnerable narcissists seek special attention for purposes of self-assurance, whereas grandiose narcissists expect it because they believe they are superior (Miller et al., 2011). Thus, individuals with vulnerable narcissistic personality traits are more stressed, fearful, and suspicious of interdependency, as well as more likely to display submissiveness, introversion, shame, and low trust in certain situations (Ronningstam, 2009; Sedikides et al., 2011). Unlike grandiose narcissists, whose posting of inflated images through SNS is motivated by attention-seeking, vulnerable narcissists present themselves on SNS for self-assurance. When facing a situation associated with a privacy threat or lack of control, the sensitive nature of the vulnerable narcissistic orientation may lead to increasing concerns and a high psychological cost. Vulnerable narcissists may even respond actively to potential convenience benefits that could diminish their psychological barriers, such as dissonant feelings. This response is due to hypersensitivity and hypervigilance on the part of these individuals, who are therefore likely to react in a way that allows them to avoid situations which threaten their personal selves. We therefore propose the final hypotheses:

> **H7a.** Among Generation Z, vulnerable narcissism positively moderates the relationship between concern for information privacy and technology dissonance.
>
> **H7b.** Among Generation Z, vulnerable narcissism negatively moderates the relationship between perceived convenience and technology dissonance.

The proposed research framework is shown in Fig. 1.

3. Methodology

To test the proposed model empirically, we collected data using an online survey. The sample, measures used, and data collection processes are explained in the following sections.

3.1. Participants and sampling method

Engagement with SNS has become an immensely popular activity among Generation Z, especially during the Covid-19 pandemic (Statista, 2021). Recent data suggest that nearly 82 % of all internet users in the US are active participants in SNS and that almost 91 % of Generation Z use at least one such site on a daily basis (Statista, 2021). Concerns have been raised that SNS is an environment in which narcissistic tendencies are promoted by allowing consumers to constantly present themselves positively (Buffardi & Campbell, 2008). Previous research on self-reported narcissism has acknowledged that people in the US are more narcissistic than those in other countries (e.g., Jonason et al., 2017; Wetzel et al., 2021). Therefore, we conducted our investigation among Generation Z customers across the US.

Data were collected by a professional data acquisition company. The sample consists of 300 Generation Z consumers (female = 210, male = 84) in the US. The respondents were selected at random from the company's sample library of 8.5 million consumers, in which females were previously reported as more active in SNS usage than males (Statista, 2022). To fit the research segment, we set the age limit in our screening question to individuals under the age of 24. For teenage participants, the company obtained appropriate parental consent and youth assent to participate in the study. Specifically, if the participant was under 18 (as shown in the basic demographic information already registered with the company), parental consent was automatically required. Study participation required both signed parental consent and the assent of individual participants. We explained that the participants could refuse to answer any given question. Demographic descriptions are provided in Table 2.

Before being administered in full, our questionnaire was evaluated by a group of five academic staff in the United Kingdom and four in the US. In order to encourage authentic disclosure of perceptions, respondents were assured that the information provided would remain anonymous and confidential (Podsakoff et al., 2003). In the survey, participants were first asked a screening question about their past SNS usage and customized advertising encounters to ensure only those Generation Z consumers who satisfied both criteria were included. Instead of designating a specific SNS site, we asked the participants to choose one site (e.g., Instagram, Facebook, TikTok, YouTube, Snapchat, or Pinterest) which they use frequently, and to complete the questionnaire according to their user experience for that site (Gnambs & Appel, 2018).

3.2. Measurement items

Most items used to operationalize the current model are taken from existing measurements; we used seven-point Likert scales adapted to the context. We prepared the measurement items in three steps. First, the online questionnaire included a short introductory message about "technology customizability" and explained the connotations of the term. Second, a focus group consisting of four researchers was formed to refine and modify the items. For instance, the item "I wondered whether I should have bought something else" was revised to "I wondered whether I should have used other tools." Finally, the questionnaire was pretested with 20 first-year undergraduates at an American university; several adjustments were made based on their feedback to ensure the intended meaning was captured as precisely as possible. In the course of our measurement validation in the main study, we retained items with
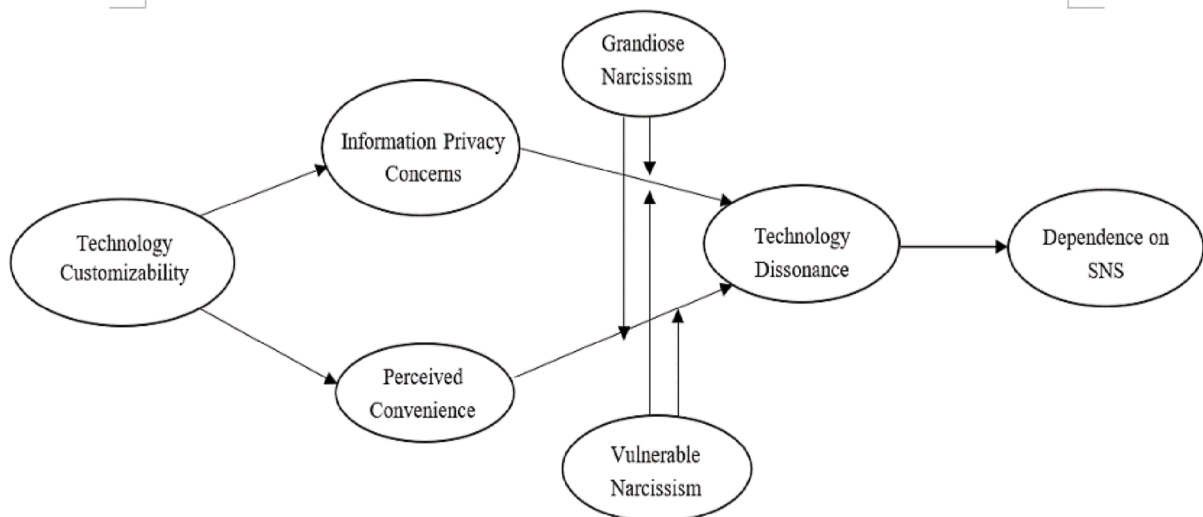
Fig. 1. Proposed research framework.

Table 2
Socio-demographic characteristics of participants.

Variable	Frequency	
	N	**Percent (%)**
Start time of using SNS		
<6 months ago	67	22.33
6 months–1 year ago	46	15.33
1–2 years ago	49	16.33
2–3 years ago	25	8.33
greater than3 years ago	113	37.67
Age (years)		
<13	5	1.67
13–16	31	10.33
17–20	138	46.00
21–24	126	42.00
Gender		
Female	210	70.00
Male	84	28.00
Other	6	2.00
Education level		
Elementary school	4	1.33
Middle school	10	3.33
High school	159	53.00
Undergraduate	80	26.67
Postgraduate	47	15.67
Frequency of usage		
Less than once a week	69	23.00
A few times a week	79	26.33
1–5 times per day	61	20.33
6–10 times per day	44	14.67
More than 10 times per day	47	15.67
Average time length per session		
<10 min	80	26.67
10–30 min	85	28.33
30 min–1 hr	77	25.67
1–2 hrs	33	11.00
greater than2 hrs	25	8.33
Frequency of online content relevant to personal data disclosure through SNS		
All the time	45	15.00
Very often	97	32.33
Sometimes	108	36.00
Hardly ever	27	9.00
Never	23	7.67

(e.g., Gao et al., 2018; Huang et al., 2017), we adopted scales that measure concerns about information privacy directly from the current IS literature. We measured perceived convenience using an adapted version of a convenience scale for catalogue and internet shopping (Mathwick et al., 2001). TD (e.g., "I wondered if I really needed the technology") was measured based on the cognitive dissonance scales of Marikyan et al. (2020) and Sweeney et al. (2000). The dependent variable, dependence on SNS, was measured using the technology dependence items established by Goodhue and Thompson (1995); an example item is "I would use SNS as often as I can." Finally, we measured the moderating variables of narcissism using the NPI-16 (Ames et al., 2006) to measure grandiose narcissism with a forced-choice scale. Respondents were asked to choose the closest expression of their personality from 16 pairs of descriptions that reflect narcissistic (coded 1) vs. non-narcissistic (coded 0) behavior, such as "Everybody likes to hear my stories" vs. "I expect a great deal from other people." We measured vulnerable narcissism using the 10-item hypersensitivity scale developed by Hendin and Cheek (1997) to assess hypersensitive narcissist orientation; an example item is "My feelings are easily hurt by ridicule or by the slighting remarks of others." To ensure that the measures mirrored our conceptual definitions of the constructs, we modified the scales carefully (see the Appendix for the final items); this required the rewording of some statements to fit the attributes of the SNS context better.

3.3. Data analysis and results

The data collected in the study were analyzed via structural equation modeling (SEM) using SPSS AMOS 18.0. Following a two-step analytical procedure (Anderson & Gerbing, 1988; Hair et al., 2010), we first evaluated the measurement model by means of confirmatory factor analysis (CFA), which was followed by an assessment of the structural model and a path analysis. We then conducted a stepwise hierarchical regression analysis in SPSS 23.0 (Hayes, 2018) to assess the continuous moderation effects of narcissism.

To check for common method bias, we used Harman's single-factor test (Podsakoff et al., 2003). We conducted factor analysis of all the item scales together and examined the unrotated factor loading matrix. The size of the homology deviation can be determined based on the first principal component of the matrix. In this study, the first principal component was 23.86 % (threshold value < 50 %), indicating the absence of common method bias in the data.

The measurement model indicated a good fit (CMIN = 2019.119, *df* = 1631, CMIN/*df* = 1.238, *p* < .001, CFI = 0.965, GFI = 0.827, NFI =

factor loadings greater than 0.70.

The technology customizability items capture the primary focus on the communication of the SNS provider (Chellappa & Sin, 2005; Nyheim et al., 2015). We adapted Thirumalai and Sinha's (2009) technology customizability scale to the SNS context. In line with previous research

0.842, RMSEA = 0.028). Convergent validity of all constructs was confirmed through significant path loadings of all items (Anderson & Gerbing, 1988). The *t*-values of all estimated path coefficients were significant at the *p* < .001 level. The AVE of all constructs surpassed the cut off value of 0.50, which indicates convergent validity (Hair et al., 2010).

To examine the unidimensionality of the latent constructs, we conducted exploratory factor analysis (Bryant & Yarnold, 1995). The results suggest a single underlying factor for each construct. Additionally, the Cronbach's alpha values (in the range 0.69–0.91) indicated adequate reliability for each construct (Hair et al., 2010). CFA factor loadings were all acceptable (i.e., above 0.60), suggesting unidimensionality of all constructs (Anderson & Gerbing, 1988) (see the Appendix). Discriminant validity was confirmed by the AVE of every pair of constructs being larger than the R^2 (i.e., the squared correlation of each of the two constructs) (Hair et al., 2010) (see Table 3).

3.3.1. Structural model and hypothesis testing

We examined the proposed hypotheses using SEM. The structural model indicated a good fit (CMIN = 651.978, *df* = 490, CMIN/*df* = 1.331, *p* < .001, CFI = 0.975, GFI = 0.886, NFI = 0.908, RMSEA = 0.033). Technology customizability is found to positively affect concern for information privacy ($\beta = 0.513$, *p* < .001). Thus, H1 is supported; that is, among Generation Z, consumption of customized technology services increases concern about information privacy.

We also found that technology customizability positively affects perceived convenience ($\beta = 0.474$, *p* < .001). Hence, H2 is supported, indicating that customized technology services enhance convenience perceptions among Generation Z. Furthermore, concern for information privacy ($\beta = 0.224$, *p* < 0.001 = was found to relate significantly and positively to TD. Thus, H3 is supported, indicating that increased information privacy concerns can promote psychological dissonance over technology.

Surprisingly, perceived convenience ($\beta = 0.492$, *p* < .001 = was found to influence TD positively. Thus, H4 is rejected, illustrating that the perception of convenience promotes dissonant feelings towards technology in general. In addition, we found that TD (β = -0.55, *p* < .001 = impacted the dependence of SNS negatively, which supports H5 and indicates that Generation Z users with strong dissonance over technology tend to consume SNS less frequently.[1]

3.3.2. Test of moderating effects

A stepwise hierarchical regression analysis was conducted in SPSS 23.0 (Hayes, 2018) to assess the continuous moderation effects of narcissism. Following the procedures suggested by Edwards and Lambert (2007), we standardized the variables before evaluating the moderation effect. The results of the main effects of concern for information privacy (Step 1) and grandiose narcissism (Step 2) on TD and the moderation effects (examined through the interaction term in Step 3) are elaborated in what follows. In Step 1, the results demonstrate a significant positive impact of privacy concerns on TD ($\beta = 1.227$; *p* < .001). Step 2 shows no significant influence of grandiose narcissism on privacy concerns (β = -0.151; *p* > .05), although the influence of privacy concerns ($\beta = 1.23$; *p* < .001) on TD remains significant in Step 2. The moderation effect of grandiose narcissism on the relationship between privacy concerns and TD was evaluated by including the regression model. The results do not support H6a; grandiose narcissism ($\beta = 0.032$; *p* > .05) does not significantly influence the relationship between privacy concerns and dissonant feelings against technology among Generation Z. We examined the moderation effect of grandiose narcissism on the relationship between perceived convenience and TD. The results show that grandiose narcissism ($\beta = 0.027$; *p* > .05) has no significant

moderation effect on the relationship between perceived convenience and TD. Hence, H6b is rejected, indicating that consumers with stronger grandiose narcissistic orientation do not encounter more dissonance when holding privacy concerns about the information.

We also conducted a moderation analysis of vulnerable narcissism on the relationship between concern for information privacy and TD. The results show that vulnerable narcissism ($\beta = 0.058$; *p* < .01) significantly and positively moderates the relationship between privacy concerns over information and TD; hence, H7a is supported, indicating that consumers with a stronger vulnerable narcissistic orientation tend to feel more psychological discomfort when information privacy is at stake. When we examined the moderation effects of vulnerable narcissism on perceived convenience and TD, vulnerable narcissism ($\beta = 0.042$; *p* < .01) demonstrates a significantly positive influence on the relationship between perceived convenience and TD; thus, H7b is rejected, indicating that Generation Z users with a stronger vulnerable narcissistic orientation might encounter more dissonance over technology, even when they perceive great convenience from the adoption of the technology. We applied simple slope analysis and plotted graphs for one standard deviation above and below the mean value of the moderators (Aiken et al., 1991), as shown in Fig. 2. Overall, six of our nine hypotheses are supported.

4. Discussion

Our findings illustrate Generation Z's psychological processes associated with the customizability of technology. More specifically, they demonstrate the potential trade-off concerning convenience benefits and privacy concerns in a personalized advertising context. Convenience and privacy concerns have opposite functions for Generation Z in the generation of TD, a finding that contributes to both the understanding of dissonance antecedents and the coping literature (Marikyan et al., 2020). Consistent with prior studies on the negative behavioral responses of information privacy (e.g., Ahn et al., 2015; Sedikides & Gregg, 2001), by adopting a cognitive dissonance framework our study uncovers the underlying mechanism of how the technology customizability of advertising influences SNS usage. It is worth mentioning that our findings might be limited to the market segmentation of Generation Z because of their unique nature. For example, they are recognized as insecure, having unstable self-esteem, and needing more social support through SNS compared to other age groups (Gentina & Chen, 2019), and therefore might demonstrate stronger dependence on SNS compared to other segmentations, even under dissonant feelings. Additionally, although Generation Z represents the sector of consumers who desire and react most positively towards convenience and immediacy (Priporas et al., 2017), this characteristic may override other psychological risks (e.g., privacy concerns) and the discomfort being caused, leaving overall SNS dependency unaffected.

Both privacy and convenience have been studied relatively infrequently in the advertising literature (Liu et al., 2019). It is interesting to see that for Generation Z perceived convenience did not reduce the psychological discomfort generated by new technology, which contradicts previous studies (e.g., de Kerviler et al., 2016; Kim et al., 2010). The discrepancy may be explained as follows. Research indicates that the benefits of technology, including convenience, might remind individuals of the potential risks even more, which may damage their self-views of being fair-minded and lead to dissonant feelings. Generation Z is known as a particularly risk-averse and sensitive group of consumers (Statista, 2022). In addition, the perceived convenience could also be greatly influenced by process transparency, legal concerns, and accuracy in algorithmic processes (Shin, 2020), and may potentially weaken the positive psychological responses caused by technology convenience for this segment. There is a persistent, ongoing choice dilemma for digital technology providers between providing a convenient customer experience, on the one hand, and ensuring enhanced protective privacy measures, on the other. Achieving both convenience and privacy is the

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[1] We also took account of the mediating effect of technology customizability on dependence on SNS. See the Appendix B.

Table 3
Discriminant validity.

	TC	CV	PC	TD	DOS	GN	VN
TC	0.792						
CV	0.451***	0.766					
PC	0.492***	0.486***	0.757				
TD	0.301***	0.578***	. 431***	0.758			
DOS	−0.285***	−0.519***	−0.412***	−0.549***	0.897		
GN	0.082	0.085	0.015	−0.036	0.015	0.713	
VN	0.175**	0.255***	0.195**	0.149*	−0.196**	0.051	0.790

Notes: *TC = technology customizability, CV = convenience, PC = information privacy concerns, TD = technology dissonance, DOS = dependence on SNS, GN = grandiose narcissism, VN = vulnerable narcissism.*

ideal resolution, especially for Generation Z, whose demand for SNS usage is high amidst an increasing level of privacy concerns (Sørensen, 2018).

SNSs serve as an ideal platform for narcissists to construct and maintain, via interpersonal behaviors, their desired self-image (Morf & Rhodewalt, 2001), for example by updating posts and photographs of themselves or providing timely feedback. Expanding previous research which simply argues that narcissism is a positive indicator of SNS usage (Kim et al., 2016), this study has unfolded the distinctive nature of different types of narcissism and how they interact with SNS-enabled customizability. Interestingly, although the two subtypes of narcissistic characteristics have commonalities, namely that they both involve an intense interest in self-obsession and superiority, their differences are remarkable (Loeffler et al., 2020). For Generation Z, grandiose narcissism is not found to have any impact on the generation of dissonance due to privacy concerns, nor does that personality trait react to perceived convenience any differently, which deviates from the supposedly over-confident and dominant nature of the grandiose narcissists in this segment (Buss & Chiodo, 1991). However, it confirms the overly self-centered, arrogant, supercilious features of this orientation, which focuses only on the self (Miller et al., 2011), lacking sensitivity to, and perceptivity of, external resources, whether positive or negative (e.g., social issues and ethical concerns) (Wu et al., 2019). As Sedikides and Gregg professed, "everything that hits this self is deflected immediately" (2001, p. 238). Grandiose narcissists are as solid as an iron tower, and like people with high-functioning autism who are oblivious and indifferent (even socio-emotionally retarded) and therefore proficient at deflecting undesired cognitions. This conclusion aligns with the proposition that Generation Z is particularly risk-averse (Priporas et al., 2017).

The abundant confidence of grandiose narcissists leads them to overestimate their capabilities, to trust in their own judgment regarding the control of external resources, and to disregard the benefits (Myung & Choi, 2017). In contrast, vulnerable narcissists display nuances of perceived convenience and psychological dissonance induced by privacy concerns among Generation Z, which confirms that insecure grandiosity is underpinned by feelings of inadequacy and incompetence (Miller et al., 2011). As Rose (2002) claimed, vulnerable narcissists by nature feel profoundly inferior and are hypersensitive to external encounters; especially in Generation Z, they have low self-esteem and are less satisfied with life in general (Gentina & Rowe, 2020). In addition, Loeffler et al. (2020) pointed out that the vulnerable narcissist orientation tends to be associated with overall emotional regulatory difficulties, such as negative acceptance of an emotional response, control failures, limited cognitive access to self-regulation strategies, and deficiencies in emotional clarity, which could therefore generate more dissonance compared to that observed among their grandiose counterparts. Foster and Trimm (2008) even suggested that such intentional motivation could translate into aversive regulatory behaviors, rather than an avoidance approach, since consumers with highly vulnerable narcissism tend to protect their unstable self-dimensions from further destabilization.

4.1. Theoretical contributions

Our study makes three main theoretical contributions. First, AI advertising research is still in its infancy. The extant literature focuses on the positive outcomes of AI advertisements, for instance, customization, real-time AI-enabled creativity (Chen et al., 2019), appreciation of AI-created advertisements (Wu & Wen, 2021), and advertising effectiveness (Shumanov et al., 2022). However, few studies have examined the negative effects of AI advertising, with only recent work (e.g., Ameen et al., 2022) suggesting a privacy concern in the use of smart technologies, such as AI-enabled services for shopping. The present study addresses this gap and responds to calls from, among others, Ameen et al. (2022) and Huang and Rust (2021) for an examination of the negative effects of AI advertising from a TD perspective. Our research extends the understanding of the new technology-driven advertising literature by revealing the negative effects of AI advertising. Furthermore, this study was conducted among Generation Z users and unpacked the predominant features of that group of consumers—digital natives with high digital literacy, in terms of capability to make informed and analytical decisions, and narcissistic tendencies—to better understand the psychological antecedents and attitudes of customized advertising encounters for that group.

Second, we investigated the psychological underpinnings of technology customizability by adopting a cognitive dissonance framework. Thus, we contribute to the literature on cognitive dissonance by revealing both its antecedents in and its behavioral responses to new technology-driven ad environments among Generation Z (Marikyan et al., 2020). On the one hand, on account of cognitive conflicts which serve as the core origin of dissonance production (Park et al., 2015, 2019), this study proposed and empirically examined the convenience vs. privacy mechanism as a key antecedent of TD among Generation Z. On the other hand, when dissonance occurs, there are two main coping methods that consumers can adopt (avoidance vs. approach) (Harmon-Jones & Mills, 2019). However, previous studies have not clarified under what conditions consumers may adopt either or both coping strategies to reduce their dissonance level. Our study, therefore, enriches the evidence on dissonance coping in SNS practice by investigating Generation Z's dependency level after encountering TD in an advertising context. More importantly, it contributes to the technology well-being literature in the following ways. Although the notion of well-being in AI-driven new technology usage is in its infancy (Henkens et al., 2021; Troisi et al., 2022), the potential psychological risk brought about by AI-featured functions is under investigation within limited research contexts. Previous studies have discussed technology well-being only in relation to technology efficacy and overall technology satisfaction (e.g., Kim et al., 2010). By introducing TD caused by privacy concerns associated with customizability, this study uncovers and expands the scope of technology well-being perceptions. Improving customer well-being not only concerns the user's experience or satisfaction, but also concerns mitigation of the user's risk of encountering mental torment. This conclusion applies especially to the vulnerable adolescent consumer group represented by Generation Z, who have lived closely with technology all their lives and who lack the psychological maturity to deal
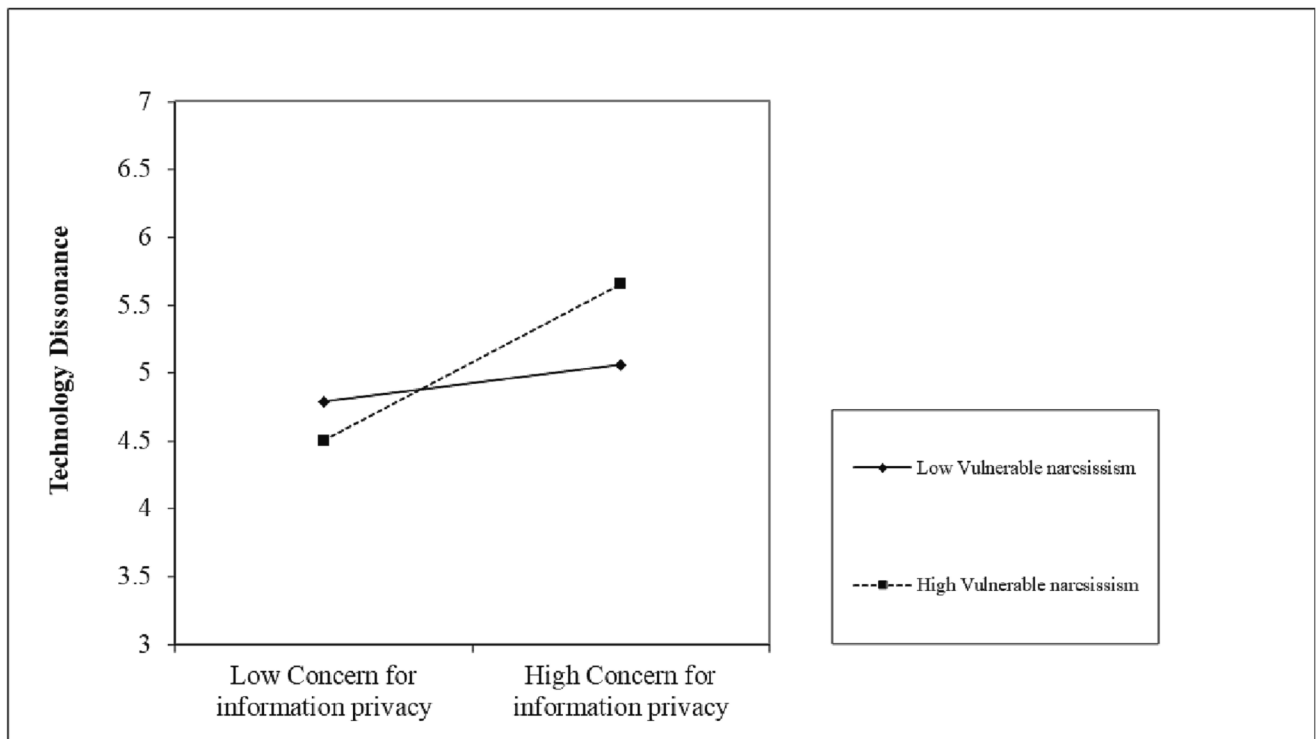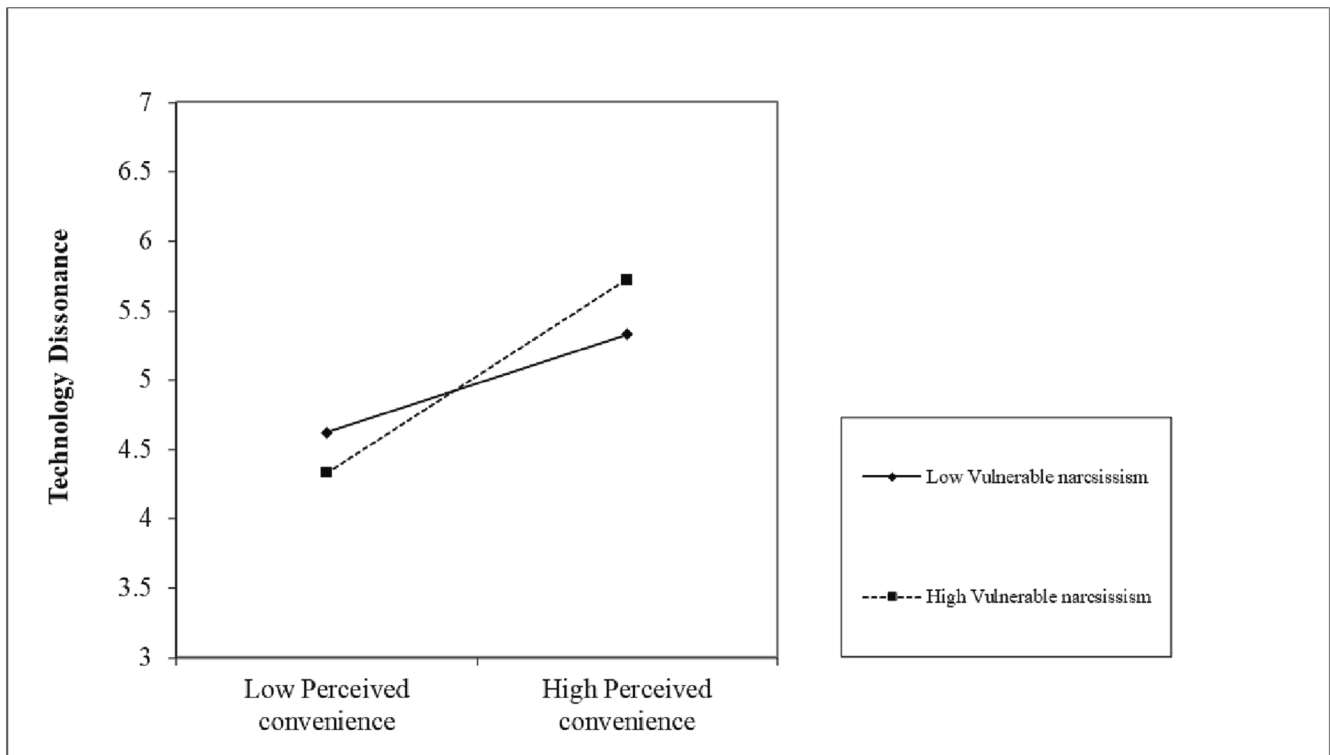
Fig. 2. Moderating effects of vulnerable narcissism on the impacts of convenience and information privacy concerns on technology dissonance.

with potential risks (Shin, 2020). Our study opens potential avenues for future research to study well-being in the context of AI-enabled technology encounters.

Third, and most importantly, our findings highlight the vast differences between the two forms of narcissism among Generation Z users, and this study is the first to focus on the psychological response of narcissism towards new technology usage and cognitive dissonance.

Tendencies towards narcissism have attracted the interest of scholars in advertising and communication studies for some time (e.g., He, 2022; Meade et al., 2021). However, there is a lack of research that distinguishes the effects of different types of narcissism (grandiose vs. vulnerable) under social media usage. Although both types of narcissism demonstrate identical behavioral tendencies, the underlying motivations vary greatly (Neave et al., 2020). Of vital importance is the finding

that those with vulnerable narcissistic characteristics possess research significance due to their nuanced inner fragility beyond self-obsession (Loeffler et al., 2020). Taking into account the trade-offs between self-presentation desires and privacy concerns, as well as the convenience benefits that personalized ads bring, this study improves our understanding of narcissistic tendencies in new ad contexts and SNS engagement.

4.2. Managerial contributions

The current study informs social media marketing and advertising strategists about overall consumer outcomes for Generation Z in a number of ways. First, our findings show that dependence on SNS is negatively affected by TD. When SNS customizability features induce a feeling of regret or uncertainty, the increased cognitive dissonance can demotivate SNS use in some users. Marketers should increase user awareness of the negative consequences of SNS customizability, which could otherwise make customers feel trapped. It is therefore of the utmost importance that SNS platform providers understand what elements of its messages may be associated with cognitive dissonance and can manipulate those elements. Organizations have begun to respond positively in order to navigate the negative relationships between SNS and consumers' overall well-being. For instance, in order to improve their commitment to data privacy, WhatsApp recently removed a passage in their terms and conditions to allow users to opt out of sharing certain data with Facebook; this means that existing users are able to choose not to share their WhatsApp account information with Facebook. In addition, customer feedback channels can be facilitated to offer solutions that justify a decision by a consonant information search and encompass trustworthy and comprehensive information about SNS customizability (Marikyan et al., 2020). The idea is to design different SNS features (e.g., navigation and trust seals) that ensure that the overall experience of young consumers is enjoyable, given that the success of SNS marketing depends on consumers' willingness to continue to share information and to build an online community with others (Appel et al., 2020). It is also worth mentioning that consumers' fulfillment and enjoyment of the convenience brought by technology customizability is largely determined by the accuracy of the tailored information. Therefore, companies should invest in research and development to improve the intelligence level of their algorithms (Kolotylo-Kulkarni et al., 2021).

Second, as social media has become a primary element of modern adolescent life, marketers and brand managers should focus on eliminating consumers' ethical concerns about their personal information disclosure to ensure greater transparency and trust. Although SNS customizability features are common, they are usually limited because of privacy concerns among the general public. Specifically, advertisers and policymakers need to hold SNS more accountable for their actions in terms of data sharing to ensure that young consumers feel secure and in control, which are the two factors critical to privacy concerns (Tucker, 2014). For example, Lee and Cranage's (2011) work has shown that consumers tend to respond more positively when privacy concerns increase, which demonstrates the importance of establishing transparent communication policies and assuring users that their privacy will be maintained. Moreover, although much data disclosure from SNS takes place covertly, companies should inform consumers about data disclosure and help them gain better knowledge of the law, advertising restrictions, and their rights (Martin et al., 2017), since consumers' attitudes towards technology customizability in advertising contexts are influenced by their own decisions to take the initiative around data disclosure. In the case of adolescents, parents could also intervene to address the potential risks of online behavior and encourage ethical practice in relation to new technology (Forester-Miller & Davis, 2016). To promote customized and ubiquitous consumer care via digital channels, which are expected to increase greatly in the near future, third-party companies collaborating with SNS should aim to provide more immediate and accessible solutions to consumers' technology

concerns at any time. SNS should launch new features to make the connection between customer and service provider closer to effortless.

Third, increased knowledge of consumers' narcissistic profiles will augment the efficiency of ad activities and help firms to a great extent. Prior studies have shown that vulnerable narcissists are more likely to interact with others in the SNS, and that they post more pictures of themselves (McCain & Campbell, 2016; Neave et al., 2020). Although some narcissists are cautious about the likely threats to privacy, the current study finds that these users will also depreciate the convenient features of SNS platforms. In particular, vulnerable narcissists, more than grandiose narcissists, perceive both convenience benefits and privacy concerns as sources of dissonant feelings in SNS use. Thus, SNS platform managers targeting segments composed of vulnerable narcissists should include communications that emphasize privacy protections and decrease the dangers of causing negative feelings around SNS use. Special care should be taken of Generation Z users, because SNS usage is such a great part of their daily lives that it shapes their identities and personalities (Lin et al., 2016). The new technology features have facilitated the process of how they form their feelings, thinking, and narcissistic behavioral tendencies, which may, in turn, lead to increased dependency on SNS. Mental health agencies should therefore collaborate with schools and universities to help young people identify the potential psychological risks associated with AI-enabled technology features, especially when they are overwhelmed or exhausted in SNS encounters.

4.3. Limitations and future research

Some limitations of this study should be noted. First, as a personality trait, a narcissistic tendency may generally be considered comparatively stable (Kandler et al., 2014), whereas self-presentation management is somewhat flexible in varied SNS contexts. Although our study did not designate a particular SNS as an image-based app, future studies could focus on Instagram, an example that allows a relatively high level of self-expression and is therefore strongly associated with narcissism (Jin & Muqaddam, 2018; Seidman, 2013). Second, although the present study was appropriately powered, it should be noted that the sample was predominantly female. Further investigation with a closer gender split is therefore merited. In addition, when studying personality traits, cultural factors play a significant role in shaping consumers' beliefs and attitudes. Therefore, a cross-cultural comparison study could encourage a deeper understanding of the role of narcissism and privacy concerns over SNS. Third, different types of customizability (user-generated vs. system-generated) should be discussed and compared in terms of consumers' psychological responses. Fourth, to enable the least time-intensive application, we adopted a convenience sampling method in this study. We selected only US samples from the database of the data acquisition company, which potentially leads to a lack of generalizability and may have caused biases in the framework testing. The findings may therefore not be representative of the US population or of Generation Z in a wider scope regarding traits or mechanisms. The likelihood of self-selection in non-probability sampling may also magnify the effect of outliers, making the results vulnerable to severe hidden biases. Future studies should seek to address this shortcoming through randomization of data selection.

CRediT authorship contribution statement

Zi Wang: Writing – original draft, Conceptualization. **Ruizhi Yuan:** Writing – review & editing, Methodology. **Jun Luo:** Validation, Formal analysis. **Martin J. Liu:** Resources, Funding acquisition. **Natalia Yannopoulou:** Supervision, Project administration.

Declaration of Competing Interest

The authors 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

Construct	AVE	Composite reliability	Cronbach's alpha	Item description	Factor loading
Technology customizability (adapted from Thirumalai & Sinha, 2009)	0.63	0.83	0.90	• I value *[name of SNS]* that are personalized for my usage experience preferences. • I value *[name of SNS]* goods and services that are personalized on information that I have voluntarily given out (such as age range, zip code). • I value *[name of SNS]* online content that is personalized for the device (e.g., computer, mobile phone), browser (e.g., Netscape, Internet Explorer) and operating system (e.g., Windows, Unix) that I use.	0.83 0.77 0.78
Technology dissonance (Sweeney et al., 2000)	0.57	0.96	0.95	• I wondered if I really needed the technology. • I wondered whether I should have used other tools. • I wondered if I had made the right choice in giving away personal data. I wondered if I had done the right thing in giving away personal data.	0.76 0.74 0.78 0.75
Dependence on SNS (Fan et al., 2017)	0.80	0.94	0.94	• I would use *[name of SNS]* more than other tools. I would prolong my usage of *[name of SNS]*. • I would use *[name of SNS]* as often as I can. • I would use *[name of SNS]* every time I can.	0.81 0.78 0.84 0.81
Information privacy concerns (Gao et al., 2018)	0.573	0.87	0.87	• I am concerned that *[name of SNS]* is collecting too much information from me. • I am concerned that *[name of SNS]* will use my information for other purposes. • I am concerned that *[name of SNS]* will share my information with other parties. • I am concerned that *[name of SNS]* does not protect the privacy of my information. • I am concerned that *[name of SNS]* allows other users to access my information.	0.71 0.74 0.86 0.71 0.73
Perceived convenience (Mathwick et al., 2001)	0.59	0.88	0.87	• Customizability is an efficient way to browse for information at any time, in any place. • Customizability makes my life easier. • Customizability fits the pace of my life. • Customizability technology is truly functional. • I find customizability very practical.	0.66 0.70 0.61 0.67 0.77
Vulnerable narcissism (Neave et al., 2020)	0.56	0.93	0.93	• I can become entirely absorbed in thinking about my personal affairs, my health, my cares, or my relations with others. • My feelings are easily hurt by ridicule or by the slighting remarks of others. • When I enter a room, I often become self-conscious and feel that the eyes of others are on me. • I dislike sharing the credit for an achievement with others. • I dislike being with a group unless I know that I am appreciated by at least one of those present. • I feel that I am temperamentally different from most people. • I often interpret the remarks of others in a personal way. • I easily become wrapped up in my own interests and forget the existence of others. • I feel that I have enough on my hands without worrying about other people's troubles. • I am secretly "put out" when other people come to me with their troubles, asking me for my time and sympathy.	0.79 0.76 0.76 0.75 0.90 0.77 0.73 0.73 0.77 0.75
Grandiose narcissism (Neave et al., 2020)	0.51	0.94	0.94	• I know that I am good because everybody keeps telling me so. • I like to be the center of attention. • I think I am a special person. • I like having authority over people. • I find it easy to manipulate people. • I insist upon getting the respect that is due to me. • I am apt to show off if I get the chance. • I always know what I am doing. • Everybody likes to hear my stories. • I expect a great deal from other people.	0.67 0.71 0.66 0.66 0.71 0.71 0.69 0.64 0.63

(continued)

Construct	AVE	Composite reliability	Cronbach's alpha	Item description	Factor loading
				• I really like to be the center of attention.	0.74
				• People always seem to recognize my authority.	0.82
				• I am going to be a great person.	0.72
				• I can make anybody believe anything I want them to.	0.74
				• I am more capable than other people.	0.77
				• I am an extraordinary person.	0.76
					0.76
CV involvement (Beatty & Talpade, 1994)		*		• SNS usage is very important to me.	
CV familiarity (Batra et al., 2000)		*		• I am not at all familiar with SNS.	

Notes: CV = control variable; * single item.

Appendix B. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jbusres.2023.114070.

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