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Biraglia, A orcid.org/0000-0002-1323-2586, Tejedor Bowen, K orcid.org/0000-0002-4967-4482, Gerrath, MHEE orcid.org/0000-0001-7422-2181 et al. (1 more author) (2022) How need for closure and deal proneness shape consumers' freemium versus premium price choices. Journal of Business Research, 143. pp. 157-170. ISSN 0148-2963

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How need for closure and deal proneness shape consumers' freemium versus premium price choices

Abstract

Internet-based firms extensively use freemium pricing strategies to thrive in the hyper-competitive e-marketplace (e.g., Spotify, Tinder). Yet many firms using this pricing strategy operate at a loss. Few studies have theorized whether consumers' decision to pay for the premium subscription is contingent on their individual traits. In response, this study posits that need for closure and deal proneness explain consumers' decisions to choose free versus premium pricing options. We test our predictions using one survey and one experiment. Study 1 shows that need for closure prompts consumers to pay for the premium subscription. Moreover, deal proneness negatively moderates this relationship. Study 2 finds that uncertainty reduction mediates the effect of need for closure on the decision to pay for a premium subscription. These findings have important implications for managers aiming to increase conversion rates from free to premium subscriptions.

Keywords: Freemium pricing strategy, Need for closure, Deal proneness, Uncertainty reduction

1. Introduction

Freemium is a pricing strategy that offers basic products or services for free but charges a fee for additional features that extend the functionality of the free version (Gokgoz et al., 2021; Rietveld, 2018). The freemium pricing strategy has become especially popular among internet-based firms as a go-to-market strategy that aims to acquire new users through the free version and then convert them to a premium subscription (Gokgoz et al., 2021; Kuester et al., 2018).[1] Yet firms that use freemium pricing often operate at a loss, despite its popularity. For example, Spotify, the global leader of online music streaming services, has operated at a loss since its inception in 2009 (when it experienced a net loss of $18.8 million), reporting a net loss of $581 million in 2020 (Statista, 2021).

Such negative return on investment and lack of profitability, which hinder the viability of a firm, may be due to consumers' behavioral tendency to exploit the free version, without exploring the augmented benefits offered by the premium subscription. Such behavior, which stops consumers from upgrading, is often driven by the perception that the free version offers an irrationally high value (i.e., the zero-price effect; Niemand et al., 2015, 2019). Consequently, conversion rates (from free to premium subscription) are often unsatisfactory, usually standing around 4%–10% (Niemand et al., 2019). For example, the online dating app Tinder estimated that, of 66 million total users in 2020, only 6.7 million had a premium subscription (Reuters, 2021).

As apps become an increasingly more popular tool to conduct business (Ho & Chung, 2020; Kunkel et al., 2021; Lee et al., 2021; Tran et al., 2021), firms face the challenge of boosting adoption rates of premium subscriptions, as this is vital for attaining profitable growth. Surprisingly, scant empirical work has addressed this real-world managerial problem

[1] In this study, freemium is a pricing strategy a firm uses to capture value from consumers. This study does not focus on freemium as a business model (see Bouncken et al., 2021; Reuschl et al., 2021), because the implications of operating a fermium business model are less proximate and require the inclusion of distinct firm capabilities, such as monitoring of a product's user base (Kumar, 2014; Rietveld, 2018), that are outside the scope of this study.

(see Table 1). The few studies examining factors that drive premium subscription sales (e.g., Bapna & Umyarov, 2015; Chica & Rand, 2017) indicate the need for more work to explore boundary conditions under which different types of users form preferences for free versus premium subscription options. Prior research has demonstrated the influence of individual differences, such as consumers' free mentality and price–quality inferences, on freemium pricing choices (Niemand et al., 2019). The current research aims to expand this stream of research and to further investigate the impact of consumers' individual differences on their choice of free versus premium subscriptions.

Trait theorists note that individual behavior can be attributed to specific traits that adequately explain individual decisions to perform certain actions (Horstmann et al., 2018; Pervin, 1994). Two individual traits that seem to be of particular relevance for explaining consumers' exploitative (i.e., taking advantage of the free subscription) and explorative (i.e., considering the augmented benefits of the premium subscription) actions are *deal proneness* and *need for closure*. The former refers to the desire to exploit special pricing offers (Lichtenstein et al., 1990); the latter denotes a general preference to attain definite answers and solutions to problems (Bareket-Bojmel et al., 2020; Kruglanski & Webster, 1996). To this point, the degree to which need for closure predicts individual behaviors is conditional on the level of uncertainty about the outcomes of such actions (Kellermann & Reynolds, 1990). In general, people try to reduce uncertainty in their lives, as uncertainty reduces their own control over a situation and their capacity to make decisions (Hogg, 2000). Need for closure further prompts the search for definite answers to problems—with people preferring solutions that reduce uncertainty—and consequently motivates them to take certain actions (Kellermann & Reynolds, 1990).

Thus, we posit that need for closure and deal proneness are important determinants of consumers' behavior and preferences when faced with freemium pricing options. On the one

hand, need for closure drives consumers to find urgent and often suboptimal choices that provide consistency and predictability. We suggest that premium pricing subscriptions, while not always representing the optimal choice or offering the best value, provide such predictability and reduce uncertainty and thus will be favored by consumers with a high need for closure. On the other hand, we argue that deal proneness is an individual trait that describes consumers' general tendency to prefer discounted pricing offers (i.e., deals). In the freemium context, this means that deal-prone consumers are more likely to choose the free rather than the premium option. Thus, our key research question is: do the individual differences need for closure and deal proneness influence consumers to exploit the free version or explore the augmented benefits of the premium subscription?

To address our research question, we conducted one field survey and one experiment to test how and if need for closure drives consumers' decision between the free and premium version of an app. In doing so, our study makes three important contributions to the literature. First, drawing on contemporary trait theories (Horstmann et al., 2018), we expand the current knowledge on the effects of consumers' individual differences on their decision to pay for the premium subscription (e.g., Niemand et al., 2019). We show that need for closure has a positive impact on consumers' decision to pay for the premium subscription. This result is in line with our prediction that responses to premium offers may be driven by the desire to seek permanency and certainty in ambiguous situations. Specifically, we find that uncertainty reduction mediates the link between need for closure and paying for a premium subscription.

Second, we identify deal proneness as a moderator of the relationship between need for closure and paying for a premium subscription. In doing so, we extend the literature on need for closure by showing that in the situational context of freemium pricing choices, deal proneness regulates how consumers' need for closure determines their willingness to pay for a premium option. Contemporary trait theories acknowledge this role of situational

conditions in triggering dispositions to behave and react in certain ways (Fleeson & Jayawickreme, 2015; Horstmann et al., 2018; Steyer et al., 2015; Tett & Burnett, 2003).

Third, our results offer firms using a premium pricing strategy guidance on the actions they need to take to increase the number of consumers choosing a premium subscription. Specifically, we show that consumers who are likely to pay for a premium subscription are influenced by the extent to which premium offers can reduce uncertainty—for example, by emphasizing the reliability and functionality of the premium offering. Thus, we suggest that managers should allocate extra resources to segment customers using the free version on the basis of individual traits (e.g., need for closure) related to the desire for information that reduces uncertainty and ambiguity in their buying decision processes.

"Insert Table 1 here"

2. Theory and hypotheses development

The growing use of freemium pricing has led scholars to examine the effects of freemium (vs. no freemium) pricing on conversion propensity (Arora et al., 2017; Koch & Benlian, 2017), sales quantity (Li et al., 2019), and firm revenue (Rietveld, 2018). Research has also investigated the effects of factors such as search engine referrals (Pauwels & Weiss, 2008), peer influence (Bapna & Umyarov, 2015), word of mouth (WOM) (Chica & Rand, 2017), product line extensions (Gu et al., 2018), and value perceptions (Niemand et al., 2015) on consumers' conversion rates from free to premium subscription. In addition, a research stream focuses on the influence of consumers' observable features (e.g., gender, age) on their decision to pay for a premium subscription (Arora et al., 2017; Punj, 2015). Scant research, however, has examined the role of individual differences and traits in how consumers evaluate free versus premium subscription options. Niemand et al. (2019) explore the impact of two consumer tendencies—namely, free mentality and price–quality inferences—on free versus premium preferences. They find that if these inferences are conflicting, consumers'

preferences for free options may be reduced, due to the incurring cognitive dissonance. However, absent such a conflict (e.g., high free mentality and low quality inference), consumers prefer the free options. Building on this stream of literature, our research aims to examine the influence of consumers' need for closure and deal proneness on their preference for free versus premium subscriptions in the app context. For this purpose, we distinguish between the free and premium subscription options. We define the former as a free-of-charge option that has limited and restricted features and capabilities and the latter as offering full and unrestricted features and capabilities in return for a pre-determined price.

2.1. Need for closure theory

Introduced as a general motivational theory in human decision making, the theory of need for closure represents an individual difference related to a general preference for definite answers and solutions to problems (Kruglanski, 1990a, 1990b). It describes the need for "clear, definite, or unambiguous knowledge that will guide perception and action" (Vermeir et al., 2002, p. 703). Need for closure exhibits two distinct but interrelated tendencies. The first, the *urgency tendency*, leads people to strive to reach a conclusion quickly to stop cognitive processing related to the issue (Webster & Kruglanski, 1994), even if the outcome does not represent the optimal solution. The second, the *permanence tendency*, directs people to maintain and "freeze" their decisions and to reduce ambiguity (Brizi, 2020; Kruglanski & Webster, 1996).

Over the years, scholars have demonstrated how different levels of need for closure can contribute to determine a series of other psychological factors and explain a variety of interpersonal and consumer-related phenomena. For example, previous research shows that need for closure fosters *group centrism*, defined as the tendency of an individual to engage to a social group and to stick with its shared norms (Kruglanski et al., 2006). Individuals with a higher need for closure will therefore reject any divergent information and conform more to

the dominant viewpoint of the group than those with a lower need for closure. Furthermore, research has applied need for closure theory to other interpersonal and social group contexts, such as stereotype activation (Baldner et al., 2019), support of extremism and violent actions (Webber et al., 2018), and political psychology (Baldner et al., 2018). In a marketing setting, this individual trait can have a considerable impact on how consumers make decisions in their daily lives. On the one hand, the *urgency tendency* induced by higher levels of need for closure may drive consumers to seek closure immediately and make decisions quickly, even incurring the risk of making a suboptimal decision in terms of price, functionalities, or other attributes (Kardes et al., 2006; Roets et al., 2015). Especially after forming a conviction, consumer with a high need for closure tend to stop the information search process (Vermeir et al., 2002). On the other hand, consumers with a high need for closure also show a *permanence tendency*, which drives them to freeze their decision and makes them unwilling to re-evaluate the chosen option or consider new information (Roets et al., 2015). This tendency toward permanent decisions also means that individuals with a high need for closure are often uncomfortable with ambiguity, preferring predictability instead (Brizi & Biraglia, 2021; Kruglanski & Webster, 1996; Vermeir et al., 2002).

Previous research also indicates that consumers with a high need for closure prefer more rapid outcomes in decision making, as these help reduce the level of uncertainty and ambiguity in a situation (Berenbaum et al., 2008; Schumpe et al., 2017). Similarly, consumers with a high need for closure engage more in practices that help reduce their uncertainty, such as buying products to reaffirm their identity (Strong et al., 2019). In the context of freemium pricing, consumers must weigh the costs and benefits of the free and premium versions of an app, often selecting the free option (i.e., zero-price effect; Kübler et al., 2018; Niemand et al., 2015, 2019). For example, consumers may question whether opting for a premium subscription is worth the cost. Due to their *urgency tendency*, consumers with

a high need for closure might be less focused on finding an optimal choice that provides the highest value and more focused on reaching a decision fast that provides certainty moving forward. This is even more so, as most premium app subscriptions can be cancelled monthly, which significantly reduces potential sunk-cost risks (Mishra et al., 2021; Stocchi et al., 2020). Free versions of an app often restrict or change the feature sets available to users. For example, apps such as Spotify, Duolingo, and Tinder restrict the usability of their free subscriptions by the hours listened to music, the number of lessons taken, and the number of people swiped right, respectively. Often, such policies change over time as the apps gain popularity (e.g., Bumble implementing a daily swipe limit in 2020). Thus, consumers with a high need for closure may be more likely to avoid such ambiguities because of their preference for stability and their *permanence tendency*.

As consumers seem to value uncertainty reduction when estimating the right amount to pay (Viglia et al., 2019), we argue that, when facing the decision to pay for an app's premium (free) subscription, consumers with a high (low) need for closure will be more likely to pay for the premium subscription. We argue that a free subscription provides a certain degree of uncertainty with its use while a premium subscription provides a promise (often even on a contractual basis and explicitly presented by comparing the features of different subscription tiers) that offers predictability and certainty to consumers (Kruglanski & Webster, 1996; Vermeir et al., 2002). Thus, reducing this type of uncertainty and risk may justify the decision of consumers with a high need for closure to pay for an app's premium subscription. As such, we posit the following:

H1. Consumers with a high (low) need for closure are more likely to pay for a premium (free) subscription.

2.2. Deal proneness

Many firms offer products and services at discounted promotional prices. Such reductions in prices, which can take many shapes or forms, are often referred to as *deals* (Hackleman & Duker, 1980; Webster, 1965). *Deal proneness* is an important individual difference that describes consumers' attitudes toward and interests in deals and may develop at an early age (Schindler et al., 2014). Schneider and Currim (1991) differentiate between active and passive deal proneness. Active deal proneness is the propensity to actively seek out price promotions (e.g., searching for a better deal), while passive deal proneness reflects an increased sensitivity to price promotions (e.g., reacting favorably to a deal). In line with this categorization, Alford and Biswas (2002) distinguish between price-conscious and sale-prone consumers. They find that price-conscious consumers actively search for better deals and lower prices while sale-prone consumers are more sensitive to deals and low prices in general. In this research, we focus on the passive form of deal proneness. Specifically, we adopt Lichtenstein et al.'s (1990, p. 56) definition of deal proneness as "an increased propensity to respond to a purchase offer because the form of the purchase offer positively affects purchase evaluations." Prior research demonstrates that deal-prone consumers react more favorably to reduced prices (Hackleman & Duker, 1980; Iranmanesh et al., 2017; Kapitan et al., 2021), especially if these entail absolute dollar savings (DelVecchio, 2005). Deal-prone consumers also react more favorably to value-added premium promotions (Prendergast et al., 2008) and WOM incentives (Wirtz & Chew, 2002) and are more likely to participate in online flash sales (Vakeel et al., 2018). Deal proneness is also related to impulsiveness, innovativeness, and shopping enjoyment (Martínez & Montaner, 2006).

Given the variety of price and sales promotion approaches in the marketplace (e.g., price-off deals, coupons, vouchers, freemium pricing), the type of deal may also affect consumer reactions (Kukar-Kinney & Xia, 2017; Lichtenstein et al., 1995). While research

has mostly examined the concept of deal proneness in the context of retailing (DelVecchio, 2005; Vakeel et al., 2018; Wirtz & Chew, 2002), its effects on the conversion from free to premium subscription remain to be fully understood. By definition, freemium pricing entails the simultaneous offering of a free subscription (e.g., a free but heavily restricted version of a product or service) and the full-featured version for a fee (e.g., a monthly paid subscription; Niemand et al., 2019). Thus, we expect deal-prone consumers to prefer the free version. Given that deal proneness determines how consumers react to pricing, we reasonably assume that highly deal-prone consumers are less likely to be influenced by other traits and individual differences that are less context or situation specific and not triggered by pricing. For example, while consumers with a high need for closure may prefer the certainty of a premium subscription's full feature set, this preference may be mitigated if they are also highly deal prone. This is in line with contemporary trait theories such as whole trait theory (e.g., Fleeson & Jayawickreme, 2015), latent state–trait theory (e.g., Steyer et al., 2015), and trait activation theory (e.g., Tett & Burnett, 2003), all of which acknowledge the role of situational conditions in triggering certain behavioral dispositions (Horstmann et al., 2018; Pervin, 1994).

Another reason that deal proneness may mitigate the effect of need for closure on paying for a premium subscription may stem from the urgency tendency of individuals with a higher need for closure. Consumers with a high need for closure tend to seek urgent solutions to problems without trying to find an optimal option and thus rely more heavily on heuristics (De Dreu et al., 1999; Kellermann & Reynolds, 1990; Webster & Kruglanski, 1994). Thus, high deal proneness may be a vehicle to find an urgent solution to the choice between free and premium subscriptions, in which the tendency to react more positively to low (or, in this case, free) prices may drive consumers to be less attracted to the premium option. As such,

increased levels of deal proneness may mitigate the positive relationship between need for closure and a preference for premium subscriptions. Thus:

H2a. A consumer's deal proneness moderates the effect of need for closure on uncertainty reduction, such that high deal proneness mitigates the positive relationship between need for closure and uncertainty reduction.

H2b. Uncertainty acts as a mediator in the relationship between need for closure and paying for the premium subscription only if deal proneness is low.

3. Research methods

To examine our conceptual model (see Fig. 1), we conducted two studies. First, we conducted a cross-sectional field survey (Study 1) among 706 US consumers. The aim of the study was to test both the main effect of need for closure on the likelihood of paying for the premium subscription and the moderating role of deal proneness. Second, we ran an experiment with 537 US participants (Study 2). This study built on Study 1 by experimentally manipulating need for closure to establish causality, examining the mediating role of uncertainty reduction, and further testing the robustness of the effects found in Study 1. We recruited all respondents from Amazon Mechanical Turk (MTurk), a crowdsourcing online market research platform extensively employed in consumer research (e.g., Daly & Nataraajan, 2015; Rakshit et al., 2021). MTurk enables scholars to reach large and diverse respondent samples in a convenient and inexpensive way (Hulland & Miller, 2018). Prior research has praised MTurk for the reliability and quality of the data provided (Buhrmester et al., 2011). Nevertheless, to safeguard the validity and reliability of our results, we recruited respondents only with a high approval rate (98% approval rate and 10,000 completed HITs [Human Intelligence Task]) and also included attention checks in our studies (Oppenheimer et al., 2009) to ensure high-quality responses.

"Insert Fig. 1 here"

3.1. Study 1

3.1.1. Procedure and measurements

The online survey focused on consumers of three apps that use freemium strategies: Spotify, Duolingo, and Tinder. We selected these apps for their popularity and topic variety (i.e., music, languages, and dating, respectively). Thus, we only recruited respondents who used at least one of these three apps. Concentrating on apps that target different consumer interests enhances the reliability and generalizability of our findings. To ensure the clarity of survey items, we pilot-tested the questions using a consumer sample (n = 70) that was not included in our final results. For the main survey, we collected 706 responses.

We adopted the scales used to measure need for closure (four items, adapted from Roets & Van Hiel, 2011; α = .87) and deal proneness (four items, adapted from Lichtenstein et al., 1995; α = .86) from prior research and adapted them to the context of our study (see Table 2 for items and sources). We measured these constructs using multi-item Likert scales (1 = "strongly disagree," 7 = "strongly agree"). With regard to app use, we asked respondents to indicate (1) which of the three apps (Spotify, Duolingo, or Tinder) they used, (2) how long they had been using the app, and (3) whether they used the app's free or premium subscription. Next, we measured social desirability (four items, adapted from Steenkamp et al., 2010; α = .75) and collected demographic information (gender, age, income level, and education) for use as additional control measures.

"Insert Tables 2 and 3 here"

3.1.2. Sample characteristics

The final sample was fairly well-balanced by gender (54.9% male). The mean age was 39 years (SD = 10.45), and the most common education level (45.5% of respondents) was a bachelor's degree. Income level was evenly distributed, with 43.7% of respondents earning

between $30,000 and $69,999. Table 3 provides the demographic information. With regard to app use, 69.1% of respondents used Spotify, 15.8% Duolingo, and 15.1% Tinder. In total, only 24.2% of all respondents paid for the apps' premium subscription. Across all three apps, 61.6% of respondents began using the app within the last four years (13.0% in 2017, 23.5% in 2018, 13.5% in 2019, 19.4% in 2020, and 2.1% in 2021).

3.1.3. Measure validation

To confirm the validity and reliability of our measures, we first ran a confirmatory factor analysis (CFA) using Mplus version 8.0 (Muthén & Muthén, 2017). This analysis included all the predictor multi-item scales (i.e., need for closure, deal proneness, and social desirability). All factor loadings surpassed the minimum threshold of 0.5 and are significant at the 1% level (see Table 2). The CFA model showed good fit indices (CFI = 0.97; SRMR = 0.05), above the fixed recommended thresholds, and reasonably close to the flex cutoff values given the purpose, focus and sample size of the study ($CFI_{.05} \geq 0.98$; $SRMR_{.05} \leq 0.03$; Mai, Niemand & Kraus, S., 2021; Niemand and Mai, 2018). Thus, the CFA results indicated good convergent validity of the measures.

The correlation matrix (see Table 4) highlights no concerns regarding discriminant validity. In addition, all scales demonstrated good internal reliability ($\alpha > .70$), and AVE and CR scores exceeded the minimum thresholds of .50 and .70, respectively (Fornell & Larcker, 1981). Table 4 reports all means, standard deviations (SD), Cronbach's alpha (α) values, construct reliabilities (CR), AVEs, and correlations.

"Insert Table 4 here"

We addressed the possibility of common method bias (CMB) in three ways. First, we followed the advice of Podsakoff et al. (2012) by (1) avoiding any convoluted or abstract questions; (2) informing respondents that their responses were subjective and, therefore, that no right or wrong answers existed; and (3) assuring respondents that their answers would

remain anonymous. Second, we ran Harman's single-factor test (Podsakoff et al., 2003) using SPSS version 26. Following this procedure, we performed an exploratory factor analysis including all construct items. The un-rotated factor solution detected three factors, with the first one explaining only 31.23% of the total variance. Thus, this procedure uncovers no CMB threats in the data. Third, we controlled for CMB using the unmeasured latent factor procedure (Podsakoff et al., 2003). Following this method, we ran a second CFA in Mplus that included a new unmeasured variable; all items not only loaded onto this new unmeasured variable but also loaded onto their theoretical constructs. The results of this analysis show that the model fit worsened when including the unmeasured latent factor ($\Delta\chi^2 = 327.43$, $\Delta df = 9$, $p < .01$). These results also indicate that CMB is not a concern in the data.

3.1.4. Analysis and results

To test our hypotheses, we first ran a binary logistic regression, with need for closure as the predictor and paying for the premium subscription as the dependent variable (free = 0, premium = 1). The results show that need for closure positively affects the likelihood of paying for the premium subscription (–2 log-likelihood = 778.726, Cox & Snell $R^2 = .004$, Nagelkerke $R^2 = .006$, $b = .13$, SE = .08, 95% confidence interval [CI] = [–2.79, –1.06], $p = .08$), such that consumers with a high need for closure are more likely to pay for a premium subscription. Thus, the results provide support for H1. Furthermore, controlling for gender, age, income level, education, and social desirability did not alter these results (–2 log-likelihood = 755.105, Cox & Snell $R^2 = .036$, Nagelkerke $R^2 = .054$, $b = .14$, SE = .08, 95% CI = [–.02, .30], $p = .09$). Table 5 (Model 1) lists all coefficients.

To assess the moderating role of deal proneness, we used PROCESS model 1 (10,000 bootstrap samples and 95% CIs; Hayes, 2013). Model 2 in Table 5 reports the results of this model (–2 log-likelihood = 745.821, Cox & Snell $R^2 = .049$, Nagelkerke $R^2 = .073$). As shown, need for closure has a positive impact on the likelihood of paying for the premium

subscription (b = .89, SE = .36, 95% CI = [.19, 1.60], p = .01). Conversely, we find that deal proneness has a marginally significant, positive effect on the likelihood of paying for the premium subscription (b = .72, SE = .39, 95% CI = [–.05, 1.50], p = .07). Last, the results show that the interaction between need for closure and deal proneness negatively affects the likelihood of paying for the premium subscription (b = –.15, SE = .07, 95% CI = [–.28, –.01], p = .03). Thus, when deal proneness is high, the positive effect of need for closure is attenuated. Fig. 2 illustrates the effect of need for closure on the likelihood of paying for the premium subscription according to different levels of deal proneness and its significance levels based on a floodlight analysis.

"Insert Table 5 and Fig. 2 here"

We also find that both age (b = –.03, SE = .01, 95% CI = [–.05, –.01], p = .00) and income (b = .12, SE = .03, 95% CI = [.06, .18], p = .00) affect the likelihood of paying for the premium subscription. The negative impact of age aligns with the logic that young people are more open to new experiences (Gregory et al., 2010). Regarding the positive effect of income, people with a higher income have less risk spending money to explore the benefits of a premium subscription. Furthermore, we find no differences in gender (b = –.02, SE = .17, 95% CI = [–.37, .30], p = .92) or education level (b = –.08, SE = .08, 95% CI = [–.23, .07], p = .25) in our sample. These non-significant effects are likely due to the broad appeal of the apps chosen (e.g., Spotify). Last, social desirability has no impact on the likelihood of paying for the premium subscription (b = –.08, SE = .08, 95% CI = [–.23, .09], p = .51). This finding may be due to the measurement and item wording of the dependent variable: respondents were asked about their current subscription type (i.e., their current behavior) using three simple, objective, and unambiguous items. Thus, the questionnaire design diminished any socially desirable tendencies (Podsakoff et al., 2012).

3.1.5. Discussion

Using consumer data, Study 1 finds a positive effect of need for closure on the likelihood of paying for the premium subscription, such that consumers with a high need for closure are more likely to subscribe to the premium versions of the three apps. In addition, we found support for the moderating role of deal proneness in the relationship between need for closure and paying for the premium subscription. Specifically, the positive effect of need for closure on the likelihood of paying for the premium decreased for consumers with high deal proneness.

3.2. Study 2

In Study 2, we aim to test the robustness of the effects found in Study 1 by replicating the survey's results in an experimental setting. Specifically, we manipulate participants' need for closure to establish causality. Moreover, Study 2 introduces uncertainty reduction as a mediator of the relationship between the need for closure × deal proneness interaction and premium subscription preference.

3.2.1. Procedure and measurements

We collected data from 537 participants (51.2% female, 47.9% male, 0.9% other; M_{age} = 40) with the help of MTurk to run a 2 (low vs. high need for closure) between-subjects factor × 1 (deal proneness) measured factor experiment. First, participants had to confirm that they have used smartphone apps before. Second, we measured deal proneness using the same four items as in Study 1 (Lichtenstein et al., 1995; α = .82). Third, we randomly allocated the participants to either the low- or high-need-for-closure condition. There are several approaches to manipulate need for closure in experimental settings (Shah et al., 1998). One way is to put participants into difficult or unpleasant situations—specifically, by adding time pressure or noise (e.g., Kruglanski & Freund, 1983; Kruglanski et al., 1993) or by inducing mental fatigue (e.g., Webster et al., 1996). Another way to manipulate need for closure, based on Avnet and Higgins's (2003) behavioral recall paradigm, is to ask participants to recall

situations that trigger low or high need for closure (e.g., De Cristofaro et al., 2019). As Study 2 took place during the COVID-19 pandemic when access to laboratories was limited, we chose to follow De Cristofaro et al.'s (2019) behavioral recall approach, which is more suitable for the online experiment context. In each condition, we asked participants to write about three memories. In the low-need-for-closure condition, participants read the instructions: "Think back to a time when, even after you made up your mind about something, you were eager to consider a different opinion"; "Think back to a time when, thinking about a problem, you considered as many different options on the issues as possible"; and "Think back to a time when you disliked the routine aspects of your work or studies." In the high-need-for-closure condition, participants read the instructions: "Think back to a time when you felt uncomfortable because you didn't understand the reason an event occurred in your life," "Think back to a time when you quickly became impatient and irritated when you did not find a solution to a problem immediately," and "Think back to a time when you felt irritated when one person disagreed with what everyone else in a group believed" (see Appendix). Participants wrote between 34 and 947 words to complete this task. Fourth, and after the writing task, we measured need for closure with the help of Roets and Van Hiel's (2011) need for closure scale (α = .92). While we reduced the scale to four items with the highest loadings in Study 1, we used the entire 15-item scale in Study 2. Fifth, we told participants to imagine that they were in the "process of downloading an app" and were "willing to use it." Moreover, the instructions informed participants that the app had two versions: "The free version has a limited number of features and capabilities and will restrict the use of the app to a certain amount of time" and "The paid version of the app possesses the full feature set and all capabilities and will not include any time restrictions regarding app usage." Sixth, we measured participants' preference for the free versus premium subscription of the app using a one-item 7-point scale (i.e., "Please indicate your

relative preference for both versions of the app"; 1 = "free," 7 = "premium"). Seventh, we asked participants to indicate whether their preferred subscription option would reduce uncertainty on a five-item 7-point Likert scale (e.g., "This version of the app reduces uncertainty"; adapted from Grieve & Hogg, 1999; $\alpha = .89$). Finally, we collected participants' demographic data.

3.2.2. Analysis and results

As intended, our manipulation check showed that participants in the low-need-for-closure condition ($M = 4.57$, $SD = 1.14$) indeed reported lower levels of need for closure than participants in the high-need-for-closure condition ($M = 5.03$, $SD = 1.07$; $F(1, 535) = 22.318$, $p = .01$, $\eta^2 = .04$; effect size matches De Cristofaro et al., 2019). To determine the impact of the need for closure on the preference for the free versus premium subscription, we ran a one-way analysis of variance. The results indicated a marginally significant main effect of need for closure on subscription preference ($F(1, 535) = 3.781$, $p = .052$, $\eta^2 = .01$), with participants in the low-need-for-closure condition ($M = 3.07$, $SD = 2.12$) reporting a weaker preference for the premium subscription than participants in the high-need-for-closure condition ($M = 3.44$, $SD = 2.21$). The marginal nature of the effect may be due to a fictitious app being used in the scenarios. Nevertheless, this result provides some support for H1. We also found a significant main effect of the need for closure manipulation on uncertainty reduction ($F(1, 535) = 3.911$, $p = .048$, $\eta^2 = .01$), with participants in the high-need-for-closure condition reporting more uncertainty reduction ($M = 5.24$, $SD = 1.23$) than those in the low-need-for-closure condition ($M = 5.03$, $SD = 1.23$).

In the moderated mediation analysis, we tested whether uncertainty reduction acts as a mediator in the relationship between the need for closure × deal proneness interaction and premium subscription preference. Thus, the model included need for closure as a dichotomous independent variable (0 = low-need-for-closure condition, 1 = high-need-for-

closure condition), deal proneness as a continuous moderator, uncertainty reduction as the mediator, and premium subscription preference as the dependent variable (PROCESS Model 8 with 10,000 bootstrap samples and 95% CIs; Hayes, 2013).

First, the model ($F(3, 533) = 14.83$, $p < .001$, $R^2 = 7.71\%$) regressed need for closure ($b = 1.54$, SE = .58, CI = [.40, 2.68], $p = .01$), deal proneness ($b = .43$, SE = .07, CI = [.28, .58], $p = .00$), and the interaction term ($b = –.25$, SE = .10, CI = [–.45, –.05], $p = .02$) on the mediator (uncertainty reduction). A floodlight analysis (Spiller et al., 2013) revealed that need for closure is significantly related to uncertainty reduction up to the Johnson–Neyman (J-N) point of 5.39 on the deal proneness scale (βJ-N = .20, SE = .10; 39.48% of the moderator's value lies below the J-N point). This result lends support to the notion that deal proneness mitigates the positive effect of need for closure on uncertainty reduction, confirming H2a.

Second, we found a significant, positive relationship between the mediator (uncertainty reduction; $b = .64$, SE = .07, CI = [.49, .78], $p = .00$) and the outcome variable (premium subscription preference) in an additional regression model that also included the independent variable and the interaction term ($F(4, 532) = 21.59$, $p < .001$, $R^2 = 13.97\%$). In addition, we found a significant indirect effect for low deal proneness (–1SD; $b = .27$, SE = .11, 95% CI = [.07, .48]), while the indirect effect for the medium (mean) and high cases of deal proneness (+1SD) did not reach significance. As expected, we found no significant direct effects for all levels of deal proneness ($p > .06$). Finally, we found a significant index of moderated mediation ($b = –.16$, SE = .08, 95% CI = [–.32, –.00]). Overall, these results lend support to the claim in H2b that uncertainty reduction is a full mediator in the relationship between the need for closure × deal proneness interaction and premium subscription preference, especially for consumers with low deal proneness. Thus, we find support for our predicted moderated mediation model (see Fig. 3).

"Insert Fig. 3 here"

3.2.3. Discussion

The contribution of Study 2 is twofold. First, we replicate the findings of the real-world survey (Study 1) in a controlled experimental setting and demonstrate the robustness of the effects of need for closure and deal proneness on premium subscription preference. Second, we expand those findings and show that perceptions of uncertainty reduction mediate this relationship. Specifically, we find that consumers with a high need for closure believe that paid apps reduce uncertainty, which in turn drives preference, especially for less deal-prone consumers. Thus, we conclude that need for closure is an important determinant of why consumers opt for premium subscriptions rather than sticking with the free version of apps.

4. General discussion

While freemium pricing strategies seem to be popular especially among digital service providers, research on what factors drive consumers to pay for a premium subscription is limited. In a field survey of users of real apps (Study 1), we show that their need for closure positively affects the likelihood of paying for the premium subscription of the app. Specifically, consumers with a high need for closure are more likely to pay for a premium subscription than consumers with a low need for closure. Consumers' deal proneness mitigates this effect, decreasing the impact of high need for closure if consumers are highly reactive to pricing deals. Importantly, the effects remain robust in a scenario-based experiment (Study 2) in which we presented consumers with a fictitious app. Study 2 also unveiled the role of uncertainty reduction as a mediator of the effect of need for closure on the preference for the app's premium subscription. Consumers with a high need for closure prefer premium apps because of the capacity to reduce the uncertainty associated with the limited features and functionalities that characterize the free version.

4.1. Theoretical contributions

First, the study findings contribute to the literature on freemium pricing strategies by highlighting potential antecedents and mechanisms that influence consumers' choice. Second, our research also contributes to the theory on the need for closure by identifying the moderating effect of deal proneness. Need for closure is often considered a key factor in decision making (not only in consumer research but also in organizational behavior, general management, and even political science, especially for individual and collective negotiations). Uncovering the role of such traits in increasing the acceptance of a higher cost (in our case, a premium price) may have theoretical implications for disciplines other than marketing.

4.2. Managerial implications

We recommend that, to raise adoption rates of premium subscriptions, firms using a freemium pricing strategy should segment customers on the basis of individual traits, such as need for closure and deal proneness. Managers could design systems to gather data on the behavioral patterns of users across various situations (e.g., responses to special offers, searches for deal-related information). Doing so could help firms segment users by their desire for certainty and for exploiting special deals. After that, managers could target consumers characterized by need for closure with tailored communication campaigns geared toward providing reassurance and reducing uncertainty about their decision to pay for the premium subscription. For example, managers could use testimonials of premium users and/or offer money-back guarantees (i.e., after the first month, to unsatisfied premium users) to provide reassurance, reduce uncertainty, and consequently increase premium subscription sales. In addition, managers could create promotional campaigns that foster uncertainty reduction. For example, managers could design communication campaigns that highlight the reliability of premium subscriptions (e.g., being able to play music on Spotify even when there is no signal, focusing on the lack of advertising interruptions with freemium).

For the segments characterized by deal proneness (e.g., consumers who reacted positively to price promotions in the past), managers should not waste resources on designing targeted communications that aim to persuade these consumers to upgrade to the premium subscription; consumers characterized by deal proneness will not be sensitive to such messages. Still, this segment may respond to promotional campaigns that focus on added-value deals (e.g., exclusive content such as pre-releases, personalized content). Thus, managers should target these consumers with such messages instead of special deal offers (e.g., free trial). Fig. 4 summarizes the actionable tactics we recommend that firms take to increase adoption rates of premium subscriptions. Last, identifying and targeting consumers with a high need for closure may be a valuable strategy to boost customer retention. As people with a high need for closure tend to "freeze" their decisions and disregard additional information, they may be less interested in canceling their premium subscription or switching to a competitor.

"Insert Fig. 4 here"

4.3. Limitations and future research directions

This study should be considered in light of its limitations. First, both Studies 1 and 2 are cross-sectional, which limits understanding of the long-term effects of individual traits on premium subscription consumption. Use of an experiment supports the causality claim of individual traits' influence on premium subscription preference, but future studies could gather longitudinal data to further investigate the stability of this influence. Second, our studies were limited to the app context. While freemium pricing strategies are particularly common in this context, they are not limited to apps. Thus, future research might test the robustness of our findings in a different context (e.g., financial services) or on different pricing approaches (e.g., guaranteed discounts for subscribers). Furthermore, a fruitful avenue for future research would be to investigate differences among different types of apps

or services using freemium pricing, as well as differences among cultures, age groups, or other demographic variables (e.g., education, income; Kübler et al., 2018). Third, in our investigation we focused solely on examining how two individual traits—need for closure and deal proneness—may influence freemium pricing perceptions and choices of consumers. Future research might examine other individual differences that may influence consumer behavior in the freemium context. For example, research could examine whether consumers with a high knowledge of all products on the market and whose opinions are valued by others (e.g., market mavens, opinion leaders) are more or less likely to adopt premium subscription services. On the one hand, their deep product knowledge may make them more skeptical of the benefits of premium offerings; on the other hand, their status in society may drive them to try out more premium (i.e., full-featured) options to stay up to date with the latest market developments and innovations (Goldsmith et al., 2006; Reinecke Flynn & Goldsmith, 2017). Similarly, future research might examine whether consumers' tendency to seek better value (e.g., high-value-conscious consumers; Lichtenstein et al., 1990) may moderate the effect of need for closure on premium subscription adoption in the same way as price-consciousness (i.e., deal-proneness). One way to do this would be to manipulate the value or quality of the deal (e.g., various price points and features of a premium app).

Moreover, we tested the effects of need for closure in the freemium context using measurement (Roets & Van Hiel, 2011) and manipulation (De Cristofaro et al., 2019). Nevertheless, future research could attempt to replicate our findings by using alternative manipulations of need for closure (e.g., Kruglanski & Freund, 1983), or using a latent growth structural equation modeling approach, which would measure need for closure before and after the manipulation.

Companies extensively use these marketing techniques, but their effectiveness across consumer groups remains ambiguous. Scholars investigating the effectiveness and return on

investment of trial and taster techniques could help firms gain a better understanding of the effects of consumers' need for closure, deal proneness, uncertainty reduction, and individual traits on premium subscription consumption. Finally, although the use of MTurk raises concerns about data quality, self-selection bias, and social desirability bias, it also offers the opportunity to reach a large and diverse audience, enabling the generalization of the study findings to a broader population. It would be fruitful to replicate our study using a different audience (e.g., Asian or European consumers) reached via any other crowdsourcing online market research platform to assess the robustness and external validity of our study results.

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Table 1: Empirical research on freemium pricing strategy.

Study	Study context	Study design	IVs	Underlying mechanisms		DVs	Study findings
				Moderators	Mediators		
Pauwels and Weiss (2008)	1,383 daily observations at an online content provider for a period of 4 years	Time series	Search engine referrals	N/A	N/A	From free to fee subscription	• Direct effect (+)
Oestreicher-Singer and Zalmanson (2013)	39,397 non-paying users and 3,612 new subscribers of online music radio	Time series	Content consumption, content organization, friends, subscriber friends, community participation	N/A	N/A	Subscription to premium services	• Direct effects (– / + / – / + / +)
Liu et al. (2014)	60,142 observations from 1,567 product panels from Google Play	Secondary data	Free version of mobile app	Rating of the paid version	N/A	Downloads of paid version	• Direct effect (+) is moderated (–)
Wagner et al. (2014)	Survey of 317 users of MaaS	Cross-sectional	Attitude premium	N/A	N/A	Intention to pay premium	• Direct effect (+)
Niemand et al. (2015)	Survey of 158 Spotify users	Cross-sectional	Fermium effect	N/A	N/A	Perceived quality, perceived value, perceived sacrifice	• Direct effect (– / + / ns)
Punj (2015)	Survey of 755 adult internet users	Cross-sectional	Income, education, gender, age	N/A	N/A	Pay for online content	• Lower-income group more likely to pay • High school graduates more likely to pay than post-graduates • Men more likely to pay than women • Those aged 25–34 and 35–44 years more like to pay than those aged 65+ years
Bapna and Umyarov (2015)	Field experiment with 2,000 music service users	Cross-sectional	Peer influence	Number of friends	N/A	Premium subscription	• Direct effect (ns) is moderated (–)
Hamari et al. (2017)	Survey of 869 Finnish consumers	Cross-sectional	Assurance, empathy, reliability, responsiveness, play intention	N/A	N/A	Purchase intention for premium (vs. freemium) content	• Direct effects (ns / ns / ns / ns / +)
Koch and Benlian (2017)	Contest-based online experiment with 225 people	Experimental	Free trial strategy (premium-first vs. free-first)	Product value discrepancy	N/A	Conversion propensity	• Direct effect (+) is moderated (–)
Chica and Rand (2017)	Agent-based framework for decision support system	Experimental	WOM	N/A	N/A	Premium sales	• Direct effect (+)
Arora et al. (2017)	Dataset of 7.7 million observation from 12,315 paid apps	Secondary data	Free version presence	App category	N/A	Paid app adoption speed	• Direct effect (–) is moderated (–)
Dinsmore et al. (2017)	Survey of 257 online consumers	Cross-sectional	Impulsivity, bargain proneness, frugality	N/A	N/A	Tendency to pay for apps	• Direct effects (ns / + / –)
Rietveld (2018)	Experiment with 246 users in the context of the computer game industry and Steam	Experimental	Freemium business models, premium business models	N/A	N/A	Use rates Revenue	• Products brought to market through freemium have lower use rates than products brought to market through premium • Freemium generates less revenue from paid items than products brought to market through premium
Gu et al. (2018)	Randomized field experiment with an online content provider	Experiment	Product line extensions	Price of new premium versions	N/A	Purchase of premium version	• Direct effect (+) is moderated (+)

Study	Study context	Study design	IV(s)	Underlying mechanisms		DV(s)	Study findings
				Moderators	Mediators		
Yan and Wakefield (2018)	Survey of 270 Spotify users	Cross-sectional	Willingness to subscribe	N/A	N/A	Actual subscription	• Direct effect (+)
Lee et al. (2018)	1-year field experiment using a B2B electronic platform company	Field experiment	Buyers' direct traffic, buyers' referral traffic, buyers' organic traffic, sellers' use of value-added services, sellers' use of social forums	Upmarket repositioning strategy	N/A	Revenue from freemium	• Direct effect (+) is moderated (+) • Direct effect (ns) is moderated (ns) • Direct effect (+) is moderated (ns) • Direct effect (+) is moderated (+) • Direct effect (+) is moderated (+)
Li et al. (2019)	Experiment with a non-profit publisher	Field experiment	Freemium (vs. no freemium) offer	Price increase	N/A	Sales quantity	• Freemium (+) is moderated (ns)
Beltagui et al. (2019)	Survey of 245 GameCorner players	Cross-sectional	Service performance, strength of community	Achievement and social orientations	N/A	Willingness to pay premium	• Direct effects (ns / +) are moderated (ns / ns / + / –)
Niemand et al. (2019)	65 French students in an implicit association test and experiment with 511 Germans	Experimental	Price perception	Free mentality, price quality inference	N/A	User response to freemium offers	• The interplay (free mentality × price–quality) affects (+) user response to freemium offers
Danckwerts and Kenning (2019)	Survey of 772 online German consumers	Cross-sectional	Music-based psychological ownership	N/A	N/A	Intention to switch	• Direct effect (+)
Cziehso et al. (2019)	Study 1, online experiment with 65 students; Study 2, online experiment with 187 German consumers	Experimental	Switching option (0 = forced vs. 1 = freemium)	N/A	Fairness perception, attitude toward the company, usage intention	Purchase intention of the free-based service	• Direct effect (–) is mediated (– / – / –)
Mäntymäki et al. (2020)	Survey of 471 Spotify users from Finland	Cross-sectional	Intrusiveness of advertising, ubiquity, social connectivity, discovery of new content	Enjoyment, price value	N/A	Intention to update to/retain premium subscription	• Direct effect (ns) is mediated (ns / ns) • Direct effect (ns) is mediated (+ / +) • Direct effect (ns) is mediated (ns / ns) • Direct effect (ns) is mediated (+ / +)
Hamari et al. (2020)	Survey of 869 players of freemium/free-to-play games	Cross-sectional	Perceived enjoyment Perceived social value Perceived quality Perceived economic value Users' continued use intention	N/A	N/A	Intention to purchase premium content	• Direct effects (– / + / ns / ns / +)
Bordonaba-Juste et al. (2020)	Survey on 2,480 Spanish cloud users	Cross-sectional	Ubiquity, storage space, access online resources, easy of sharing, data loss protection	Age	N/A	Payment for cloud services	• Direct effects (– / + / – / + / –) are moderated (+ / – / + / – / –)
Sarkar et al. (2021	Study 1: Survey of 791 consumers; Study 2 and 3: Experiment with 305 and 412 participants, respectively	Cross-sectional, Experimental	Strong self-brand connection, flexible brand attitude, intransient brand attitude, brand love	N/A	Intransient brand attitude, brand love	Willingness to pay a price premium	• The direct effect of strong self–brand connection is mediated (+ / +) by Intransient brand attitude and brand love • Direct effects of flexible brand attitude (–), intransient brand attitude (+), and brand love (+)
This study	**Study 1, survey of 706 app users** **Study 2, experiment with 537 consumers**	**Experimental Cross-sectional**	**Need for closure (NC)**	**Deal proneness**	**Uncertainty reduction (UR)**	**Paying for premium subscription**	• **Direct effect of NC on UR (+)** • **Direct effect of UR on paying for premium (+)** • **The direct effect of NC on paying for premium (+) is mediated (+) by UR** • **Direct effect of NC on UR (+) is moderated (–) by UR**

Table 2: Measurement model results.

Factor and items	SL	*p*-value
Need for closure (items adapted from Roets & Van Hiel, 2011)		
I find that a well-ordered life with regular hours suits my temperament.	.72	0.00
I don't like to go into a situation without knowing what I can expect from it.	.73	0.00
I enjoy having a clear and structured mode of life.	.79	0.00
I dislike unpredictable situations.	.70	0.00
Deal proneness (items adapted from Lichtenstein et al., 1995)		
Buying products with cents-off deals makes me feel good.	.82	0.00
When I take advantage of a 'buy-one-get-one-free' offer I feel good.	.94	0.00
I will sometimes switch brands if I can get something for free when purchasing a different brand.	.60	0.00
I like to take advantage of special deals I notice in the store.	.71	0.00
Social desirability (items adapted from Steenkamp et al., 2010)		
I always know why I like things.	.67	0.00
Once I've made up my mind, other people can seldom change my opinion.	.57	
I never regret my decisions.	.62	0.00
I am very confident of my judgments.	.79	0.00
Fit index: χ^2 =192.18, df = 48, p = 0.02; CFI = 0.97; TLI = 0.96; RMSEA = 0.06; SRMR = 0.05		

Note: SL = standardized loading.

Table 3: Sample characteristics.

Survey descriptive statistics			
		M (N)	SD
Age		38.99 (706)	10.45
Social desirability		4.60 (706)	1.15
		Frequency	%
Gender	Male	393	54.89
	Female	304	42.46
	Prefer not to say/Other	8	1.12
	Total	706	100
Highest education level achieved	Less than high school degree	3	0.42
	High school graduate	70	9.92
	Some college but no degree	112	15.86
	Associate degree in college (2-year)	89	12.61
	Bachelor's degree in college (4-year)	322	45.61
	Master's degree	93	13.17
	Doctoral degree	8	1.13
	Professional degree (JD, MD)	12	1.27
	Total	706	100
Annual household income (USD)	Less than $10,000	17	2.41
	$10,000–$19,999	38	5.38
	$20,000–$29,999	62	8.78
	$30,000–$39,999	83	11.76
	$40,000–$49,999	74	10.48
	$50,000–$59,999	74	10.48
	$60,000–$69,999	78	11.05
	$70,000–$79,999	58	8.22
	$80,000–$89,999	53	7.51
	$90,000–$99,999	33	4.67
	$100,000–$149,999	93	12.75
	More than $150,000	46	6.52
	Total	706	100

Table 4: Correlations, descriptive statistics, and reliability measures.

Construct	M	SD	α	CR	AVE	1	2	3	4
1. Paying for premium subscription[a]	.24	.43	N/A			1			
2. Need for closure	5.42	1.25	.87	.82	.54	.07	1		
3. Deal proneness	5.29	1.11	.86	.85	.61	–.04	.21**	1	

**Correlation is significant at the 0.01 level (two-tailed). [a] Coded as 0 = Freemium, 1 = Premium. N/A = not applicable.

Table 5: Regression coefficients.

	Model 1[a]					Model 2[b]				
	B	SE	*p*	95% CI		*B*	SE	*p*	95% CI	
				Lower	Upper				Lower	Lower
Gender	-0.02	0.17	*ns*	-0.37	0.30	0.02	0.17	*ns*	-0.31	0.35
Age	-0.03	0.01	***	-0.05	-0.01	-0.03	0.01	***	-0.05	-0.01
Income level	0.12	0.03	***	0.06	0.18	0.12	0.03	***	0.06	0.18
Education	-0.08	0.08	*ns*	-0.23	0.07	-0.09	0.07	*ns*	-0.23	0.06
Social desirability	-0.08	0.08	*ns*	-0.23	0.09	-0.05	0.08	*ns*	-0.21	0.10
Need for closure	0.14	0.08	*	-0.02	0.30	0.89	0.36	**	0.19	1.60
Deal proneness	—	—	—	—	—	0.72	0.39	*	-0.05	1.50
Need for closure × deal proneness	—	—	—	—	—	-0.15	0.07	**	-0.28	-0.01
(Constant)	-0.82	0.75	*ns*	-2.35	0.60	-4.68	2.15	**	-8.90	-0.46

[a] Standardized coefficients. [b] Unstandardized coefficients. SE = standard error. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$; *ns* = non-significant.

Fig. 1. Conceptual model.

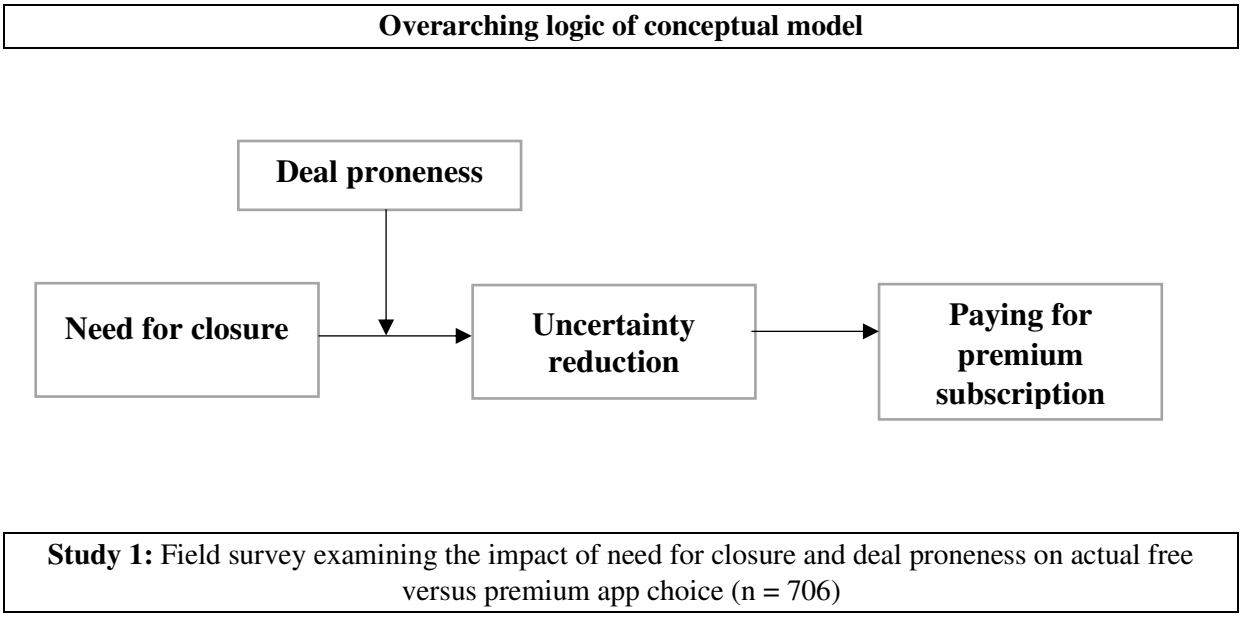

Fig. 2. Floodlight analysis of the moderating effect of deal proneness in the relationship between need for closure and premium subscription adoption.

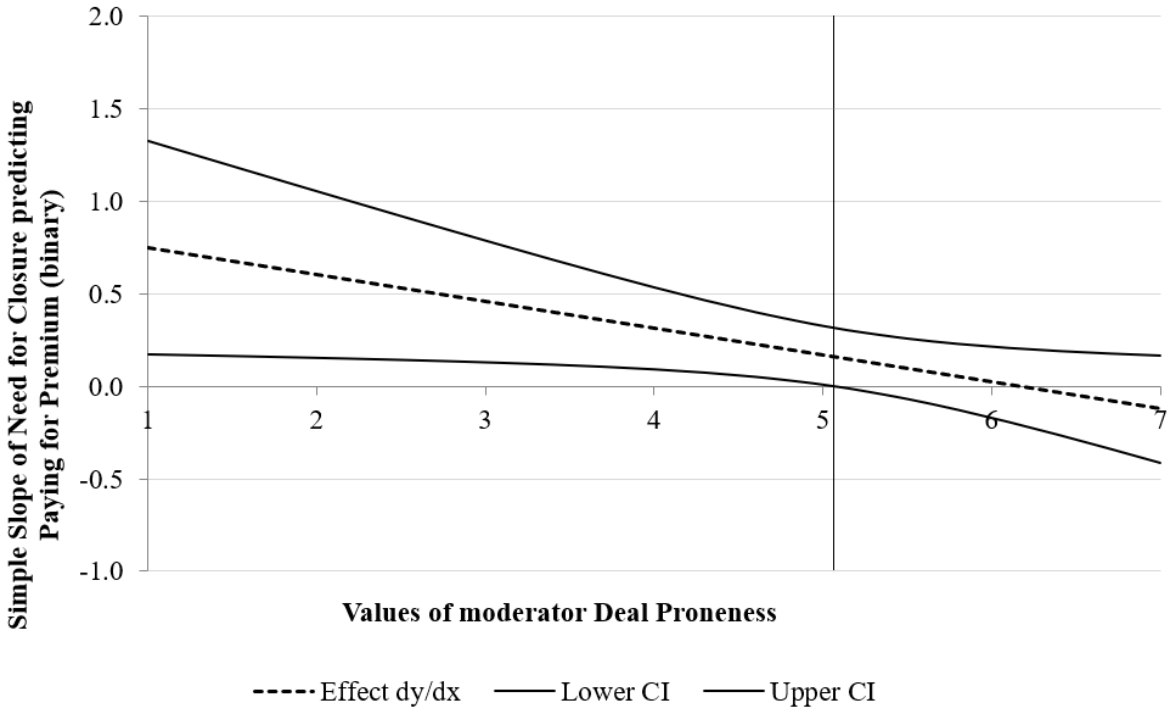

Fig. 3. Moderated mediation model of Study 2.

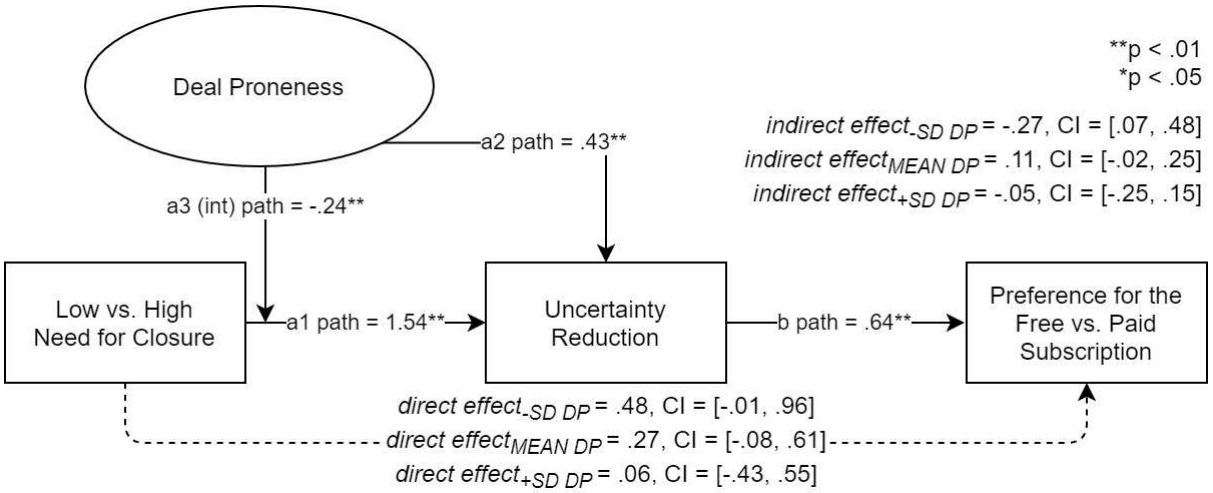

Fig. 4. Actionable tactics to boost adoption rates of premium subscriptions.

	Low deal proneness	**High deal proneness**
Low need for closure	**Select** Firms should invest selectively to target this segment, as it can add value to a firm's growth profitability and overcome the costs it adds to operations. Firms should invest in a calculative manner to improve adoption rates.	**Divest** Firms should stop targeting and investing in this segment, as it adds costs and no value to a firm's operations and growth profitability, respectively. Firm should let these types of consumers go.
High need for closure	**Invest** Firms should increase investments to target this segment with tailored messages that provide reassurance and reduce uncertainty, as this segment can add great value to a firm's growth profitability. Firm should invest to grow conversion rates.	**Resect** Firms should reduce investments to target this segment and consider divestment, as this segment adds costs to a firm's operations and limit its growth profitability. Firms should try to reduce the size of this segment.

Appendix. Need for Closure Manipulations of Study 2

Low Need for Closure

We will now ask you to recall three memories/situations from your past. Please read the instructions carefully. Then, please type your answers in the boxes below. In typing your response, please try to be as specific as you can.

--- Page Break ---

Think back to a time in which, even after you made up your mind about something, you were eager to consider a different opinion:

TEXT BOX

--- Page Break ---

Think back to a time in which, when thinking about a problem, you considered as many different options on the issues as possible:

TEXT BOX

--- Page Break ---

Think back to a time in which you disliked the routine aspects of your work or studies:

TEXT BOX

High Need for Closure

We will now ask you to recall three memories/situations from your past. Please read the instructions carefully. Then, please type your answers in the boxes below. In typing your response, please try to be as specific as you can.

--- Page Break ---

Think back to a time in which you felt uncomfortable because you didn't understand the reason why an event occurred in your life:

TEXT BOX

--- Page Break ---

Think back to a time in which you quickly became impatient and irritated when you did not find a solution to a problem immediately:

TEXT BOX

--- Page Break ---

Think back to a time in which you felt irritated when one person disagreed with what everyone else in a group believed:

TEXT BOX