



Precommitment-based Pricing

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In service marketing, customers typically pay more when they use more. Based on this principle, various non-linear pricing plans or flat-rate tariffs attempt to lure customers into higher use and higher-revenue contracts. An emerging marketing practice we term *precommitment-based pricing* turns these principles around and asks customers to pay extra when they use the service too little. For example, a local fitness club offers customers a discount when they reach a minimum training frequency, and those who fall short pay a premium. This form of pricing aligns directly with customer objectives and assists them in achieving their goals. In this research, we assess which type of precommitment-based pricing is best suited to pay off for marketers and customers alike. We study whether refunds for high use (prepaid) or premium payments for low use (postpaid) are more effective and find empirically that these different types of payment have a differential impact on service adoption, goal attainment, and retention. Five empirical studies in three service domains demonstrate that prepaid contracts attract more customers, but postpaid contracts increase goal achievement and, thus, loyalty. We test boundary conditions and discuss practical implications on how to implement precommitment-based pricing.

Keywords: Precommitment-based Pricing; Service Marketing; Customer Acquisition; Goal Achievement; Customer Retention

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Precommitment-based Pricing

The consumer market for personal development services has seen rapid growth in digital and offline domains like fitness, nutrition, education, (mental) health, and financial services. The fitness sector alone generated annual global revenues of \$96.7 billion in 2019, with dedicated apps, training, nutrition plans, and self-tracking devices (e.g., Statista 2021; IHRSA 2020). Expected growth rates for the online fitness market are expected to exceed 30% at least until 2027 (FiorMarkets 2021). Likewise, Duolingo, the world’s most successful educational app in 2020, reached over 500 million users with their language-learning services (Duolingo 2020). These personal development services have one thing in common: Their customer benefits hinge on customers’ ability to practice self-control in achieving their personal development objectives.

However, even when their intentions might be noble, service providers often benefit from customers’ tendency to overestimate how much they will use these services. For example, fitness studios often overbook. When customers overestimate their actual usage, time-inconsistent preferences can make such practices profitable in the short-term (e.g., Armstrong and Vickers 2010; Rochet and Stole 2002; Sundararajan 2004; Thanassoulis 2007). In this form of pricing, customers and marketers are sitting on opposite sides of the table, with marketers exploiting consumers’ welfare in favor of maximizing revenue. Recently, however, a different approach has emerged that uses service pricing to support customers’ self-control, rather than benefitting from their lack of self-control. We term this emerging marketing practice precommitment-based pricing. This kind of pricing adds a variable price component that is linked to a predefined goal of customers to incentivize them to follow through with their ambitions.

A popular European cycling studio, for example, offers a promotional 190 € six-week cycling challenge, which is 40 € more than the regular 150 € price tag. However, the promotion comes with a twist. Customers who step on the peddles at least three times a

week pay only 100€, as they receive 90€ cashback. Customers who do not cycle three times a week for the six weeks receive no cashback, so they pay the complete 190€, which is more than 25% more than the usual price and 90% more than the successful promotional customers. When the studio introduced this promotion, it was unsure whether customers would sign up but hoped for positive word-of-mouth. Despite the relatively ambitious training goal, more than 10% of new customers opted to take the challenge, and these customers were also more loyal after the promotion ended, with 48% continuing their membership instead of the usual 32%.

These observations suggest that precommitment-based pricing may attract new customers and improve retention, aligning firm goals with customer goals. Of course, this initial field evidence comes with limitations, as the predefined goal and the monetary risk might have been too extreme. Moreover, customers might have self-selected, and we cannot determine whether the pricing resulted in higher use or more motivated customers choosing to accept the challenge. We also cannot test whether goal achievement translated into loyalty. Other examples from various industries have picked up on precommitment-based pricing as well (as shown in Web Appendix A) and appear to see potential in this emerging practice. However, these examples differ in their design of the precommitment component (Figure 1), suggesting uncertainty in how best to execute it. Despite the growing managerial interest, how marketers can best implement precommitment-based pricing to benefit both firm and consumer objectives remains unclear.

- *Insert Figure 1 about here* -

Just as Ulysses committed himself to the mast of his vessel, not trusting himself to resist the sirens' call, research in marketing and psychology has accumulated evidence that individuals voluntarily sacrifice their freedom to stay on course (e.g., Ariely and Wertenbroch 2002; Schwartz et al. 2014; Thaler and Benartzi 2004). For example, investors are willing to commit to fixed financial savings contracts to ensure they attain their financial goals (Ashraf et al. 2006), and grocery shoppers accept limiting cashback bonuses

to meet dietary food objectives (Schwartz et al. 2014).

Precommitment-based pricing contrasts traditional commitment contracts by connecting goal achievement with service payments. When Ulysses committed himself to his mast, no contractual partner stood to gain should he break his ropes. Similarly, traditional commitment contracts do not link corporate revenues with goal achievement. For example, customers at the cycling studio who failed to reach their goal may have felt unfairly treated by having to pay 90 € more than successful customers who used the service more. Not only did the studio receive more revenue from failing customers, but also these customers were less expensive for the studio to serve. That might feel at odds with customers used to paying less (or at least not more) when they use a service less. Although the cycling pricing was designed to motivate customers, how customers respond to their failure in such cases remains unclear.

When choosing a pricing plan, firms are often forced to make trade-offs between acquisition and retention objectives (Iyengar et al. 2011; Joo et al. 2002). However, no empirical evidence has shown whether this also applies to precommitment-based pricing. Contrasting effects are possible because what appears attractive to customers during the adoption of a service may not suffice to motivate them while they are using it.

Practical implementations of precommitment-based pricing also have characteristics that conventional commitment research has not studied. Whereas some commitment contracts ask customers to prepay the variable payment of the fee, others require postpayment. The cycling studio asked customers to prepay the commitment contract and to receive a partial refund if they succeeded. In contrast, the Christmas savings club Park requires customers who want to receive their savings earlier to postpay an extra fee of up to £20 ¹. Park's approach may exert more pressure on its customers to reach desired goals, but the potential refund of the cycling studio may function like a silver lining to consumers that alleviates some of the service contract costs (Thaler 1985). Because of these different

¹<https://www.getpark.co.uk/>

mechanisms, what fits the goal of customer acquisition may not be optimal for retention.

In this research, we discuss theoretical mechanisms and derive predictions regarding the optimal execution of precommitment-based pricing. Then we conduct empirical studies that demonstrate the impact of precommitment-based pricing on customer adoption, goal achievement, and retention. These studies investigate common payment sequences in marketing practice. Specifically, we compare prepaid and postpaid commitment contracts to determine whether companies must balance marketing objectives when they use precommitment-based pricing. Finally, we assess relevant boundary conditions and explore how narrow and broad goal bracketing moderates our findings.

Related Literature

Pricing of ongoing services like language courses and fitness studios includes (non-linear) pay-per-use tariffs (Krämer and Wiewiorra 2012) and flat-rate pricing with fixed fees, irrespective of actual use (Ascarza et al. 2012). Precommitment-based pricing differs from these conventional practices in two significant ways. First, the service fee depends on customers' level of goal achievement such that the service's final price is an uncertain function of customers' self-control capabilities. Second, customers pay a predefined penalty when they use a service too little, as opposed to traditional service pricing, where the customer pays less (or at least not more) when they use the service less. However, some aspects of precommitment-based pricing are similar in spirit to what commitment research has studied, so we review research on both service pricing and commitment contracts before formulating hypotheses.

Service Pricing

Usage-based price discrimination is one of the central themes in service pricing. Conventional practices assume that usage involves incremental costs but also value for customers. Customers who sign up for higher-use contracts typically generate more

revenue, allowing firms to offer usage-based discounts. Prior research finds that customers are risk-averse, avoid choosing contracts that limit their service usage, and hence systematically overestimate service utilization (e.g., DellaVigna and Malmendier 2006). This tendency to overestimate allows services like fitness studios and airlines, which have limited capacity, to overbook so they can increase their profitability per customer (e.g., Armstrong and Vickers 2010; Sundararajan 2004; Thanassoulis 2007). Services are also build around flat-rate biases with customers favoring simple fixed fees (e.g., DellaVigna and Malmendier 2006; Nunes 2000; Just and Wansink 2011; Train et al. 1987; Uhrich et al. 2013), even if a pay-per-use tariff would be cheaper for them (e.g., Krämer and Wiewiorra 2012; Nunes 2000). The mechanisms behind these effects include consumers’ dislike of consumption tracking, risk aversion against potential higher payment, and overestimation of consumption (e.g., Lambrecht and Skiera 2006). These mechanisms predict low interest in commitment contracts because commitment contracts involve tracking progress toward a goal. Also, consumers face uncertainty about their eventual payment, and those contracts deny them the option of underuse without penalty.

Research also studies the effects of non-linear pricing and flat-rate bias on customer retention. When customers realize they have overspent, standard economic theory predicts that customers will switch contracts, churn (Moser et al. 2018), or recommend less to others (Barrot et al. 2013). However, empirical evidence is mixed. Some authors argue that customers who pay too much may accept it in the interest of simplicity (Lambrecht and Skiera 2006) so marketers face little risk of losing them and lowering their retention levels (DellaVigna and Malmendier 2006; Wolk and Skiera 2010). In contrast, some research directly comparing customers who have close-to-optimal service plans with those who have sub-optimal service plans find that the latter results in more churn (Iyengar et al. 2011; Wong 2010). For example, Joo et al. (2002) show that telecommunication customers with underused calling plans have significantly lower retention rates, suggesting that some of the acquisition benefits of flat-rate pricing are offset by lower retention. More recently, Moser

et al. (2018) reports that price positioning moderates the impact on retention, with premium providers risking higher churn than low-cost providers do.

Importantly, research has not yet studied personal development services and has focused instead on telecommunication or internet services, where higher personal goal achievement and service usage are not as strongly connected. In commitment contracts, the aim is to help customers attain their goals, rather than betting on their not doing so. The extant research leads us to expect customers who achieve their goals and receive a refund to be less likely to switch than are those who fail and incur additional costs, which can undermine the relationship with the provider.

Commitment Contracts

Personal development services naturally require customers to have self-control and commitment contracts assist customers in these efforts (e.g., Laibson 1997; O’Donoghue and Rabin 1999b) by limiting options, providing financial incentives to achieve goals (e.g., Casari 2009; Houser et al. 2018), and threatening penalties for failure (e.g., Royer et al. 2015). From a normative perspective, such limitations seem to be inferior options since less constrained alternatives have greater option value. However, if consumers have difficulty with self-control (e.g., O’Donoghue and Rabin 1999a), limitations can be strategically rational (Ariely and Wertenbroch 2002). Accordingly, research finds consumer interest in commitment contracts that address such issues as financial saving (Ashraf et al. 2006; Thaler and Benartzi 2004), procrastination (e.g., Ariely and Wertenbroch 2002), and exercising and health (e.g., Milkman et al. 2014; Royer et al. 2015; Schwartz et al. 2014; Volpp et al. 2008; John et al. 2011). Further, Wertenbroch (1998) shows that consumers are even willing to pay “self-control premiums” to limit consumption of products they may otherwise consume more than they should. Precommitment-based pricing contrasts such commitment contracts by connecting goal achievement with service payments and, thus, corporate revenue, which raises additional questions related to acquisition, retention, and the effectiveness of different kinds of precommitment contracts.

Considering the marketing potential of precommitment-based pricing, the findings above are encouraging and suggest consumers might even prefer pricing that is tied to personal development objectives over less expensive conventional pricing. However, conventional flat-rate payments involve irreversible sunk costs for customers (Krämer and Wiewiorra 2012), which can motivate the use of the services for which they have already paid, so customers may not see additional value in an extra self-control device. On the other hand, according to mental depreciation, this motivating force of prior expenditures diminishes over time, with loyalty being highest right after customers make the flat-rate payment (Arkes and Blumer 1985; Gourville and Soman 1998). Thus, precommitment-based pricing is less likely to result in payment depreciation and more likely to provide a relatively constant motivational factor since payments are linked to goal achievement over the entire contractual period.

According to commitment research, individuals accept both pre- and postpayment, but research has not compared these formats (e.g., Houser et al. 2018; Royer et al. 2015). That both kinds of payment are present in the market suggests that marketers are uncertain which one is more effective in achieving marketing objectives of customer acquisition and retention. A later extra payment appears to be a powerful tool for customer motivation since consumers want to avoid losses, but consumers who fear failing to achieve their goals may feel they will be paying twice and reject such offers.

Since commitment research has not studied precommitment-based pricing in the context of service pricing, how it affects customer retention remains unclear, although consistent and robust evidence has shown that commitment improves performance and goal achievement (e.g., Ariely and Wertenbroch 2002; Kaur et al. 2015). Further, goal achievement increases customer satisfaction and retention (Heitmann et al. 2007), so commitment contracts that help to reduce self-control conflicts should enhance customer loyalty via the indirect benefits of goal achievement. Whether pre- or postpayment is the more effective motivational device is an open question that we address in this research.

Conceptual Model and Research Hypotheses

We distinguish acquisition and retention decisions conceptually, as shown in Figure 2. We first discuss how pre- and postpaid commitment contracts impact acquisition and then how these contracts relate to goal achievement and customer retention. Since the effects on acquisition and retention may differ, we also study boundary conditions to determine whether and when these contracts' effects on marketing outcomes may align and suggest an optimal design of precommitment-based contracts.

- *Insert Figure 2 about here* -

Precommitment-based Pricing and Customer Acquisition

Choosing precommitment-based pricing requires customers to consider a more complex series of unknown outcomes than non-linear or flat-rate pricing does. Consider two normatively identical payment sequences: (1) pay \$70 now and get \$20 back if you meet your goals (prepaid), and (2) pay \$50 now and pay \$20 later if you fail (postpaid). Both sequences contain a variable payment, but in contrast to conventional pricing, customers face the uncertainty of whether they will achieve the contractual goal. While we do not know whether the effectiveness of these two precommitment-based pricing plans differs, research outside service pricing suggests that both types of contracts can attract individuals who have issues with self-control. Specifically, research finds evidence that both prepayment (e.g., Casari 2009; Houser et al. 2018) and postpayment (e.g., Royer et al. 2015) can be attractive solutions for those with self-control issues, but research has not compared the two. We also need additional perspectives to determine how customers process these payment sequences in the context of service pricing. While both kinds of contracts result in a \$50 fee in case of success and a \$70 fee in case of failure, the concreteness principle (Slovic 1972) suggests that customers process them differently psychologically, that is, as two separate payments that contain a fixed fee and a positive or a negative variable fee (Auh et al. 2008; Jarnebrant et al. 2009).

Two related theories make similar predictions about which of these sequences is more appealing to customers. Thaler’s (1985) hedonic editing hypothesis proposes that consumers attempt to avoid multiple losses (-\$50 and -\$20). When customers choose a contract, they cannot be certain that they will attain the goal, so they are likely to see the potential loss as relevant. In contrast, a prepaid contract combines a scenario of mixed losses (-\$70 and +\$20), with the possible refund functioning as a silver lining (Thaler 1985). Based on these considerations, prepaid contracts should attract more customers, as the larger initial payment should appear to be less painful than two individual payments, with the reward at the end of the period further increasing attractiveness.

In addition to segregation versus integration of payments, pre- and postpaid commitments both involve a sequence of events. One of the most consistent findings related to sequential events has been that consumers favor improving over declining sequences (e.g., Ariely and Loewenstein 2000; Chapman 2000), whether they are monetary payments (Loewenstein and Sicherman 1991), leisure time (Loewenstein and Prelec 1993), medical treatments, or experiences of discomfort (Ariely and Zauberman 2000; Chapman 2000; Kahneman et al. 1993; Redelmeier and Kahneman 1996; Ariely 1998; Ariely and Carmon 2000). Similarly, in electricity service pricing, consumers favor higher initial prices with potential refunds over plans with potential extra payments (Schulz et al. 2015). This perspective makes the same prediction as hedonic editing: Prepaid contracts, with their potential for improving the transaction in the customer’s favor, should be a more attractive payment sequence than postpaid payments, with their risk of resulting in a less attractive transaction. These considerations suggest:

Hypothesis 1. Precommitment-based pricing with prepaid contracts are more effective than postpaid contracts for increasing customer acquisition.

Precommitment-based Pricing, Goal Achievement, and Customer Retention

At the end of the contract period, customers choose whether to renew their contracts with the service provider. Under precommitment-based pricing, they either receive a

partial refund, pay a penalty, or neither one. Specifically, under a prepayment contract, successful users receive a refund, while unsuccessful users do not. Conversely, under a postpayment contract, unsuccessful users pay extra, and successful users do not. Thus, at the end of the contractual period, prepayment contracts result in more attractive cash flows (either a refund or no payment) than postpayment contracts do (either a penalty or no payment). Since the firm executes these cash flows, customers may have an unfavorable response, especially to the requirement for an extra payment (e.g., Schulz et al. 2015). Relatedly, behavioral economics studies reciprocity (e.g., Fehr and Gächter 2000) and finds fundamental human desires to reward positive actions with friendly behavior and penalize hostile actions with resentment. Strong, consistent evidence of positive reciprocity in trust and gift exchange games (e.g., Fehr et al. 1993; Berg et al. 1995; McCabe et al. 1996) shows that individuals even go as far as to incur a loss to be able to penalize a contractual partner that put them in an undesirable position (e.g., Camerer and Thaler 1995; Roth and Erev 1995). In marketing, Kumar and Shah (2004) find similar mechanisms of reciprocity in the context of customer relationships and loyalty, particularly with regard to customers' feeling committed to firms that do well for them. Wang et al. (2016) also report that customers feel obliged to reciprocate with loyalty when they receive bonuses. Similar effects are conceivable when firms execute commitment contracts, as the more attractive cash flow and perceived fairer outcome of prepayments may result in customers' positive reciprocity toward the firm, while postpayment lowers reciprocity and decreases customer retention:

Hypothesis 2. Precommitment-based pricing has a positive influence on customer retention, with prepaid contracts being more effective than postpaid contracts.

According to H1 and H2, prepayment contracts are in firms' best interests, as they maximize both short-term revenue via acquisition and long-term revenue via retention. However, we have not yet considered how the payment sequence impacts customers' goal achievement. Equally established theories on motivation point in opposite directions. Specifically, research demonstrates that losses are more powerful motivational cues than

gains of equivalent size (Kahneman and Tversky 1979), so postpaid contracts that present looming losses should motivate goal achievement more than prepaid contracts that present potential gains. Research in various fields supports this notion, showing, for example, that customers compare the losses and gains of outcomes to the goals they hope to achieve (Heath et al. 1999) and that individuals learn more from failure than they do from success, which indicates that negative events may be a more powerful motivational force than positive reinforcement (Koch and Nafziger 2009). Accordingly, we expect that activating postpaid contracts' associations with loss increases motivation and goal achievement.

Goal achievement, in turn, drives customer loyalty (Heitmann et al. 2007). The consequences of individuals' failing to meet goals include reduced feelings of control over their future success (Brunstein and Gollwitzer 1996) and inferior overall performance (Soman and Cheema 2004). In contrast, individuals' goal achievement leads to subsequent success (Drèze and Nunes 2011; Kivetz et al. 2006), increased customer loyalty, and quicker re-entry into loyalty programs (Kivetz et al. 2006). Hence, the indirect effects of goal achievement should serve to align customers' and service providers' interests. When firms succeed in helping customers achieve their goals, customers are likely to reward them with retention. Following this theorizing, the negative effect of the payment sequence operates only indirectly through goal achievement. Note, however, that this motivational mechanism makes no predictions outside the context of goal achievement.

Hypothesis 3. Payment sequences have an indirect negative effect on customer retention via goal achievement such that prepaid contracts decrease the level of goal achievement and, consequently, also the level of loyalty.

The indirect effect of payment sequences via goal achievement is in contrast but not contradictory to H1's proposal related to customer acquisition, which predicts higher demand for prepaid contracts. For postpaid contracts, the two potential losses (fixed + variable price) make adoption less attractive but, once chosen, the looming penalty payment improves motivation. Conversely, a prepayment may initially appear more

attractive, but it compromises subsequent goal achievement because the prospect of a potential payback is less motivating than a looming extra payment. H2, which derives from the concepts of reciprocity, makes the opposite prediction from H3’s indirect effect on goal achievement. The two outcomes are independent of each other and may exist simultaneously, with a positive direct effect and a negative indirect effect. If both mechanisms play a role, the outcome would depend on the strength of the two effects.

We test these predictions in a series of five studies. Studies 1, 2, and 3 assess whether precommitment-based pricing drives customer acquisition and determine which type of payment sequence is most effective across several scenarios (H1). Study 4 investigates whether precommitment-based pricing facilitates customer retention (H2) and examines the mediating role of goal achievement (H3). Study 5 tests a potential boundary condition for the proposed effect. While studies 1 and 2 contain hypothetical decision scenarios, studies 3, 4, and 5 are all incentive-compatible such that decision-makers received the benefits their contract entitled them to. Table 1 summarizes all five studies, including the overall experimental setup and the hypotheses that each study tests. (See Web Appendix B for descriptions of the studies.).

- Insert Table 1 about here -

Study 1: The Effect of Precommitment-based Pricing on Customer Acquisition in Educational Services

Study 1 tests whether precommitment-based pricing facilitates customer acquisition and whether the payment sequence influences this effect (H1). Specifically, the study explores whether customers favor prepaid over postpaid commitment contracts and whether framing the price as a discount makes a difference because many firms advertise commitment contracts as a special offer (e.g., the “Rockstar Challenge”). We test H1 and this possibility using decision scenarios related to a language-learning app.

Design and Sample

Study 1 employs a 2 (payment sequence: prepayment, postpayment) x 2 (discount: yes, no) plus control group (regular contract) between-subjects design. We recruit 401 ($M_{age} = 33.35$, $SD_{age} = 11.61$; 66.3% female) participants from an online access panel and assign them randomly to one of the five conditions. In this and the following studies, we screen out participants who failed to pay sufficient attention, as evidenced by an introductory attention check that asked them to correctly repeat essential information from a previous page.

Procedure and Stimuli

We first presented participants a short video with a product description of a language-learning app. As an attention check, we had participants indicate which functionality the app does not provide (“helps to arrange romantic dates”). Then we informed participants that the app is almost ready and can soon be purchased. We presented the control group with a three-month membership challenge for a total of \$15 and instructed the experimental groups (prepayment and postpayment) that the provider wants its members to commit to achieving their goals, so they have a new tariff option that links the price of the language-learning app to the fulfillment of a predefined goal. We instructed participants in the prepayment condition that they pay \$20 upfront for the three-month challenge and get \$5 back if they complete the language test successfully. We informed participants in the postpayment condition that they pay \$15 for the challenge and then will have to pay \$5 if they do not complete the language test successfully. We manipulated the discount by framing the variable payment of \$5 as a discount or loss of a discount, respectively. (See Web Appendix C for the stimuli.) All manipulation conditions included the risk of a higher price since the achievement of the goal was uncertain. Hence, from a normative perspective, the control group should have the most interest in the plan. Finally, participants filled out manipulation checks, other controls, and demographics.

Measures

The primary dependent variable is purchase intention, which participants indicate using a seven-point scale (1 = *not likely at all*, 7 = *very likely*). The manipulation of the payment sequence and discount serve as independent variables. We use three measures as manipulation checks: whether perception of the language-learning app’s price depends on a predefined goal (one item: “The price I have to pay for the app depends on my performance in the language test” (1 = *strongly disagree*, 7 = *strongly agree*)), manipulation of the independent variable payment sequence (one item: “I have to pay extra money if I don’t successfully complete 50% of the language test” (1 = *strongly disagree*, 7 = *strongly agree*)), and manipulation of the moderating variable discount (one item: “I lose an additional discount if I don’t successfully complete 50% of the language test” (1 = *strongly disagree*, 7 = *strongly agree*)).

Results

Manipulation checks. Three one-way ANOVAs confirm that all manipulations are successful. In terms of the price dependency ($F(1, 399) = 162.300, p < .001$), participants in the experimental conditions perceive the price of the language-learning app as more dependent on a predefined goal ($M = 5.80$) than the control group does ($M = 2.94$). Regarding the payment sequence ($F(1, 321) = 28.000, p < .001$), participants in the prepayment condition associate the pricing less with extra payments than those in the postpayment condition do ($M = 2.56$ vs. $M = 3.94$). Finally, participants in the discount condition perceive more strongly that they could lose an additional discount ($F(1, 321) = 16.550, p < .001; M = 4.83$) than those in the no-discount condition do ($M = 3.76$).

Purchase intention of contracts. A one-way ANOVA shows a positive main effect of precommitment-based pricing on participants’ intention to sign up ($M_{\text{experimental}} = 3.58$, $M_{\text{control}} = 2.71; F(1, 399) = 13.940, p < .001$). This effect of .9 on a 7-point scale is strong, even though the precommitment-based pricing is > 30% more expensive in the case of failure without offering any financial benefits in the case of goal achievement. More importantly, it matters which payment sequence the service provider chooses. In line with

H1, the prepayment sequence results in higher purchase intentions than postpayment ($M_{prepayment} = 3.80$, $M_{postpayment} = 3.36$; $F(1, 321) = 4.490$, $p < .05$, see Figure 3). On the other hand, the effect of the discount ($M_{discount} = 3.57$, $M_{no\ discount} = 3.59$; $F(1, 321) = .01$, $p > .938$), and the interaction between payment sequence and discount ($F(3, 319) = 1.500$, $p > .215$), is not significant.

- *Insert Figure 3 about here* -

Discussion

Study 1 provides causal evidence that precommitment-based pricing facilitates customer acquisition, even though fixed payments are economically more attractive, indicating that precommitment is also effective in service pricing, where a provider benefits from failure and customers face fixed service costs. In addition, we find that contracts with a prepaid sequence are more effective in triggering purchase intent than postpaid contracts are (H1). We do not find that discount framing has an influence, which suggests that customers evaluate the payment sequence independent of other potential discounts.

Since the main effect of precommitment-based pricing replicates earlier findings on commitment contracts for another domain, we focus on the novel comparison of payment sequences and how they relate to customer acquisition and retention. Whether the higher preference for prepayment contracts in the language-learning case can be generalized to other domains is not clear, as using a language-learning may require little subjective effort and incentive to commit, so prepayment may have appeared to suffice. That may not generalize to domains that require, for example, more physical effort. In addition, response formats like purchase likelihood on a continuous scale can stimulate future-oriented thinking that may impact the observed effects, since the focus of commitment contracts is on future activity (e.g., Ariely and Wertenbroch 2002). Therefore, in Study 2, we examine the robustness of our findings by investigating whether the effect is also present in another self-control context using a different response format.

Study 2: The Effect of the Payment Sequence on Customer Acquisition in Fitness Services

Study 2 explores the impact of the payment sequence on customer acquisition by studying the effect in the context of a fitness app that requires physical discipline.

Design And Sample

Study 2 uses a 2-cell (payment sequence: prepayment, postpayment) between-subjects experimental design. We recruit 201 participants ($M_{age} = 37.69$, $SD_{age} = 11.66$; 45.3% female) from Amazon Mechanical Turk (MTurk) and assign them randomly to either the prepayment condition or the postpayment condition.

Procedure and Stimuli

First, we showed the participants a short teaser video that described the fitness app and its features and mimicked similar real-world applications. We told the participants that the app was almost ready and could soon be purchased. We explained that the price for the app depends on completing fifteen fitness sessions in an eight-week challenge. We told participants in the prepayment condition that they would pay \$15 for the challenge, and if they succeeded, they would receive a refund of \$5. We told participants in the postpayment condition that they would pay \$10, and if they failed, they would pay an additional fee of \$5. Web Appendix D contains the exact stimuli. Then, we asked participants whether they would purchase the app with the tariff option that we presented to them. Finally, they fill out manipulation checks and demographic variables.

Measures

The dependent variable is customer acquisition, where the question “Would you purchase the app with the tariff option we presented to you?” was scored as 1 for yes and 0 otherwise. The manipulation of the payment sequence serves as the independent variable. We also use manipulation checks as in Study 1, adapted to the fitness app context.

Results

Manipulation checks. A one-sample t-test shows that price is perceived as being dependent on goal achievement above the scale midpoint ($M = 5.64, t = 17.356, p < .001$). A one-way ANOVA confirms our manipulation of the payment sequence ($F(1, 199) = 306.160, p < .001$), with participants in the prepayment condition associating pricing less with extra payments than those in the postpayment condition do ($M = 2.16$ vs. $M = 6.19$).

Customer acquisition. A chi-square analysis reveals a positive effect of the prepayment sequence on customer acquisition, as 66.13% of the participants in the prepayment group want to purchase the fitness app, compared to 33.87% of the participants in the postpayment group ($\chi^2(1) = 32.652, p < .001$). (See Figure 4.) Therefore, the payment sequence strongly also impacts customer acquisition for a relatively high-effort physical program with about twice as much demand for prepayment compared to postpayment.

- Insert Figure 4 about here -

Discussion

Study 2 repeats the finding that prepaid commitment contracts result in higher levels of acquisition than postpaid contracts do. However, we have used only scenario-based manipulations in our experimental designs, so whether our results hold for incentive-compatible decisions remains unclear. Specifically, the hypothetical bias that can arise in a survey may have resulted in more substantial effects of our manipulations than choices with actual monetary consequences would have. We address this question in the next three experiments.

Study 3: The Effect of the Payment Sequence on Customer Acquisition in Weight Loss Services

We design Study 3 to replicate Studies 1 and 2 (H1) but incorporate actual monetary consequences for participants. We also test the positive effect of commitment contracts on

customer acquisition in another context, that of weight loss. Improving self-control for weight loss may have even more societal benefits than language learning since 1.9 billion people worldwide are reported to suffer from overweight (WHO 2020).

Design and Sample

The study employs a 2-cell (payment sequence: prepayment, postpayment) between-subjects design. We recruit 202 participants ($M_{age} = 40.09$, $SD_{age} = 13.66$; 65.35% female) from MTurk and assign them randomly to one of the two conditions.

Procedure and Stimuli

First, to determine the relevance of weight loss, we asked the participants whether they had ever tried to lose weight and whether they were satisfied with their bodies. Then we presented a short video with a product description of a weight loss app and its features. We told the participants that the app was almost ready and could soon be purchased. However, before entering the market, the provider wanted to have a test session of the weight-loss seminars (including classes for healthful eating, fitness, and mindfulness, consisting of exercises and talks with experts in this field), and was offering the possibility to test the app at home. We asked participants to participate in one seminar (about 30 minutes) each day for the next two weeks. We utilized participants' compensation to make the payment sequences incentive-compatible. We instructed participants in the prepayment condition that they would receive \$20 for their participation in the weight-loss study and that, if they succeeded, they would receive an extra \$10 payment. In contrast, we informed participants in the postpayment condition that they would receive \$30 for their participation in the weight loss study and that, if they failed, they would lose \$10 of their payment. These stimuli are summarized in Web Appendix E. Next, we asked whether participants would like to sign up for the two-week weight loss study for the indicated amount. Subsequently, we told those who wanted to sign up that the required number of participants had already been reached, so their participation was not possible. Then, we collected information for manipulation checks, other controls, and demographic variables.

Measures

The dependent variable is customer acquisition, where the question “Do you want to participate in this two-week study?” is scored as 1 for yes and 0 otherwise. The manipulation of the payment sequence on which participants based their decision to sign up or not to sign up serves as the independent variable. We use the same manipulation checks as in Studies 1 and 2, adapted to the weight-loss app context. In addition, we include weight-related control variables to assess the robustness of our findings, as the desire to lose weight and associated self-control problems may also affect the impact of commitment contracts on customer acquisition. These control variables include the participants’ current weight and how much weight they want to lose (in lbs.).

Results

Manipulation checks. A one-sample t-test shows that the payment for the weight loss program is perceived as being dependent on the goal achievement ($M = 4.88, t = 8.346, p < .001$). A one-way ANOVA confirms that our manipulation of the payment sequence is successful ($F(1, 200) = 50.490, p < .001$), with participants in the prepayment condition associating pricing less with extra payments than the postpayment group does ($M = 3.12$ vs. $M = 5.40$).

Customer acquisition. A chi-square analysis reveals that 54.61% of the participants in the prepayment sequence want to join the trial weight loss program, compared to only 45.39% of the participants in the postpayment sequence ($\chi^2(1) = 2.448, p < .118$) — that is, about 25% more demand for the prepaid service than the postpaid service. A logistic regression model controlling for the relative weight loss goal with payment sequence as the independent variable and customer acquisition as the dependent variable (using postpayment as reference) results in a positive effect of prepayment on customer acquisition ($b = .616, z = 1.933, p < .05$). Thus, when we control for some of the unobserved heterogeneity, the odds that a participant would choose to try the service versus not to try it are 85% higher for the prepaid commitment contract than for the

postpaid commitment contract.

Discussion

This incentive-compatible experiment again reveals a sizable effect in the expected direction, consistent with Studies 1 and 2. We also find evidence that the effect generalizes to losing weight as another personal development domain. Taken together, these observations suggest a robust positive effect of prepaid versus postpaid contracts. However, these first three studies do not indicate how payment sequences impact customers' goal achievement and loyalty, so we examine these matters, which are related to H2 and H3, in Study 4. Since H2 and H3 make opposite predictions related to the payment sequence and customer retention, the next experiments investigate which of the two forces (reciprocity or goal achievement) play a more crucial role in customer loyalty and whether service providers have to balance acquisition and retention objectives.

Study 4: The Effect of the Payment Sequence on Customers' Goal Achievement and Retention

Study 4 tests whether the payment sequence influences customer retention by examining whether reciprocity or indirect effects via goal achievement drive the impact on customer retention (H2 & H3). Since goal achievement requires incentives, the study couples the payment for participation in the study to participants' performance.

Design and Sample

Study 4 uses a 2-cell (payment sequence: prepayment, postpayment) between-subjects design. We recruit 179 participants ($M_{age} = 39.61$, $SD_{age} = 11.70$; 50.84% female) from MTurk and assign them randomly to one of the two experimental conditions. We again use a language-learning app that offers the possibility to learn Chinese numbers as an experimental context. In both conditions, we assign participants to a language-learning task and offer them incentives to meet objectives in learning Chinese. Since interest in goal

achievement is critical for precommitment-based pricing, we exclude participants who took a disproportionately short or long time for language-learning (± 2 SDs away from the mean). For example, some participants took only four seconds, compared to the average of about thirteen minutes, which indicates a lack of interest in the learning task. As expected, if we do not exclude these participants, effects remain directionally consistent but are weaker in magnitude (see Web Appendix F for Studies 4-5). Similarly, we did not invite participants who were already fluent in Chinese since the service has no value for them.

Procedure and Stimuli

First, we told the participants that we were conducting market research for a Chinese learning app and would be asking them to learn Chinese vocabulary. We told them that the provider of the app wanted its members to commit to their learning behavior and goal achievement and that they were introducing a new tariff option that links the app's price to a predefined goal. We used participants' compensation for participating in our study to make the payment sequences incentive-compatible, instructing participants in the prepayment condition that they would receive \$.70 for their participation in this study and earn \$.30 if they completed five out of ten exercises. By contrast, we told participants in the postpayment condition that they would receive \$1.00 for their participation in this study and lose \$.30 if they did not complete five out of ten exercises (see Web Appendix G for details). In the main task, we asked participants to learn to count in Chinese from one to 100, including the characters and pronunciations. To teach the Chinese numbers, we used an advanced didactic design, including visual assistance and audio functions, which was identical for both groups. Participants could terminate the program after any of the ten exercises. Subsequently, we told participants whether they would receive their extra payment or keep their full payment, respectively. Then we asked them whether they would participate in further similar studies (to test retention), and they filled out information related to manipulation checks and other controls.

Measures

The primary dependent variable, customer retention, is assessed by means of the question “How likely are you to continue with another pilot study for the language learning app?” (1 = *very unlikely*, 7 = *very likely*). The manipulation of the payment sequence serves as the independent variable, and the number of completed exercises serves as the mediating variable of goal achievement. We examine the manipulation of the payment sequence with two seven-point scale items: “I am afraid that I could lose a part of my payment” and “I am afraid that money will be taken from me” (1 = *strongly disagree*, 7 = *strongly agree*; $\alpha = .92$).

Results

Manipulation checks. A one-way ANOVA confirms our manipulation of the payment sequence ($F(1, 177) = 15.480, p < .001$), with participants in the prepayment condition ($M = 3.14$) indicating that they are less afraid of losing money than those in the postpayment condition ($M = 4.28$).

Goal achievement. Our results show that 50.28% of the participants meet the goal of completing five exercises. A one-way ANOVA shows a negative main effect of the prepayment sequence with prepayment resulting in less goal achievement than postpayment ($M_{prepayment} = 4.71, M_{postpayment} = 6.04; F(1, 177) = 4.680, p < .05$, see Figure 5). Although the two groups were offered the same absolute amount of incentive, a difference of more than 25% between the conditions suggests that the payment sequence has a strong impact on goal attainment.

Customer retention. Reciprocity principles predict that postpayment sequences reduce customer loyalty, but when we test the direct effect of the payment sequence on retention, we find the opposite pattern in favor of postpayment sequence ($M_{prepayment} = 4.47, M_{postpayment} = 4.88$), although this result is not statistically significant on conventional alpha levels ($F(1, 177) = 1.910, p > .169$). According to the principles of reciprocity, we would expect failing participants to punish the language-learning app provider by not continuing with the study because of their monetary loss, so the differences between

payment sequences may be limited to non-achievers, who either pay or do not receive payments. Therefore, we test whether an effect exists for non-achievers but find no directional or statistical evidence ($M_{prepayment} = 4.06$, $M_{postpayment} = 4.23$; $F(1, 87) = .150$, $p > .700$). The results are similar for achievers ($M_{prepayment} = 5.00$, $M_{postpayment} = 5.35$; $F(1, 88) = .880$, $p > .351$). In sum, none of these tests suggests any impact of reciprocity.

In contrast, and as predicted by H3, goal achievement has a positive effect on retention ($b = 1.519$, $t = 4.430$, $p < .001$), i.e., a 10% increase on the ten-point goal achievement scale translates into a more than 20% increase in retention (see Figure 5). In other words, goal achievement has a sizable impact on retention. Testing the indirect effect reveals a negative indirect effect of the payment sequence via goal achievement on retention, with prepayment resulting in lower levels of retention than postpayment ($b = -.196$, $CI_{95} = [-.442, -.025]$; 5,000 bootstrap, see (Hayes 2013)). Hence, customers and firms stand to benefit from postpayment contracts in terms of goal achievement and customer loyalty, while the opposite pattern holds for customer acquisition.

- *Insert Figure 5 about here* -

Discussion

The results of Study 4 show that prepaid contracts are less effective for goal achievement than they are for customer acquisition. From a theoretical perspective, the results suggest that the indirect effect of payment sequence via goal achievement drives participants' retention. However, we cannot confirm our proposals about reciprocity, as we find no evidence of participants, whether achievers or non-achievers, punishing the app provider by discontinuing the study. According to these results, service providers must decide which objective — retention or acquisition — is more important when they choose a payment sequence. Next, we investigate a relevant boundary condition for these conclusions.

The Moderating Role of Goal Bracketing

Our investigations in the first four studies were limited to narrow goal bracketing, which is also the dominant marketing practice (e.g., “come more than 18 times,” “attend 15 classes a month”; see Figure 1 and Web Appendix A for other examples). However, research on goal bracketing points to a potentially more effective alternative in terms of goal attainment: Instead of coupling goal attainment to exercising three times a week, the cycling studio could have used broad goal bracketing by coupling payments with attainable improvements in terms of ECG, muscular tissue, or pounds lost (Read et al. 1999). Since precommitment-based pricing focuses on goal achievement, it likely matters how achievement is framed. Local outcomes that are related to one or few choices—that is, narrow bracketing—may result in conclusions that differ from those related to global outcomes that are associated with a complete series of decisions (broad bracketing).

For example, when a consumer chooses to eat one chocolate bar, the expected pleasure can reasonably outweigh the trivial health consequences, but if all of the individual chocolate bar choices made in a year are added together, the health outcome appears less trivial and can exceed the pleasure. Accordingly, the more holistic perspective of broad bracketing helps to attenuate careless consumption (Read et al. 1999). A variety of choice biases have been related to narrow bracketing, including equity premiums (Benartzi and Thaler 1995; Gneezy and Potters 1997), fewer than optimal investments (Barberis and Huang 2001), asymmetric price elasticities (Bruce et al. 1993), and labor supply (Camerer et al. 1997).

Although narrow bracketing is more directly related to the services offered, broad bracketing is likely to result in more favorable outcomes and fewer trade-offs among acquisition, goal attainment, and retention. We expect broad goal bracketing to result in consistently high levels of intrinsic motivation. Narrow bracketing, on the other hand, relies on external financial reward where losses are more motivational than equivalent-sized

gains. Consequently, the motivational differences between prepaid and postpaid contracts are likely to be smaller for broadly bracketed goals than they are for narrowly bracketed goals. We do not expect similar differences for acquisition decisions because both narrow and broad bracketing result in similar challenges in evaluating the prospects of attaining objectives (and the associated risk of an additional payment with postpayment contracts). Based on this reasoning, the best of both worlds is likely attainable for broad goal bracketing, which allows marketers to drive acquisition without compromising goal achievement and retention. Therefore, we expect:

Hypothesis 4. Goal bracketing attenuates the effects of postpaid versus prepaid contracts on customers’ goal achievement and retention, and broad goal bracketing facilitates goal achievement irrespective of the payment sequence.

Study 5: Goal Bracketing and Precommitment-based Pricing

Study 5 tests whether goal bracketing moderates the effect of the payment sequence on customer retention. Following the design of Study 4, we couple participants’ payments with their actual performance.

Design and Sample

Study 5 uses a 2 (payment sequence: prepayment, postpayment) x 2 (goal bracketing: narrow, broad) between-subjects design. We recruit 255 participants ($M_{age} = 39.85$, $SD_{age} = 12.27$; 50.20% female) from MTurk and assign them randomly to one of the four conditions. Like Studies 1 and 4, Study 5 uses a language-learning app as the experimental context, and we use the same recruitment criteria as in Study 4.

Procedure and Stimuli

First, we showed the participants a short video that described the language-learning app. Next, we presented the same scenario as in Study 4. To make the payment sequences incentive-compatible, we again linked participants’ compensation to their performance

(fixed \$.70; variable \$.30) based on experimental conditions. In terms of goal bracketing, we coupled participants' compensation with either the number of completed exercises (narrow bracketing) or actual language learning as evidenced by a language test (broad bracketing). Specifically, participants in the narrow bracketed group received an incentive when they completed eight out of ten practice exercises and participants in the broad bracketed group received an incentive when they answered eight out of ten tasks in a language test correctly (see Web Appendix H). We kept the ratio of 8/10 constant across conditions to rule out numerical effects that may have a motivational impact. As in Study 4, we asked participants to learn to count in Chinese from one to 100, after which they could do practice exercises before taking the language test. Subsequently, we informed the participants about their goal achievement, asked them whether they wanted to participate in another study (retention), and collected information for manipulation checks and other controls.

Measures

As in Study 4, our primary dependent variable is retention, where the question, “Would you like to participate in another part of the study (also about Chinese learning) for an additional payment next week?” is scored as 1 for yes and 0 otherwise. The manipulation of payment sequence and goal bracketing serve as independent variables. We also assess the indirect effect of goal achievement by counting the number of tasks the participants completed in the narrow bracketing condition and the number of correct answers in the language test for participants in the broad bracketing condition. We use the same manipulation checks as in Study 1 and assess the manipulation of goal bracketing with one item, “The payment I receive depends on the amount of practice exercises I do” (1 = *strongly disagree*, 7 = *strongly agree*).

Results

Manipulation checks. A one-sample t-test shows that the payment is perceived as depending on the goal achievement ($M = 6.31, t = 33.950, p < .001$). For the payment

sequence ($F(1, 253) = 65.140, p < .001$), participants in the prepayment groups are less afraid about losing part of their payment ($M = 3.80$) than are those in the postpayment groups ($M = 6.13$). Similarly, participants in the broad conditions relate their payment less to practice exercises than participants in the narrow condition do (difference of 1.19 on the 7-point scale, $p < .001$).

Goal achievement. Among the participants, 29.80% achieve their goal. Consistent with Study 4, prepayment ($M_{prepayment} = 41.24\%$, $M_{postpayment} = 50.24\%$) has a negative effect on participants' goal achievement ($b = -.090, t = -2.061, p < .05$). A multiple regression with goal bracketing, the payment sequence, and the interaction as independent variables reveals a negative main effect of narrow goal bracketing on goal achievement ($b = -.230, t = -4.171, p < .001$), which is consistent with prior studies in indicating that evidence of progress (proficiency in Chinese) is more motivating than completing tasks.

More importantly, we find a significant negative interaction effect between the payment sequence and goal bracketing on participants' goal achievement ($b = -.163, t = -2.102, p < .05$). Specifically, prepayment affects goal achievement only negatively when participants have a narrow bracketed goal ($M_{prepayment} = 21.40\%$, $M_{postpayment} = 38.20\%$, $p < .01$), which is in line with Study 4. However, this effect vanishes for the broadly bracketed condition ($M_{prepayment} = 60.80\%$, $M_{postpayment} = 61.20\%$; $p > .923$; see Figure 6), so the payment sequence is much less of a factor in goal achievement when goals are bracketed broadly. Therefore, choosing prepaid contracts that also attract more customers does not compromise customer goal achievement when goals are bracketed broadly.

- Insert Figure 6 about here -

Customer retention. A chi-square analysis reveals that the prepayment sequence has a marginally negative but significant effect on participants' retention, with 85.71% of those in the postpayment condition willing to continue with another study, compared to 77.52% of those in the prepayment condition ($\chi^2(1) = 2.847, p < .100$). As in Study 4, we find no evidence of reciprocity playing a role; if anything, participants favor postpayment contracts

that resulted in potentially painful losses at the end of the contractual period. This effect weakens for non-achievers (*prepayment* : 73.20%, *postpayment* : 79.27%; $\chi^2(1) = .898$, $p > .343$) but does not indicate that participants would penalize the service provider for the lost variable payment.

As expected, participants' goal achievement is positively related to retention ($b = 1.739$, $z = 3.204$, $p < .001$) with 94.74% of achievers and 75.98% of non-achievers willing to continue the study. This effect again documents goal achievement's relevance to customer loyalty.

Moderated mediation analysis. We employ a moderated mediation model to test H4 ((Hayes 2015); bootstrap samples = 5,000), with payment sequence as the independent variable, goal achievement as mediator, and goal bracketing as moderator. As expected, the interaction between payment sequence and goal bracketing is significant for goal achievement ($b = -.163$, $t = -2.102$, $p < .04$), which facilitates participants' retention ($b = 1.966$, $z = 3.612$, $p < .001$). In line with H4, goal bracketing moderates the indirect effect of payment sequence on retention via goal achievement ($CI_{95} = [-.757, -.038]$). Specifically, the indirect effect of payment on retention via goal achievement is significant only for narrow bracketed goals ($b = -.330$, $CI_{95} = [-.713, -.096]$) but not for broadly bracketed goals ($b = -.009$, $CI_{95} = [-.205, .172]$), suggesting that service providers should worry less about potential negative effects on retention when they formulate broad bracketed goals that are more effective than narrow bracketed goals in terms of goal achievement and the resulting retention.

Discussion

Study 5 demonstrates that broad bracketed goals mitigate the negative effect of prepayment on customers' goal achievement, so service providers that use broad bracketing do not have to choose among customer acquisition, goal achievement, and retention. Study 5 also shows that broad bracketing has a positive main effect on goal achievement, thus facilitating retention even for participants who had the primary goal of monetary

compensation, so these effects may be even more significant for actual customers that use the service because of their inherent interest.

However, we still do not know how goal bracketing influences customer acquisition. All five studies indicate that customers do not correctly anticipate the motivational impact of the payment sequences, so we do not expect broadly bracketed goals to be associated with a higher subjective risk of failure. Therefore, it seems unlikely that broad bracketing results in lower customer acquisition than narrow bracketing does. We investigated this issue by conducting an experiment in the context of weight loss that included broad and narrow bracketing conditions ($N = 216$, $M_{age} = 38.13$, $SD_{age} = 11.14$; 43.5% female). The effect of the payment sequence remained the same (customer acquisition: prepayment 30.09%, postpayment 18.45%, $p < .05$), but the main effect of goal bracketing ($p > .425$) and the interaction effect of both were not statistically significant ($p > .892$). As expected, the difference between prepayment and postpayment is not a matter of goal bracketing because broad bracketing does not eliminate the subjective risk of not reaching objectives and facing a penalty payment. Customer acquisition is similar, with 22.12% for narrow goals and 26.79% for broad goals ($p > .10$, see Web Appendix I for details). If anything, broad bracketed goals attract more customers, and certainly not fewer customers. Accordingly, attaining the benefits of loyalty and goal achievement through broad bracketing does not require trade-offs regarding customer acquisition. In short, personal development services benefit from broadly bracketed, prepaid commitment contracts, as all alternatives result in lower customer acquisition, goal achievement, or retention.

General Discussion

This article explores how precommitment-based pricing can best be executed to facilitate customer acquisition, goal achievement, and retention. The results of five experiments show that precommitment-based pricing asymmetrically influences marketing outcomes. Customers prefer prepaid over postpaid commitment contracts in making their

acquisition-related choices, but customers who undertake prepaid payment sequences are less likely to attain their goals than those who use postpaid payments and are consequently less loyal. We also identified that a broadly bracketed goal mitigates the poor performance of prepaid commitment contracts in terms of goal achievement. These findings have implications for marketing research and practice.

Theoretical Implications

While marketers have adopted precommitment-based pricing in various personal development services, this type of pricing has not received much attention from marketing research. The present study defines precommitment-based pricing and explains how it contrasts with commitment contracts and traditional pricing techniques. We also present evidence that precommitment-based pricing facilitates customer acquisition, goal achievement, and retention across several domains (fitness, dietary, and educational programs). Research has investigated the effects of non-linear pricing and flat-rate bias, leading to assumptions about how firms can exploit consumers' overestimation of their own self-control by luring them into more expensive services than they are likely to use (e.g., Rochet and Stole 2002; Thanassoulis 2007). However, none of this pricing research has studied personal development services. The novel contribution of our research consists in showing how firms can design their service pricing to increase customer acquisition and retention while assisting customers in achieving their goals. This contribution shows that service providers and customers need not sit on opposite sides of the pricing fence, and marketers need not optimize revenues at the expense of customer welfare. When commitment contracts are done right, corporate and customer goals can be aligned.

Our findings also have implications for research on commitment contracts. While this literature has shown the positive effects of commitment contracts on goal achievement (e.g., Ashraf et al. 2006; Ariely and Wertenbroch 2002; Kaur et al. 2015), how variable service prices tied to personal development goals influence important marketing outcomes is not clear. Research has also offered no insights into whether prepaid or postpaid

contracts are more effective in terms of acquisition, retention, and goal achievement because it has investigated other outcomes. This comparison is of particular interest for practical service acquisition and retention questions that earlier work in the commitment literature has not studied. According to this research, customers prefer payment sequences that improve over time, so they favor prepaid contracts. We also investigate whether reciprocity or indirect effects via goal achievement play a more central role in ensuring customer loyalty, finding an indirect effect that increases the motivation of customers who use postpaid contracts to avoid additional penalty payments, which translates into better prospects for goal achievement. This result affects customer loyalty because goal achievement increases retention.

Finally, this article has implications for research on the boundary conditions of commitment contracts. We find that goal bracketing is related to the success of commitment contracts such that broad goals mitigate the negative influence of prepaid contracts on customers' goal achievement and retention. These findings demonstrate that the motivating power of loss aversion applies more strongly to narrowly bracketed than it does to broader bracketed goals.

Managerial Implications

This research suggests that precommitment-based pricing is a powerful marketing tool that warrants attention. It provides firms with valuable insights into the design of commitment contracts via payment sequences and goal bracketing. By implementing precommitment-based pricing in service contracts, firms can support their customers in achieving their goals instead of exploiting their difficulties with self-control. Our findings demonstrate that commitment contracts are useful to attract new customers in the growing personal development services sector. Further, we show that firms must be careful about the relative importance of acquisition vs. retention objectives. Prepaid contracts are more desirable than postpaid contracts when customers choose a tariff option, but customers are less likely to achieve their goal with prepaid contracts, reducing retention. Clearly, firms

should consider goal bracketing carefully. Many firms include narrow goal bracketing in their commitment contracts, perhaps because narrow bracketed goals might be more closely related to the use of a given service. For example, the cycling studio mentioned above offers 90€ cashback to customers who train at least three times a week. However, the results from our research suggest that prepaid contracts are not optimal for customer retention. A broad goal would have more potential: For example, the cycling studio could couple payments with attainable objectives in terms of ECG or pounds lost. According to this research, a broadly bracketed prepaid contract attracts more customers than postpaid contracts and also does not undermine goal achievement and retention.

Overall, this research suggests there is potential in designing pricing systems to assist customers. Considerations about pricing must not be limited to the customer’s cost and the firm’s revenue. Taking customers’ goal achievement into account can result in attractive pricing plans that benefit the firm and its customers alike. Conventional pricing tactics such as non-linear pricing and price bundling optimize revenue at the expense of customers’ welfare. More customer-oriented pricing has the potential to drive both short- and long-term revenues. Pricing is seldom associated with customers’ goal achievement or overall societal objectives, but given the current interest in the corporate purpose and society’s awareness of individuals’ coping with physical and mental health problems (Pfefferbaum et al. 2020; Rajkumar 2020), precommitment-based pricing is likely to have implications beyond customer acquisition and retention. When the growing sector of personal development services gets pricing right, it can have a more sizeable impact on outcomes that benefit both individuals and society at large. In addition, companies that use pricing to assist rather than exploit customers are likely to attract customers from the growing segment that seeks brands with purpose. Broad bracketing and prepaid contracts fit best with these objectives because they relate most directly to individual and societal progress.

Limitations and Future Research

While this research provides consistent evidence, it also comes with limitations and opportunities for further research. First, we have not provided participants with intermediate feedback about their progress, although many personal development apps provide such feedback via notifications or emails to inform users about their progress. Future studies may investigate how this type of feedback affects customers' goal achievement and retention. Second, popular elements in fitness applications include gamification and social interaction among users. The present research centers on individual goal achievement, but the effects of the payment sequence and goal bracketing may change when customers are made aware of other users' performance or individualized incentives are tied to performance relative to that of others. Third, our research focuses on the interaction between the payment sequence and goal bracketing. Related research suggests that the size of the variable payment (e.g., Thaler 1985), the goal difficulty (e.g., Latham and Locke 1991), and the duration of the goal (e.g., Gourville and Soman 1998) may also play roles. Future research could test whether and how those conditions interact with the payment sequence of commitment contracts. Fourth, although we tested our expectations under incentive-aligned settings with actual financial consequences (Study 3, 4, and 5), measuring effect sizes in the actual marketplace would help to quantify the marketing potential of precommitment-based pricing more precisely. We hope our work motivates further research in these and related directions.

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Tables

Table 1: Overview of all experimental studies (Studies 1 to 5)

Study	Service context	Experimental manipulation	Dependent variable(s)	Incentive-compatible	Hypotheses
1	Language-learning	pre- vs. postpayment, with vs. without discount	Acquisition		H1
2	Fitness	pre- vs. postpayment	Acquisition		H1
3	Weight loss	pre- vs. postpayment	Acquisition	x	H1
4	Language-learning	pre- vs. postpayment	Goal achievement, retention	x	H2-H3
5	Language-learning	pre- vs. postpayment, broad vs. narrow bracketing	Goal achievement, retention	x	H2-H4

Figures

Figure 1: Examples of the market review of precommitment-based pricing: European cycling studio with customer response via social media and Lingoda online language school

6 WEEKS
UNLIMITED


RIDE & REFINE

Get €90 back if you come more than 18 times (about 3 x per week). Can only be purchased once.


BUY
€190 (Get €90 Back)

Promotions
Recent activity from your promotions.

RECENT



erikacberlin mentioned you in a comment: Thanks to @becycleberlin and their genius first-timers 6-week challenge, I managed to stick with a workout regimen for the first time since a high school coach yelled at me every afternoon! (Genius because you get 90 Euro back if you complete it, and you know money is a better motivator than, like, being a healthy person.) 🙌 44m



Sprint
Intensive learning that fits your schedule

✓ 3 months, 15 classes per month

✓ Earn 50% cashback

✓ English / French / Spanish
€199 / \$239 per month

✓ German / Business English
€229 / \$279 per month

Super Sprint
Super intensive 3-month learning period

✓ 3 months, 30 classes per month

Earn 100% cashback:
✓ Only valid for sign-ups before 24 June

✓ English / French / Spanish
€330 / \$399 per month

✓ German / Business English
€390 / \$469 per month

How does the cashback work?

When you win, we win. That's why we offer a cashback incentive for students who attend every class. Here's how it works:

Sprint™: Attend 15 classes a month (for 3 months) and get a 50% refund.

Super Sprint™: Attend 30 classes a month (for 3 months) and get a 100% refund.

Figure 2: Conceptual model and summary of research hypotheses

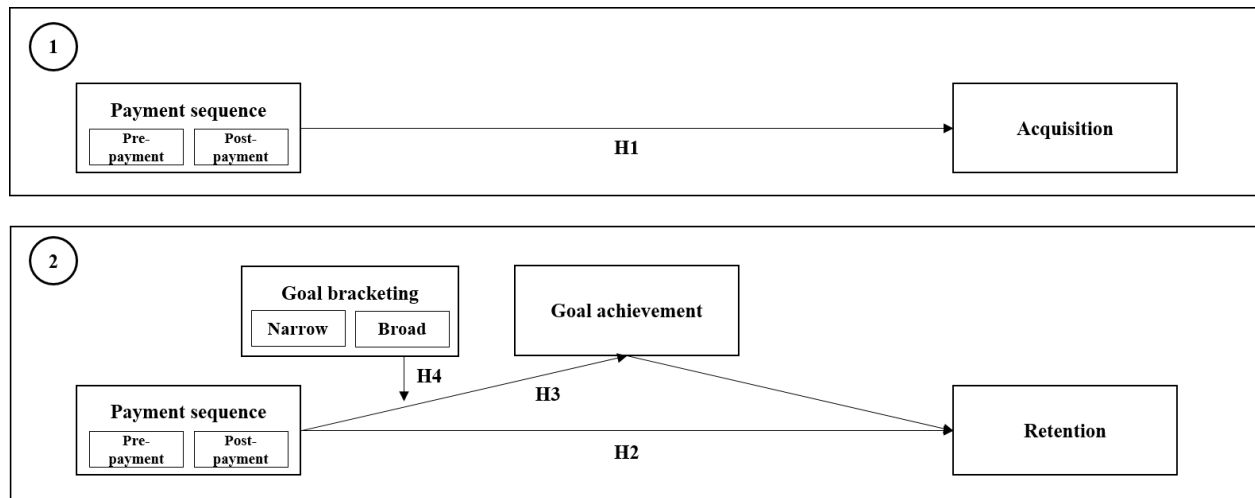
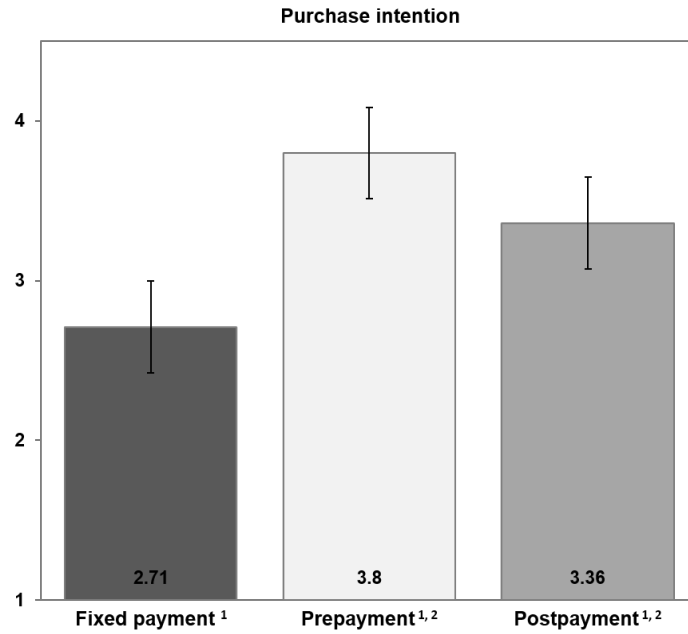


Figure 3: Commitment contracts increase purchase intention. Prepayment compared to postpayment facilitates purchase intention (Study 1).



¹Fixed payment versus commitment contracts: $p < .001$

²Prepayment versus postpayment: $p < .05$

Figure 4: Prepayment compared to postpayment facilitates customer acquisition (Study 2).

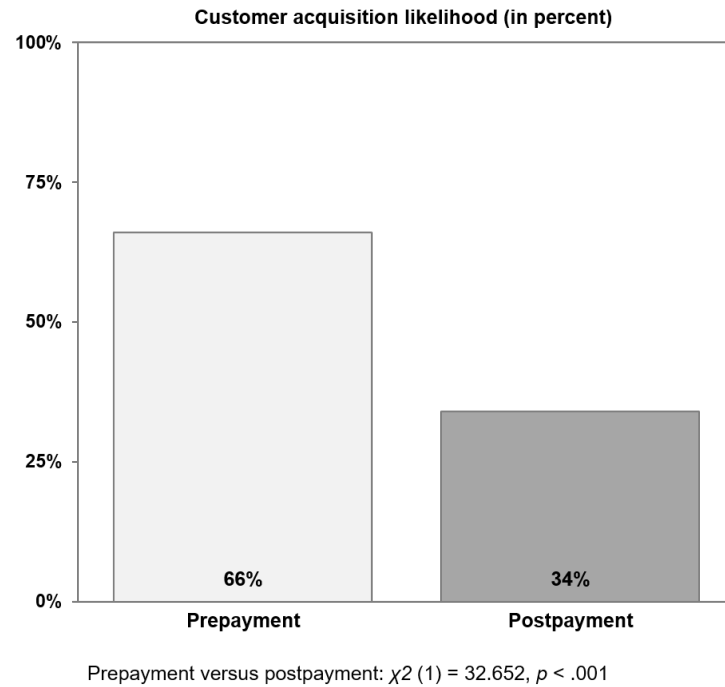


Figure 5: Prepayment attenuates customers' goal achievement. Further, goal achievement facilitates customer retention (Study 4).

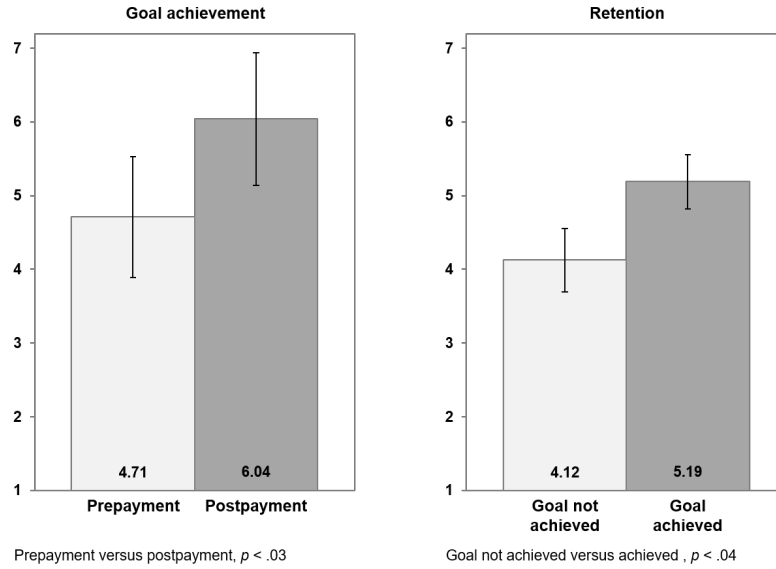
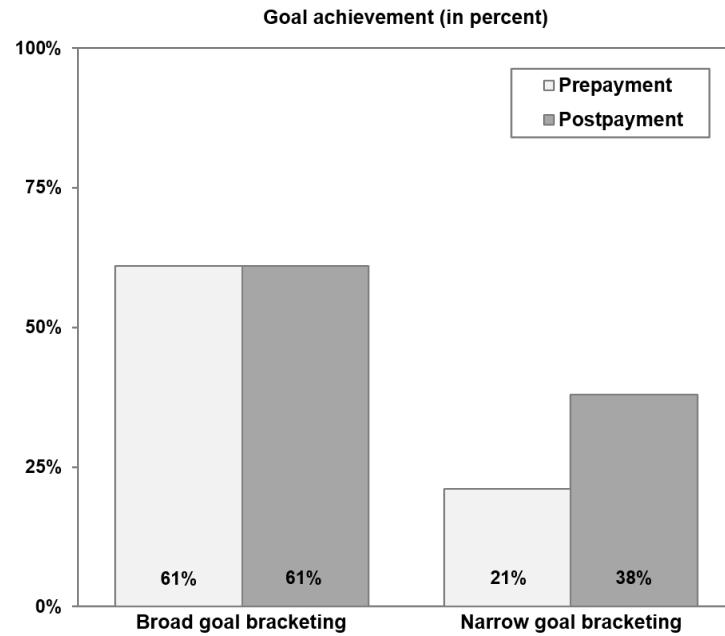


Figure 6: Postpayment compared to prepayment only facilitates goal achievement when the goal is bracketed narrowly (Study 5).



Interaction payment sequence*goal bracketing, $p < .04$

Precommitment-based Pricing: Web Appendix

Appendix A: Market Review of Precommitment-based Pricing

Company	Service context	Pricing sequence	Duration	Goal	Price	Variable fee
Lingoda	Language classes	Prepayment	3 months	Attend 15 classes per month	\$588 \$1056	50% 100%
spontan-abnehmen.ch	Weight loss	Postpayment	6 months	Attend 30 classes per month One kg per month	CHF 600	CHF 65-50 per lost kg (depending on initial weight)
Sport-Triedje	Weight loss	Prepayment	3 months	At least one kg weight loss	Price of fitness equipment	1% per kg weight loss
Hicyle	Fitness	Prepayment	3 weeks	11 times in three weeks	150€	50€
Lazy Jar	Fitness	Postpayment	Set own duration	Set own goal (calories, miles, minutes of activity, steps)	free	Set own amount
ARAG SE	Insurance	Prepayment	Contract duration	No claims for insurance	Individual annual insurance premium	Up to 40%
Allianz	Car insurance	Prepayment	12 months	Collect points according to safe driving behavior	Individual annual insurance premium	Up to 30%
AXA	Car insurance	Prepayment	12 months	Collect points according to safe driving behavior	Individual annual insurance premium	Up to 30%
Park Christmas Saving Club	Financial saving	Postpayment	Max. 12 months	Do not access your savings before November	Own budgeting plan	10%, at least £ 20

Appendix B: Means, standard deviations, and choice proportions for dependent, mediating variables, and manipulation checks (Studies 1 to 5)

Studies	Acquisition		Retention	Goal achievement	Perception payment dependence		Perception payment frame		Perception discount		Perception goal bracketing
	Discount				Discount		Discount		Discount		
	No ¹	Yes ¹			No	Yes	No	Yes	No	Yes	
Study 1											
	Prepayment	3.79 (1.81)	3.80 (1.90)		5.64 (1.97)	5.87 (1.68)	2.40 (2.09)	2.73 (2.29)	4.42 (2.44)	4.48 (2.47)	
	Postpayment	3.39 (1.86)	3.34 (1.83)		5.94 (1.52)	5.74 (1.81)	4.18 (2.50)	3.70 (2.42)	3.09 (2.17)	5.20 (2.19)	
Control	2.71 (1.89)				2.94 (1.90)		1.99 (1.33)		2.74 (1.96)		
Study 2											
	Prepayment	66.13%			5.80 (1.65)		2.16 (1.70)				
	Postpayment	33.87%			5.48 (1.84)		6.19 (1.56)				
Study 3											
	Prepayment	54.61%			4.79 (2.34)		3.12 (2.27)				
	Postpayment	45.39%			4.97 (2.36)		5.40 (2.30)				
Study 4											
				Effort							
	Prepayment		4.47 (2.04) ²	4.71 (4.06)	3.41 (3.40)		3.14 (1.93)				
Postpayment		4.88 (1.92) ²	6.04 (4.14)	4.46 (3.47)		4.28 (1.93)					
Study 5											
				Goal bracketing							
				Narrow							
Prepayment	78.13%	76.92%	2.14 (2.95)	6.08 (2.55)	5.95 (1.66)	6.34 (1.31)	4.16 (2.65)	3.45 (2.71)	4.19 (2.46)	2.69 (2.24)	Goal bracketing Narrow Broad
Postpayment	85.00%	86.36%	3.82 (4.09)	6.12 (2.65)	6.45 (1.19)	6.52 (1.01)	6.22 (1.75)	6.06 (1.93)	3.83 (2.44)	2.97 (2.27)	

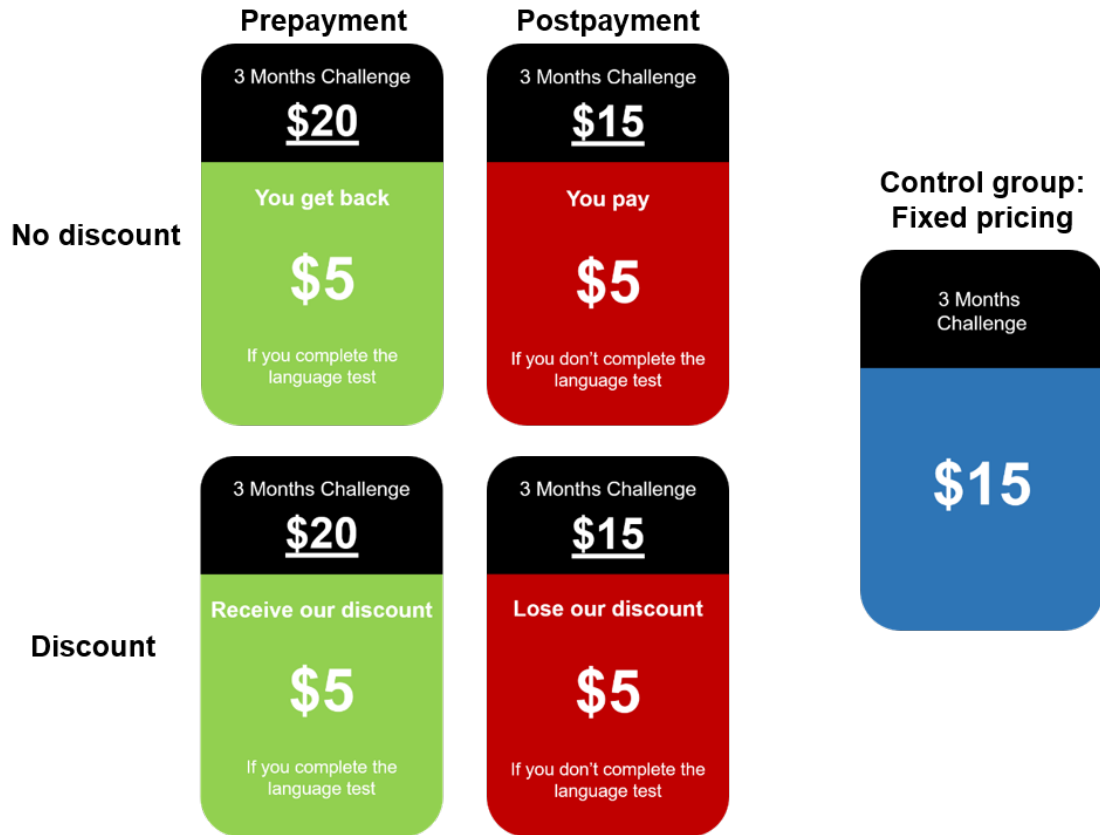
Standard deviations in parentheses

¹ Customer acquisition: purchase intention 1 = not likely at all to 7 = very likely

² Customer retention: retention likelihood 1 = very unlikely to 7 = very likely

Appendix C: Experimental stimuli of Study 1

Stimuli for payment sequence and discount as well as the control group, fixed payment.



Appendix D: Experimental stimuli of Study 2

Stimuli for payment sequence (pre- and postpayment).

Prepayment

8 Weeks Challenge

\$15

If you achieve the goal of completing **15 fitness sessions**, you receive a **refund of \$5**.

Postpayment

8 Weeks Challenge

\$10

If you do not achieve the goal of completing **15 fitness sessions**, you **pay a fine of \$5**.

Appendix E: Experimental stimuli of Study 3

Stimuli for payment sequence (pre- and postpayment).

Prepayment

You receive **\$20 for your participation** in this study.

If you achieve the goal of participating in one seminar
each day for two weeks,
you gain an extra \$10 payment.

Postpayment

You receive **\$30 for your participation** in this study.

If you do not achieve the goal of participating in one
seminar each day for two weeks,
you lose \$10 of your payment.

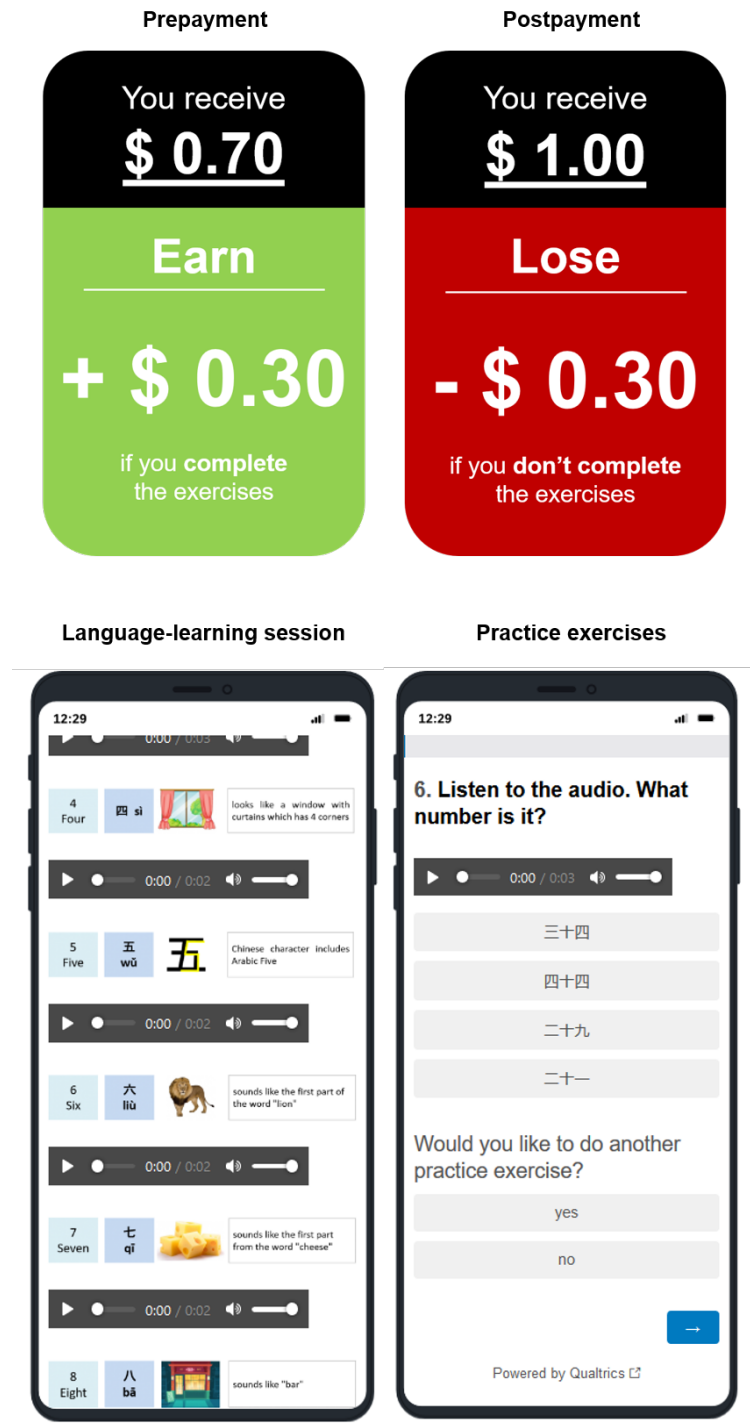
Appendix F: Results of goal achievement and retention Study 4 and 5

Results of goal achievement and retention with the complete samples of Study 4 and 5.

Study 4								
N = 201								
	Goal achievement				Retention			
	β	se	t	p	β	se	t	p
Payment sequence	-.122	.058	-2.099	.037	-.468	.283	-1.656	.099
Goal achievement					1.563	.326	4.791	.001
Study 5								
N = 321								
	Goal achievement				Retention			
	β	se	t	p	β	se	z	p
Payment sequence	-.080	.040	-2.017	.045	-.357	.281	-1.272	.203
Goal bracketing	-.304	.036	-8.458	.001	-.078	.278	-.780	.780
Payment sequence x Goal bracketing	-.084	.072	-1.171	.242	-.118	.563	-.209	.834
Goal achievement					2.146	.473	4.536	.001

Appendix G: Experimental stimuli of Study 4

Stimuli for payment sequence (pre- and postpayment) and excerpts from the language-learning session and practice exercises .



Appendix H: Experimental stimuli of Study 5

Stimuli for payment sequence and goal bracketing.

Payment sequence		
	Prepayment	Postpayment
Goal bracketing	<p>You receive \$0.70 for your participation in this study.</p> <p>If you achieve the goal of doing 8 (out of 10) practice exercises, you gain an extra \$0.30 payment.</p>	<p>You receive \$1 for your participation in this study.</p> <p>If you do not achieve the goal of doing 8 (out of 10) practice exercises, you lose \$0.30 of your payment.</p>
	<p>You receive \$0.70 for your participation in this study.</p> <p>If you achieve the goal of 8 (out of 10) correct answers in the final language test, you gain an extra \$0.30 payment.</p>	<p>You receive \$1 for your participation in this study.</p> <p>If you do not achieve the goal of 8 (out of 10) correct answers in the final language test, you lose \$0.30 of your payment.</p>

Appendix I: Experimental stimuli and results manipulation checks

Stimuli for payment sequence and goal bracketing.

Which membership would you most likely choose?

	Prepayment	Postpayment	Fixed pricing
Narrow goal bracketing	3 Months Challenge \$45 Get \$15 back if you manage to eat 500 calories less per day	3 Months Challenge \$30 Pay \$15 extra if you do not manage to eat 500 calories less per day	3 Months Membership \$30
Broad goal bracketing	3 Months Challenge \$45 Get \$15 back if you manage to lose 5% of your body weight	3 Months Challenge \$30 Pay \$15 extra if you do not manage to lose 5% of your body weight	

Choice shares, means, and standard deviations of the manipulation checks.

	Customer acquisition (choice of challenge)	Perception payment dependence	Perception payment frame	Perception goal bracketing
Prepayment	30.09%	5.05 (2.18)	3.00 (1.92)	
Postpayment	18.45%	5.32 (1.88)	4.26 (1.35)	
Broad goal	26.79%			1.91 (1.48)
Narrow goal	22.12%			4.66 (1.49)

Standard deviations in parentheses