RESEARCH REPORT 1

Nudging Marketplace Sellers Towards Financial Resilience: Increasing Inventory and Access to Credits with Mercado Libre

center for inclusive growth

CENTER FOR ADVANCED HINDSIGHT COMMON CENTS LAB

Background

DIGITAL MARKETPLACES

In recent years, the health and economic crises brought about by the COVID-19 pandemic have exacerbated the challenges faced by independent workers and entrepreneurs, especially in regions such as Latin America and the Caribbean (LAC), where the public safety net is weaker than in more industrialized countries and where workers have few financial or policy resources in case of any type of emergency. In this context, digital platforms have proved instrumental in creating and expanding the opportunities available to such individuals, thus becoming essential elements in their financial health infrastructure.

With its mission to advance equitable and sustainable economic growth and financial inclusion around the world, the Mastercard Center for Inclusive Growth has been a key partner for the Common Cents Lab to expand its work across the region to design and test behaviorally informed interventions aimed at improving the financial resilience of low- and moderate-income independent workers and entrepreneurs in the region.

The COVID-19 pandemic exposed many of the challenges that Latin America has been facing because of insufficient safety nets, high informality, and a recent decrease in growth. However, the region has also seen a rapid increase in digitalization, as the size of digital platforms shows. Moreover, entrepreneurship plays a crucial role in the economic dynamics of the region. Small and medium enterprises (SMEs) account for the majority of firms in the region, and more than half of formal employment in LAC is driven by SMEs. While the region still lies below world averages in terms of financial inclusion, individuals are opening more financial accounts, making more digital payments, and saving more.

In this context, digital platform use has been increasing across the region—providing a lifeline for workers and entrepreneurs and giving them access to opportunities for resilience and growth. Platforms have brought an entry door to new markets, digitalization, financial inclusion, and community. However, many of these workers and entrepreneurs remain disconnected from social protection benefits like paid time off, sick leave, health insurance, and pensions that could help strengthen their safety net. As such, digital platforms have a unique opportunity to support workers and entrepreneurs in the region, by designing products and services that place financial resilience as a mission in its core and leveraging behavioral sciences' robust evidence and innovative tools.

BUILDING A RESEARCH PARTNERSHIP

To advance these objectives, we partnered with Mercado Libre, the largest online commerce ecosystem in Latin America and present in 18 countries across the region, including Brazil, Argentina, Mexico, Chile, Colombia, Peru, Uruguay, Venezuela, Bolivia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, and El Salvador.

Mercado Libre's ecosystem provides users with a range of e-commerce services designed to address their commercial, logistics, and financing needs. The company offers a marketplace (Mercado Libre), a fintech platform to facilitate payments, manage savings, and access credits (Mercado Pago), a logistics service (Mercado Envíos), an advertising solution (Mercado Libre Ads), a classifieds service (Mercado Libre Classifieds), and an online storefronts solution (Mercado Shops).

The coverage and comprehensiveness of such an ecosystem represents a unique opportunity for the Common Cents Lab to identify key touchpoints where we can design and test behaviorally informed interventions that improve the financial well-being of users.

Following a series of initial meetings to set up the basic legal and logistical collaboration arrangements and learn more about the different components of the Mercado Libre ecosystem, Common Cents Lab delivered an introductory workshop on behavioral sciences to key staff from across the organization that could benefit from the partnership. The group included members from different functional areas within the Mercado Credits, Mercado Envíos, and Mercado Pago teams.

> **Our partnership with the Mastercard Center for Inclusive Growth has focused on four main objectives to help independent workers and entrepreneurs, including: 1) increase their earnings, 2) increase their short-term savings, 3) increase their long-term savings, and 4) increase their uptake of insurance products.**

As part of the workshop, the teams were asked to collaboratively identify the challenges faced by the organization within their areas, and the opportunities available to address them. They were also asked to rank them according to their potential impact and feasibility to be tackled in the short term, and the potential benefit they had for users' financial health. Such activity helped identify and agree on the key behaviors to focus on during our collaboration.

Given the availability and readiness of the Mercado Envíos Inventory team at the time (Fall/2021), we decided to focus on their key behavior for our first study with Mercado Libre. To deepen our understanding of the financial and behavioral barriers and experiences of users related to the services provided by the Inventory team, we designed a survey that was mailed by Mercado Libre directly to their sellers. The survey will be sent a second time this year and will provide important insights for the design of future interventions.

Based on data and insights from the Mercado Envíos team, we co-designed an intervention to incentivize their sellers to place inbound shipments to their distribution centers during peak sales season, to help them be prepared to meet the increased demands of buyers. To do this, we drafted a set of behaviorally informed email messages highlighting the potential losses sellers would miss out on if they were not adequately prepared (loss aversion) and the fact that other similar sellers were taking the steps needed to meet the demand (dynamic social norms).

For the second study, we partnered with Mercado Pago's Credits unit. They were interested in increasing the credit demand from sellers who already have a loan from Mercado Pago. To do this, sellers were asked to connect an additional bank or taxes (SAT, the IRS equivalent in Mexico) account to their Mercado Libre account. For this study we designed a two-phase experiment to test the effectiveness of in-app messages, applying different behavioral principles selected based on the barriers identified, such as active choice, completion bias, implicit default, and operational transparency. The details and results of both studies can be found in the following sections.

Behaviorally informed messages to encourage inbound shipments during peak sales season

BEHAVIORAL DIAGNOSIS

Sellers were missing out on sales

Mercado Envíos is Mercado Libre's logistics arm, providing services such as product packaging, labeling, shipment, tracking, storage, and inventory management, as well as special filters for companies enrolled in the service. One challenge the team identified among their sellers to take full advantage of the services offered by Mercado Envíos and improve their business performance, was that sellers did not stock the right number of items in Mercado Envíos distribution warehouses. As a result of this, sellers could not take advantage of the possibility to have their products delivered on time and at low cost by Mercado Envíos, thus potentially having to incur additional shipping and storage costs elsewhere. This challenge was particularly concerning during the Holiday peak sales season in November and December.

As such, we decided to focus our efforts on incentivizing Mercado Envíos sellers who are enrolled in "Full" (inventory management) and who lost sales in previous weeks due to insufficient stock. Specifically, we wanted to help sellers schedule a shipment of stock to the warehouse during the Holiday peak sales season.

Behaviors and habits can be sticky

Identifying opportunities for a behavior change intervention begins with understanding the environment in which people make decisions. For this challenge, this meant understanding the process that sellers must follow to schedule an inbound shipment of stock, which typically happens through the Mercado Libre seller platform or through the call center. While we identified opportunities for improvement in the structural design of the scheduling process, we focused our attention on the psychological barriers faced by sellers when deciding whether to schedule a shipment and how much to send.

Previous research has shown that humans struggle to make complex cost-benefit calculations (Sunstein, 2000), such as deciding how much to invest in additional stock (including production, fees and logistics) for the potential revenue of additional sales. Moreover, behaviors and habits can be sticky; it is easier for sellers to send the usual amounts of stock rather than increasing them for a specific season (status quo bias). Lastly, even apparently insignificant elements of the environment in

which we make decisions, such as a number, can influence our decisions (anchoring bias); for sellers, the default amount shown on the scheduling platform worked as an anchor influencing how much stock to ship, which could be more or less than what they needed to maximize their revenue during the season.

Identifying opportunities for a behavior change intervention begins with understanding the environment in which people make decisions. For this challenge, this meant understanding the process that sellers must follow to schedule an inbound shipment of stock.

Facing these barriers, we identified an opportunity to reframe the experience for sellers, building on a key metric tracked by Mercado Libre. On a weekly basis, Mercado Libre estimates how much a seller is losing in revenue by having products out of stock, combined with searches from buyers. While this number is visible for sellers on their dashboard, there is no evidence on how important this number currently is for their business decisions. Research, however, suggests that people have limited attention, and that when we perceive that resources are scarce (scarcity mindset), thus diminishing our cognitive capacity, we overtly focus on the resource that we perceive as scarce and magnify costs while minimizing benefits (Cook & Sadeghein, 2018). As such, sellers facing a scarcity mindset might not only be unaware of the revenue they are losing but could be focusing mostly on the costs of increasing their stock instead of the benefits.

INTERVENTION DESIGN

Reframing and testing communications for behavior change
Building on these findings, we reframed how the loss revenue indicator was presented to sellers and averaged two behavioral principles that research has shown can influence people's decisions and behaviors: loss aversion (Kahneman et al., 1991) and social norms (Schultz et al., 2007). Loss aversion is the principle that describes how people react to losses and make larger and disproportionate efforts to prevent them, compared to how they react to gains of similar value. Social norms, on the other hand, are unofficial rules that guide our behavior, based on what other people are doing (descriptive norms) or our beliefs about what others expect us to do in a certain situation (injunctive norms).

To test these principles, we designed a script that combined loss aversion, by highlighting how much revenue each seller was losing by not having enough stock to cover their current demand (loss revenue), as well as highlighting the dynamic descriptive behavior that, as we approached the Holidays, more sellers were increasing their inbound shipments of stock (dynamic norms). We hypothesized that, by making salient what sellers were missing on by not having enough stock for the season, they would make additional efforts to increase their stock and reap the benefits of the peak sales season. This script was adapted to be delivered through two of Mercado Libre's contact channels: Emails and call center phone calls. In each channel, intervention messages were compared to business-as-usual communications.

Table 1. Email Interventions

Intervention Email	Control Email
Subject: You missed out on sales last week!	**Subject:** Send more stock to Full to reactivate your publications
Body: You missed out on MXN 10,000 on sales last week!	**Body:** Your publications for certain products were paused because you ran out of stock in Full.
When customers tried to purchase from you, you missed out on MXN 10,000 to your competitors who had products in stock.	Schedule a shipment as soon as possible to reactivate your publications and start selling again.
With sales peaking during the Holidays, more and more Mercado Libre sellers like you are increasing their stock to meet the peak sales season demand.	Don't waste your time! Take advantage of the number of buyers that are currently searching for these products and offer it again as soon as possible.
Go to [LINK] and schedule a shipment.	You can prevent other publications from being suspended due to being out of stock reviewing constantly your sales report and restocking your most sold products.
	Go to [LINK] and schedule a shipment to make sure you are prepared for the upcoming peak sales season.

Table 2. Phone Script Interventions

Intervention Phone Call	Control Phone Call
"Hi [NAME],	"Hi [NAME],
Last week, when customers tried to purchase from you, you missed out on MXN 10,000 to your competitors who had products in stock. This happened for the following products. With sales peaking during the Holidays, more and more Mercado Libre sellers like you are increasing their stock to meet the peak sales season demand.	We see that some of your most sold items don't have stock in Full. We suggest that you restock as soon as possible. Buyers are searching for publications that have Full shipment since these give them a better experience. Make sure you always have stock of your best publications in Full to avoid losing sales.
Would you like to schedule a shipment of any of your products, to make sure you are prepared for the upcoming peak sales season?"	Would you like to schedule a shipment of some of your products for the coming season?"
If Yes: "I can help you schedule a shipment… (follow scheduling steps) or you can log-in to your seller platform and go to… (describe steps)"	**If Yes:** "I can help you schedule a shipment… (follow scheduling steps) or you can log-in to your seller platform and go to… (describe steps)"
If No: "Is there any way I can help you be prepared for the coming Holiday season?"	**If No:** "Is there any way I can help you be prepared for the coming Holiday season?"

A sample of 3,177 sellers enrolled in the Mercado Libre Full Service, meaning they had access to the warehouse storage service and shipment from Mercado Libre, were randomly selected to participate in the study. Sellers belonged both to the small sales volume segment ("long-tail" - LT) and to the middle sales volume segment ("mid-tail" - MT). To maximize the statistical power to compare the effectiveness of the intervention on LT sellers and MT sellers, we used a stratified randomization process. Likewise, to maximize the potential impact of the intervention during the peak sales season (November and December), we used an unequal randomization ratio (2:1) that randomly allocated a larger number of sellers to the intervention group, compared to the control group.

We hypothesized that, by making salient what sellers were missing on by not having enough stock for the season, they would make additional efforts to increase their stock and reap the benefits of the peak sales season.

The intervention was launched on November 23rd, 2021, at 12pm. At that time, emails were sent to those in the email intervention group and calls began to those in the call center intervention group and continued throughout the week. Sellers in the Email groups received 2 emails—1 on November 23rd, 2021, and 1 on December 2nd, 2021. Those in the call center group received only 1 phone call.

Table 3. Random Assignment to Experiment Groups

	Long-Tail (Small)	Mid-Tail (Medium)
Control Email	32 sellers	526 sellers
Intervention Email	76 sellers	1,272 sellers
Control Phone Call	72 sellers	320 sellers
Intervention Phone Call	169 sellers	710 sellers

RESULTS

An opportunity to explore the call center as intervention point

The results of the study show that reframing communications might not be enough to help sellers overcome the barriers to increase sales during peak sales season. To measure the effectiveness of the communications (email and phone calls), we measured 2 primary outcomes:

» The percentage of sellers in the group that scheduled an inbound shipment into the warehouse in the 2 weeks following the emails or phone call (at least 1 shipment)

» The percentage change in lost revenue compared to the previous period (the 4 weeks before the launch of the emails and calls)

As Table 4 shows, results analyzed by Mercado Libre show that, both among MT and LT sellers, phone calls using the behaviorally informed script seem to have increased the percentage of sellers scheduling an inbound shipment of stock into the warehouse by 3 and 4 percentage points, respectively. Statistical analyses confirm that only the 4-percentage point increase in inbound shipments among long-tail sellers is marginally significant (p value < 0.1).

Table 4. Study 1 Outcomes by Experiment Condition

Segment	Channel	Group	% with Inbound Shipment	% Change in Lost Revenue
Mid-Tail	Call Center	Control	16%	0.4%
	Call Center	Intervention	19%	0.6%
	Email	Control	17%	1.1%
	Email	Intervention	16%	0.7%
Long-Tail	Call Center	Control	11%	-0.2%
	Call Center	Intervention	15%	-0.3%
	Email	Control	13%	-0.4%
	Email	Intervention	14%	-0.6%

These results suggest that the personalized assistance of the customer representative and guidance through the process, as well as characteristics of the messenger—the person who calls (Dolan et al., 2010)—may be influencing their decision to schedule a shipment, compared to those who are exposed to an email. Previous research has shown that even automated phone messages can encourage financial behaviors (Mazar et al., 2018). As such, there is an opportunity for Mercado Libre to explore other behaviors for which the current interventions (social norms and loss aversion) could be relevant, particularly focusing on smaller sellers (long-tail).

Behaviorally informed messages to encourage account linking for credit access

BEHAVIORAL DIAGNOSIS

Lack of trust and choice architecture can prevent sellers from accessing credit offers to grow their business

Following the preliminary results of the first study, both Mercado Libre and we hypothesized that lack of capital to invest in additional stock shipments could be a structural barrier preventing sellers from increasing their sales. While the results of the survey will provide more clarity on this hypothesis, we worked with the Mercado Pago team, Mercado Libre's financial arm, to understand the process of accessing credit and its barriers.

To be able to provide users with an affordable credit offer to help them grow their business, Mercado Libre needs to analyze businesses' transactional data to evaluate their readiness to take on a loan and their ability to pay back on time, without it disrupting their business operations. Whenever existing information within the Mercado Libre and Mercado Pago platforms is not available or extensive enough to assess the likelihood that sellers will be able to pay their bills on time, users can link accounts outside of the Mercado Libre ecosystem to provide more visibility into their business' sales and operations.

> **A key barrier that users face towards achieving the key behavior that will allow them to get access to a credit offer that could help them grow their business is related to trust.**

At the time, 14% of all eligible sellers had started the process of linking an account and only 3% ended up successfully linking at least 1 account. Research conducted by Mercado Libre reveals that, whereas close to 50% of users with a bank account outside of Mercado Libre indicate they would be willing to share their bank account statement, less than 20% would be willing to link their bank account to Mercado Libre, citing as the primary reason "not feeling confident with sharing my data" (67% of respondents). This evidence suggests that a key barrier that users face towards achieving the key behavior that will allow them to get access to a credit offer that could help them grow their business is related to trust.

Furthermore, this 30 percentage-point gap in their willingness to share a bank statement and link a bank account is particularly interesting given that the actual information being shared would be the same. Together with the observation that less than 10% cite "I don't have enough trust in Mercado Libre" as a reason for not being willing to link their account, this evidence seems to suggest that there is a specific dimension of trust that is most critical: trust in the process of sharing data.

However, it is important to acknowledge that this evidence relies almost exclusively on users' self-reported attitudes and intentions towards data sharing and privacy. As shown by the intention-action gap, intentions and attitudes are not necessarily strong predictors of actual behavior (Sheeran, 2002). Neither are people particularly accurate at identifying what drives their own behavior and why (Berman & John, 2020).

In fact, a growing body of evidence suggests the existence of a "privacy paradox," namely that people tend to display strong attitudes against sharing private information but act inconsistently when it comes to actual disclosing behaviors (Kokolakis, 2017). For example, in an early study by Norber and colleagues (2007), participants were asked about their willingness to disclose different pieces of personal information to a bank or a pharmaceutical company. When given the chance to disclose the same pieces of personal information several weeks later, participants ended up sharing considerably more information than they initially intended to (with or without monetary incentives).

> **A growing body of evidence suggests the existence of a "privacy paradox," namely that people tend to display strong attitudes against sharing private information but act inconsistently when it comes to actual disclosing behaviors.**

Taken together, this evidence suggests that, while lack of trust remains a primary hypothesis behind low account linking rates among Mercado Libre SMEs, it is also critical to take into consideration that privacy-related behaviors are context dependent (Morando et al., 2014) and can be largely influenced by cognitive biases and heuristics (Acquisti & Grosslags, 2007). Therefore, it is crucial to focus on the choice architecture around the decision to link an account.

A behavior map of the process of connecting a financial account (bank or taxes) revealed potential behavioral barriers preventing users from linking an account and with multiple opportunities to overcome them. Across the 11-step process of linking an account, we detected 3 key touchpoints to address. First, the point of access to the account linking process consisted of either an empty

state in the credits section of the app or an in-app awareness message via modal. Importantly, the wording of the awareness message focused on the potential benefits of requesting a credit but lacked transparency regarding the process of linking an account. We also detected several interesting opportunities for behaviorally informed product design both in the framing of the message and the structure of the response options, all of which have been shown in the past to be effective in prompting people into action in desirable ways. For instance, our previous research has shown that including key actions as part of the onboarding process and framing them as incomplete (leveraging on completion bias) can increase the likelihood that people complete those actions.

Across the 11-step process of linking an account, we detected 3 key touchpoints to address

Second, once users indicated that they wanted to start the account linking process, they would be directed to an informative landing page before starting the actual account linking process. This landing page reiterated the benefits of requesting a credit offer, briefly outlined the steps in the process of linking an account, and displayed answers to frequently asked questions. This is the first stage in which users are explicitly informed that they will be required to link their bank account for the chance of accessing a credit offer. From a behavioral sciences perspective, this landing page raised 2 main concerns. First, it introduced friction into the process of linking an account because it reiterated the same information from the immediately prior awareness message rather than directing users that had already opted in directly to the process of linking an account. Second, there were multiple competing call-to-action buttons throughout the landing, potentially causing users to postpone making a decision due to choice overload.

Third, the first step of the actual account linking process consisted of a brief onboarding screen informing users that they were being redirected to a third-party provider for the account linking process and that they would be providing read-only permits for their data. Based on internal research by Mercado Libre, this screen was being redesigned to provide an outline of what the process consists of as well as to enhance trust in the process by emphasizing that they would have read-only permits for that data.

To leverage Mercado Libre's current priorities and resources, we focused on the first key touchpoint to test out different interventions to overcome barriers identified throughout the behavior map. One key benefit of delivering interventions using in-app messaging via modal (widely used by the platform to communicate with users) was the ease and speed of implementation, because no development resources were required. Another important benefit is that these in-app messages were set up to cover the full screen of users' devices and are displayed only to users who log into the app, who then

can do the key behavior right after seeing the message. Moreover, due to their reach and feasibility, in-app messages allow testing of multiple hypotheses at a very low cost before informing a structural change that increases the potential for impact.

INTERVENTION DESIGN

Testing behavioral principles to overcome trust barriers to account linking

For this study, we focused on the close to 150,000 SMEs in Mexico for which transactional data within the Mercado Libre platform was not sufficient to accurately assess their ability to take on a loan and which met internal eligibility criteria to link accounts outside of Mercado Libre.

The objective was to test different behaviorally informed interventions to encourage existing small and middle entrepreneurs (SMEs) at Mercado Libre who had no access to a credit offer due to limited transactional data within the platform to link at least 1 bank account outside of Mercado Libre and Mercado Pago for the possibility to gain access to a credit offer. To do so we focused on interventions aimed at addressing lack of trust in the process of linking an account directly as well as interventions focused on the choice architecture surrounding the decision to link an account.

It is important to mention that, while the goal was to improve credit access for Mercado Libre sellers, the goal was not necessarily to encourage users to take on a loan after they gain access to a credit offer. Additionally, it is worth mentioning that successfully linking an account does not guarantee gaining access to a credit offer (around half of users sharing data ended up receiving a new credit offer).

Across 2 field studies, we tested out a total of 6 different behaviorally informed designs of communication-based interventions using in-app messaging (See Figure 1):

» **Active choice:** in this condition users were required to make an active decision by simply adding a second call-to-action button to the business-as-usual modal: "I don't want to get a loan." Rather than prompting people to opt in to the account linking process, numerous past studies show that eliminating the default and requiring people to make a choice in the moment can increase uptake of products and services (Carroll et al., 2009; Keller et al., 2011; Beshears et al., 2021). In a previous field study by the CCL in partnership with Steady, using an active choice design led to a 63% increase in the rate of gig workers successfully linking a bank account to use an income tracking feature.

» **Incomplete set-up:** in this condition we only made changes to the wording of the business-as-usual message to highlight that their credit offer was incomplete and that the last remaining step in order to complete their credit offer is to share additional data on their business sales outside of Mercado Libre, followed by a call-to-action button stating: "Share data." This design leverages "completion bias." a tendency to seek completion of tasks due to the pleasure it brings
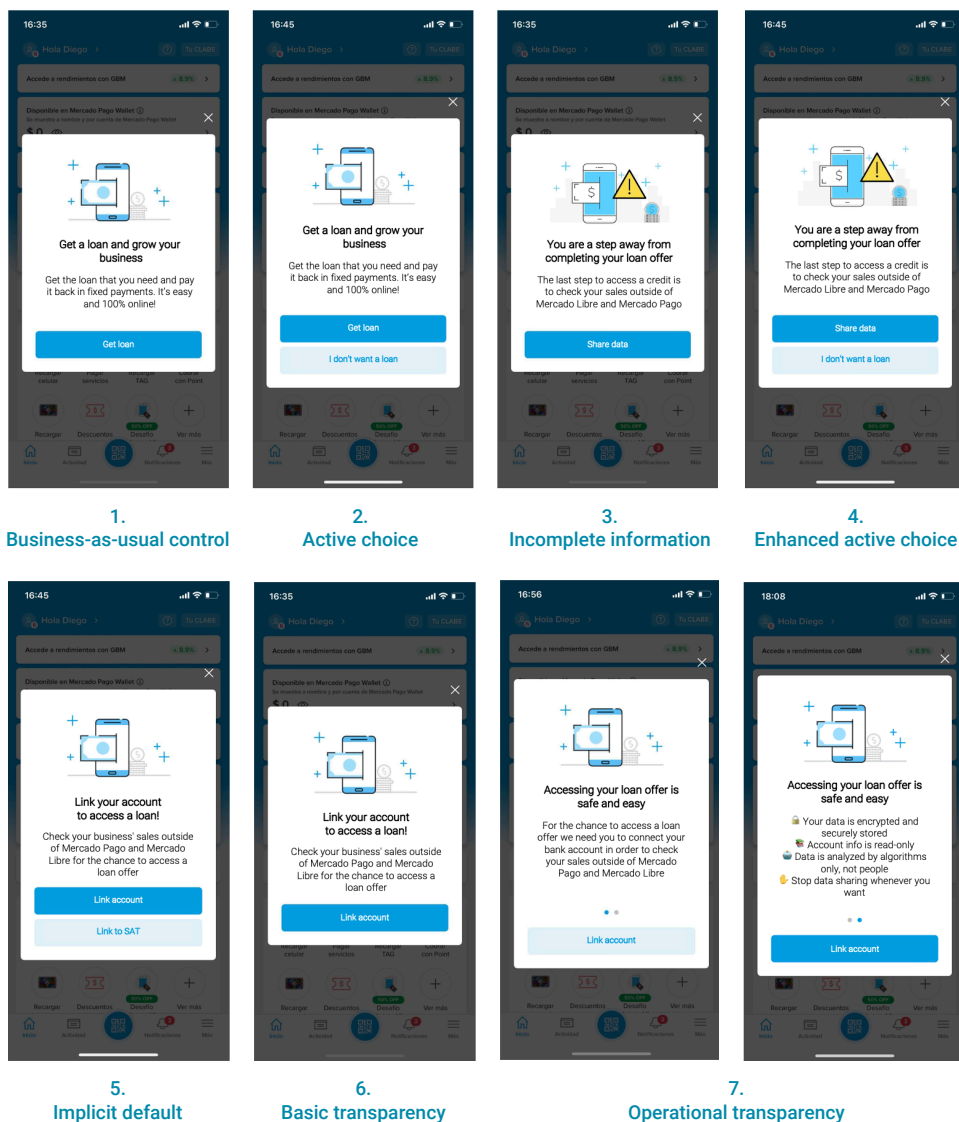
(KC et al., 2017). Additionally, given that we tend to work harder as the distance to reaching the goal shrinks (Kivetz et al., 2006; Koo & Fishbach, 2012), framing the required action as the last remaining step in the process is expected to further enhance motivation. Using an incomplete set-up framing has been shown to lead to an impressive 125% increase in the rate of gig workers successfully linking a bank account in the previously mentioned Steady field study.

» **Enhanced active choice:** in this condition we combined the structure of the call-to-action buttons from the active choice condition to prompt users to make a choice in the moment, together with the wording from the incomplete set-up condition highlighting that their credit offer was incomplete. Research by Keller & colleagues (2011) suggests that combining these design elements can contribute to further improving the effectiveness of active choice designs by advantaging the preferred option ("Share data") over the non-preferred alternative ("I don't want a loan").

» **Implicit default:** in this condition we adapted response options of the business-as-usual modal to imply that linking an account is the default course of action. Specifically, we replaced the original "Get loan" button for "Link account" and added a second button stating: "Link to SAT" (namely, the Mexican taxation authority). While users still had to opt in to start the account linking process by tapping on either call to action, the opt-in default is implied by having two options related to sharing data. Cognitively, this design changes the nature of the decision from a yes-or-no question into a question of how to share data, with the latter being usually more effective in prompting people into action (Xu & Wyer, 2007; Soman & Zhao, 2011). Research by the CCL in partnership with Self-help has shown that implicit defaults can be effective in promoting people to open a savings account. Additionally, based on evidence provided by Mercado Libre indicating that linking to SAT is a particularly unattractive option for users, this second call-to-action button ("link to SAT") is expected to come with the added benefit of operating as a potent decoy, thus enhancing the attractiveness of the "link account option" by means of direct comparison (Bateman et al. 2008).

» **Basic transparency:** in this condition we only made changes to the wording of the call-to-action button in the business-as-usual modal in order to increase the transparency of the action that users are expected to make as a result of opting into the account linking process. Specifically, we changed the wording of the call-to-action button from "Get a loan" to "Link account."

» **Operational transparency:** in this condition we sent users a new in-app message disclosing key elements of the process of linking an account in order to improve users' perceived trust in the process of linking an account. Making operational processes transparent to end users has been shown to enhance perceptions of trust (Buell et al., 2013) as well as perceptions of service value and quality (Buell & Norton, 2011; Buell et al., 2015). In practice, this message emphasized in the title that "Accessing your loan offer is safe and easy" and included a description with bullet points addressing specific dimensions of trust as well as main concerns raised by users

in qualitative research conducted by Mercado Libre. Specifically, the description was designed to enhance motive transparency by indicating why the data is needed. Also, 4 bullet points were included to highlight how data is stored and handled, read-only permits, actors involved in the process, and how users are free to stop sharing data whenever they want. Each bullet point included an emoji as a visual aid. Like in the basic transparency condition, the call-to-action button stated: "Link account."

All messages were implemented in Spanish and the account linking process was the same across all conditions.

Figure 1. Intervention Design of In-app Messages

| 1. Business-as-usual control | 2. Active choice | 3. Incomplete information | 4. Enhanced active choice |

| 5. Implicit default | 6. Basic transparency | 7. Operational transparency |

A 2-stage experiment approach

From an experimental design perspective, we conducted 2 randomized field experiments with all 150,000 eligible SMEs at Mercado Libre to test out all 6 behaviorally informed interventions. Across both studies, all participants were randomly allocated to receive only 1 in-app message throughout.

In Study 2.1, we randomly allocated all 150,000 eligible sellers to receive 1 of 5 experimental conditions using a between-subjects design in order to encourage them to link a financial account to access a loan offer: no message (N=90,000), business-as-usual control (N=15,000), active choice (N=15,000), incomplete information (N=15,000) and enhanced active choice (N=15,000).

In the no message condition, users did not receive any communication encouraging them to connect their bank account. This condition was included as a pure control group, in order to account for the effect of simply receiving a message.

All messages were displayed only once and right after users opened the app for the first time after having set up the message. The modal was launched on November 24th, 2022, and was set up for a total duration of 2 days[1], meaning those participants that did not log into the app during that period did not interact with the intervention.

> ## All messages were displayed only once and right after users opened the app for the first time after having set up the message.

In Study 2.2, we conducted a replication of the main findings from Study 2.1 and tested 3 new conditions. Specifically, users were randomly allocated (in equal proportions) to receive 1 of 6 experimental conditions: business-as-usual control message, incomplete set-up (replication from Study 2.1), enhanced active choice (replication from Study 2.1), implicit default, basic transparency, and operational transparency.

For this second study we had a sample size of around 100,000 sellers, consisting of all eligible sellers who had not interacted with any modal in Study 2.1, as well as new users that had not been included in the sample for Study 1. Additional internal checks were conducted by Mercado Libre to assess whether eligibility criteria were still met.

---

1. Initially, we planned for a total duration of 30 days to maximize the likelihood that all users would interact with the Mercado Pago app at some point during that period; however, this was not possible due to operational concerns raised by Mercado Libre.

As in Study 2.1, all messages were shown only once and right after users open the app for the first time after setting up the message. The modal was launched on December 14th, 2022, and was set up for a total duration of 5 days, meaning that only those who logged into the app during that period interacted with the intervention.

RESULTS

Any message influences sellers' decision to share information

Comparing all messages sent to participant sellers with the control group that didn't receive any in-app messages in Study 2.1, we found a 36% increase in the likelihood of sellers linking an external financial account to share additional information. Figure 2 shows the percentages of sellers randomly assigned to the control group (no message) or to receive any of the messages designed (any message). Not surprisingly, bringing to sellers' attention the possibility of linking a financial account is more impactful than letting sellers explore the platform and find the feature themselves.

Figure 2. Effect of Sending Any Message on Linking a Financial Account

PROPORTION LINKING A FINANCIAL ACCOUNT
Among all sellers

Differences are statistically significant (p < 0.001)

0.39%   0.53%

■ NO MESSAGE   ■ ANY MESSAGE

All sellers (N = 145,219)
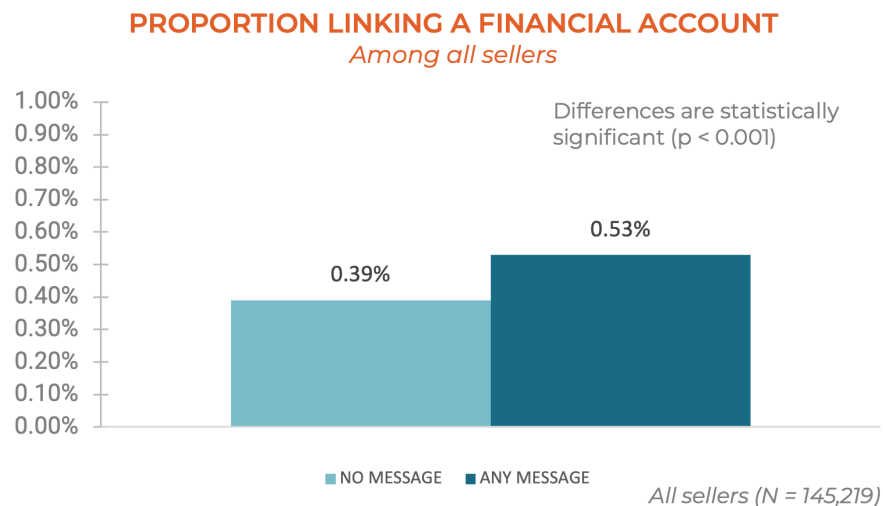
An incomplete information framing seems to encourage sellers to link a financial account

In terms of the effectiveness of the behaviorally informed messages, we found mixed evidence in support of the "incomplete information framing" (completion bias) message. While in Study 2.1 we found a statistically significant difference between the completion bias message and the business-as-usual control, showing a 73% increase in the likelihood of sellers' linking a financial account to access a credit offer (Figure 3), in Study 2.2 we didn't find any significant differences between messages (Figure 4).

Figure 3. Effect of Sending Any Message on Linking a Financial Account

PROPORTION LINKING A FINANCIAL ACCOUNT
Sellers who viewed the message
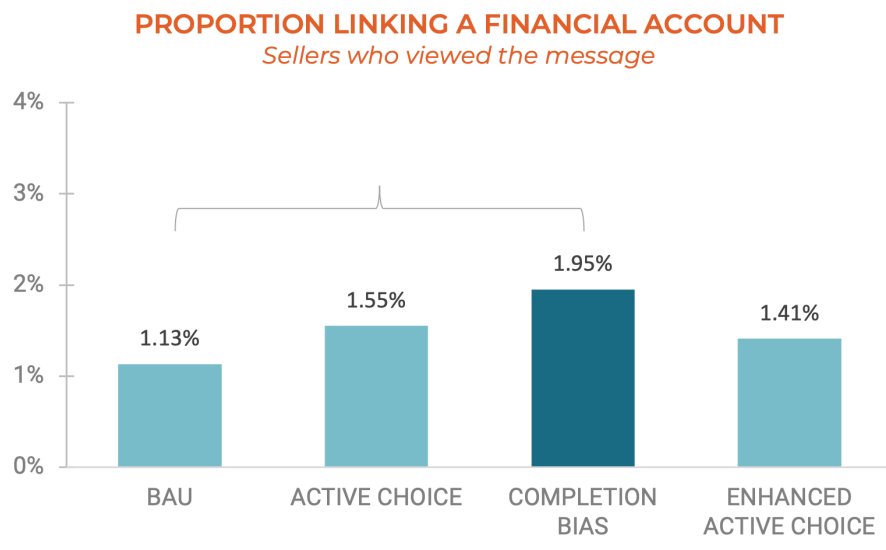
These mixed results highlight the importance of replications (repeating tests and evaluations) to understand the robustness of behaviorally informed interventions. If an intervention is robust, it has a higher probability of being successful when scaled up—and of positively impacting a larger number of people. As part of these efforts to replicate studies and build robustness, Mercado Libre ran 4 tests comparing an adapted version of the completion bias message, against their business-as-usual messages in Mexico and Brazil, with 2 different audiences. Their results show an increase of 21% to 88% in the probability of linking an external financial account to share additional information, benefiting approximately 400,000 sellers in both countries.

Figure 4. Effect of Sending Any Message on Linking a Financial Account

PROPORTION LINKING A FINANCIAL ACCOUNT
Sellers who viewed the message

Category	Value
BAU	1.47%
COMPLETION BIAS	1.54%
ENHANCED ACTIVE CHOICE	1.40%
BASIC TRANSPARENCY	1.41%
IMPLICIT DEFAULT	1.54%
OPERATIONAL TRANSPARENCY	1.44%
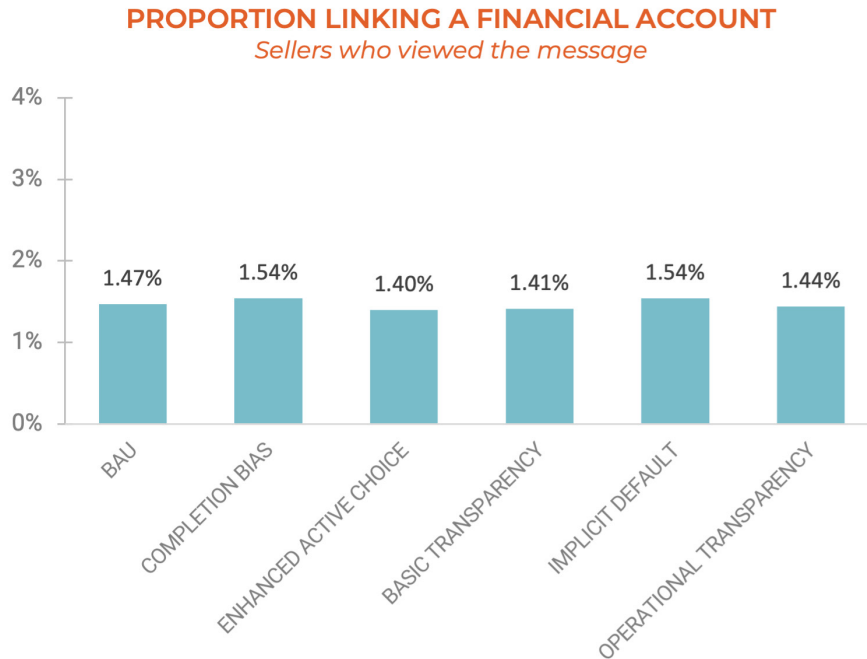
Thanks to the large number of Mercado Libre users that had a chance to link a financial account—and the replication efforts to understand the robustness of the intervention—evidence suggests that the completion bias message is a promising intervention to encourage users to complete actions that put them on a better path towards financial resilience.

Linking an account benefits small and medium sellers

Throughout the duration of the study, 137 sellers received a credit offer as a result of sharing additional information with Mercado Libre, through the process of linking an account. Of these sellers, 56% were mid-tail sellers while 24% were long-tail sellers. Both groups of sellers typically have fewer than 10 employees, have less access to financial services and are in the process of professionalizing their business operations.

As such, the results of this study will benefit the efforts done by Mercado Libre to continue supporting this group of sellers in their process of accessing relevant financial services for their financial well-being and their business growth.

Mercado Libre: Conclusions and implementation takeaways

> 👉 **Digital marketplaces have an opportunity to continue improving how they support their users' financial resilience**

» Throughout our conversations with teams and behavioral science workshops, we have helped Mercado Libre uncover opportunities where considering the financial resilience of their users can help them rethink how their features and communications are designed.

» Mercado Libre's large environment with multiple touchpoints with sellers in LAC makes those design decisions more impactful but adds complexity to the process of getting buy-in to make changes to communications and features.

» Throughout 2 years of partnership, it is clear that involving people from multiple teams is key to unlocking research opportunities and enhancing our understanding of sellers' behaviors, as well as to successfully implementing behavioral science studies.

» A large part of the challenge involves identifying opportunities that are both impactful for the organization's users' financial resilience, and relevant for their business strategy.

> 👉 **Behavioral sciences offer an opportunity to improve how the design of marketplace features and communications impacts the financial resilience of their users**

» Testing is key to understanding what works and what doesn't. Both the studies run by the Common Cents Lab and the replications done by Mercado Libre show the relevance of what the organization learned from incorporating rigorous testing and behavioral sciences in their work.

» Designing and testing communications is easier but can have a limited impact. As a result of this partnership, we are discussing opportunities with Mercado Libre to test similar principles as part of structural changes to the platform.

» Behavioral sciences have the potential to improve not only the design of interventions, but also the product management and the implementation of interventions in the field. Our work with Mercado Libre helped both our team and their teams identify opportunities to improve how we apply behavioral sciences in the field, timing it better with product development timelines and maintaining research rigor.

👉 Scaling for impact and systemic change

» The evidence generated by digital platforms can be crucial to inform deeper systemic changes, even outside the organization.

» Rigorous research provides opportunities to test hypotheses in the field that can then inform scaled-up interventions.

» While our behavioral work with platforms is key to unleashing their potential to improve the living conditions of their users, we recognize the importance of the policy context where they operate to substantially improve the financial resilience of platform users in the long term.

» Behavioral science evidence specific to LAC is still lacking, and digital platforms are uniquely positioned to help generate such evidence.

» An increased emphasis on the financial health of users represents an opportunity for digital platforms to improve their own business performance.

Mercado Libre: Meli sellers share additional information about their business' activity to access Meli's better credit alternatives

Legend: ACTIONS · DATA / INSIGHT · STRUCTURAL BARRIERS · BEHAVIORAL BARRIERS

Phase: User starts information sharing process

Stage (Action)	Data / Insight	Structural Barriers	Behavioral Barriers
Log in to app	Target is 150,000 users per month		
See in-app message in home page, tap "mejorar mi oferta"	Only 20% of traffic comes through this message		CTA not transparent about user action; No saliency of benefits of sharing data
Redirected to enrollment page, tap on "solicitar mejora"		Friction added when visiting main informative landing page	No saliency of benefits of sharing data; Choice overload via multiple competing calls to action; Information overload via multiple competing pieces; Status quo bias of opt-in design of data share request
See onboarding of information-sharing app	Screen recently eliminated by Meli due to performance		Mistrust related to linking bank account; Mistrust in information-sharing app; Uncertainty about the data to be requested
Tap "continuar" in security screen	Screen recently eliminated by Meli due to performance		

Phase: User shares additional financial information

Stage (Action)	Data / Insight	Structural Barriers	Behavioral Barriers
Select type of financial institutions	Only 3% get to this stage	No changes are feasible	Default is selecting a bank account; Mistrust in linking SAT (tax) account; Mistrust in process of sharing bank credentials
Select institutions	90% select 1 of all available options; Whereas 50% of users would share their bank statement data, only 20% trust sharing the same information through this process	No changes are feasible	Cognitive load associated with deciding upon type of institution
EXIT PROCESS, CONFIRM EXIT			
Enter financial institution credentials	Different banks may require different credentials; Only 23% enter bank credentials	No changes are feasible	Privacy and security concerns; Compatible with bank's recommendation of not sharing credentials
Wait for data encryption, confirmation		No changes are feasible	
Choose to share additional information or end process	Competing goals between sharing more data and requesting loan		
Finish information sharing process	User returns to main app; 20% of those who share information receive an offer		Delayed reward—response can take up to 4 days

References

Acquisti, A. & Grossklags, J. (2007). What can behavioral economics teach us about privacy. In A. Acquisti, S. Gritzalis, C. Lambrin-oudakis, S. di Vimercati (Eds.). *Digital privacy: theory, technology, and practices* (pp. 363–377). Auerbach Publications.

Berman, K. & John, J. P. (2020, March 31). [Don't] Listen to your customers. *UX Booth.* https://www.uxbooth.com/articles/dont-lis-ten-to-your-customers/

Beshears, J., Choi, J. J., Laibson, D., & Madrian, B. C. (2021). Active choice, implicit defaults, and the incentive to choose. *Organizational Behavior and Human Decision Processes*, 163, 6–16. https://doi.org/10.1016/j.obhdp.2019.02.001

Buell, R. W. & Norton, M. I. (2011). The Labor Illusion: How Operational Transparency Increases Perceived Value. *Management Science*, 57(9), 1564–1579. https://doi.org/10.1287/mnsc.1110.1376

Buell, R. W., Porter, E., and Norton, M. I. (2021). Surfacing the Submerged State: Operational Transparency Increases Trust in and Engagement with Government. *Manufacturing & Service Operations Management* 23(4), 781–802.

Buell, R. W., Kim, T., & Tsay, C. (2017). Creating Reciprocal Value Through Operational Transparency. *Management Science*, 63(6), 1673–1695. https://doi.org/10.1287/mnsc.2015.2411

Carroll, G. D., Choi, J. J., Laibson, D., Madrian, B. C., & Metrick, A. (2009). Optimal Defaults and Active Decisions. *The Quarterly Journal of Economics*, 124(4), 1639–1674. https://doi.org/10.1162/qjec.2009.124.4.1639

Cook, L. A., & Sadeghein, R. (2018). Effects of Perceived Scarcity on Financial Decision Making. *Journal of Public Policy & Marketing*, 37(1), 68–87. https://doi.org/10.1509/jppm.16.157

Dolan, P., Hallsworth, M., Halpern, D., King, D., & Vlaev, I. (2010). MINDSPACE: Influencing Behaviour through Public Policy. Retrieved, from: http://www.instituteforgovernment.org.uk/publications/mindspace

Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1991). Anomalies: The endowment effect, loss aversion, and status quo bias. *Journal of Economic Perspectives*, 5(1), 193-206.

KC, D. S., Staats, B. R., Kouchaki, M., & Gino, F. (2020). Task Selection and Workload: A Focus on Completing Easy Tasks Hurts Performance. *Management Science*, 66(10), 4397–4416. https://doi.org/10.1287/mnsc.2019.3419

Keller, P. A., Harlam, B., Loewenstein, G., & Volpp, K. G. (2011). Enhanced active choice: A new method to motivate behavior change. *Journal of Consumer Psychology*, 21(4), 376–383. https://doi.org/10.1016/j.jcps.2011.06.003

Kivetz, R., Urminsky, O., & Zheng, Y. (2006). The Goal-Gradient Hypothesis Resurrected: Purchase Acceleration, Illusionary Goal Progress, and Customer Retention. *Journal of Marketing Research*, 43(1), 39–58. https://doi.org/10.1509/jmkr.43.1.39

Kokolakis, S. (2017). Privacy attitudes and privacy behaviour: A review of current research on the privacy paradox phenomenon. *Computers & Security*, 64, 122–134. https://doi.org/10.1016/j.cose.2015.07.002

Koo, M. & Fishbach, A. (2014). The small-area hypothesis: effects of progress monitoring on goal adherence. *The Journal of Consumer Research*, 41(1), S138.

Mazar, N., Mochon, D., & Ariely, D. (2018). If you are going to pay within the next 24 hours, press 1: automatic planning prompt reduces credit card delinquency. *Journal of Consumer Psychology*, 28(3), 466-476.

Morando, F., Iemma, R., & Raiteri, E. (2014). Privacy evaluation: what empirical research on users' valuation of personal data tells us. *Internet Policy Review,* 3(2). https://doi.org/10.14763/2014.2.283

Norberg, P. A. Horne, D. R., & Horne, D. A. (2007). Privacy Paradox: Personal Information Disclosure Intentions versus Behaviors. *The Journal of Consumer Affairs*, 41(1), 100–126. https://doi.org/10.1111/j.1745-6606.2006.00070.x

Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. Psychological Science, 18(5), 429-434.

Sheeran, P. (2002). Intention-Behavior Relations: A Conceptual and Empirical Review. *European Review of Social Psychology*, 12(1), 1–36. https://doi.org/10.1080/14792772143000003

Soman, D. & Zhao, M. (2011). The Fewer the Better: Number of Goals and Savings Behavior. *Journal of Marketing Research*, 48(6), 944–957. https://doi.org/10.1509/jmr.10.0250

Sunstein, C. R. (2000). Cognition and cost-benefit analysis. *The Journal of Legal Studies*, 29(S2), 1059-1103.

Xu, A. L. & Wyer, R. S. (2007). The Effect of Mind-Sets on Consumer Decision Strategies. *The Journal of Consumer Research*, 34(4), 556–566. https://doi.org/10.1086/519293