Green Loyalty Programmes: Customer Trait Reactance and Reward Preferences

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Abstract

Loyalty programmes (LPs, thereafter) can restrict customers' actions where they require customers to undertake specific activities (i.e., LP efforts) to collect reward points. As a consequence, these activities inevitably limit customers' future consumption freedom. The customer's consumption freedom may be even more restricted by green loyalty programmes (GLPs, thereafter), given the pro-environmental goals of such programmes. However, in order to attract customers to join a GLP, they may be offered rewards that are non-eco-friendly alongside eco-friendly ones. If customers choose non-eco-friendly rewards, then this can defeat the pro-environmental objective of offering GLPs to customers. This study focuses on the effect of individual differences in trait reactance on reward preferences in GLPs that has been overlooked in LP literature. Through one experimental study and three scenario-based online surveys, we find that customers with high (vs low) trait reactance are more likely to choose the non-eco-friendly rewards. However, when customers are primed with the pro-environmental goal, they choose eco-friendly instead of non-eco-friendly rewards. Interestingly, we find that this effect is stronger for those who score highly on trait reactance. Our research advances the understanding of LPs and psychological reactance theory, highlighting the broader implications of studying reactance in managing customers' preferences for GLP rewards. We explore how high-reactant LP members, when their pro-environmental goals are salient, respond positively to offerings by preferring eco-friendly rewards. This demonstrates the superiority of the goal-reward congruity hypothesis over the effort-reward congruity hypothesis, enriching previous studies on goals and pro-environmental behaviour. Moreover, the insights gained from this study have practical implications for designing effective reward schemes that promote pro-environmental behaviours.

Keywords: Trait reactance, Goal-reward congruity; Effort-reward congruity; Psychological reactance theory; Pro-environmental goal

1. Introduction

Loyalty programmes (LPs), as the name implies, reward customers for their loyalty. Customers are rewarded typically based on the accumulated level of their transactions. Retailers and service providers can also choose to offer reward points to motivate the purchase of certain types of goods and services. A number of organizations, such as retailers and hotels, have been offering green loyalty programmes (GLPs) in order to promote and advocate pro-environmental behaviors (Flacandji et al., 2023). Given their unique position in the supply chain, retailers play a key role in enabling and legitimising sustainability initiatives to reduce environmental harm (Vadakkepatt et al., 2021). Firms also sometimes offer such GLPs as part of their CSR engagement. GLPs differ from LPs in that customers are rewarded for pro-environmental behaviours (Liu & Mattila, 2016) such as Starbucks' reward points when consumers use their own cups. Such promotional activities can potentially play an important role in motivating customers to adopt pro-environmental behaviours. GLPs offer their members various types of rewards (Liu & Mattila, 2016) and, to motivate customers to sign up, non-eco-friendly rewards may be also offered (Li et al., 2021; Yang & Thøgersen, 2022). The non-eco-friendly rewards are not aligned with the pro-environmental behaviour goals as advocated by the GLPs and customers might be tempted to choose these rewards instead of the eco-friendly ones. To continue with the example of Starbucks, customers are not restricted in terms of what they can purchase using their rewards by using their own cups. Our research focusses on GLPs because they are becoming more popular as a way to encourage sustainable behaviour as environmental issues become more pressing. This is useful because it can help marketers create LPs that lessen resistance and get customers to act in more environmentally friendly ways.

Like LPs, GLPs can induce psychological reactance. This is defined as the feeling that customers experience when they perceive that their consumption freedoms are being constrained or restricted (Brehm, 1966). In the case of LP, this may be caused by the requirements imposed on members in order to obtain a reward (e.g., collecting several reward points to redeem a reward). Accordingly, individuals will undertake specific coping mechanisms when they feel restricted (Brehm, 1966). Customers may attempt to justify their actions in order to weaken the psychological tensions arising from reactance (Kivetz, 2005). But not all customers react in the same manner when faced with restrictions. We therefore need to differentiate between situational reactance and trait reactance. Situational reactance is embedded in the design of the offer whereas trait reactance is the individual's predisposition to feel and experience reactance (Hong & Faedda, 1996). Trait reactance-compared to say personality traits - is particularly useful in studying how different customers feel and consequently react when faced with choice situations which impose some form of restriction. Hence, the term 'trait' suggests a lasting inclination that consistently affects customer behaviour across various contexts (Endler & Kocovski, 2001; Monni et al., 2020). Conversely, 'state' is considered to be temporary and shaped by specific circumstances (Hamaker et al., 2007). Although the concept of trait reactance does vary from customer to customer, little empirical research has been conducted to examine the relationship between trait reactance and its impact on marketing tactics (Amarnath & Jaidev, 2021). Most of the customer reactance research has been conducted in individualistic cultures, such as the United States, and relatively few studies have explored collectivistic cultures, such as China (Amarnath & Jaidev, 2021).

In our research, we build upon the work of Kivetz (2005) who studied reactance in a context similar to ours when customers were offered different rewards from promotional offers. We argue in our context, GLPs, that, if non-eco-friendly and eco-friendly rewards are on offer, customers will choose non-eco-friendly ones if these non-eco-friendly rewards are congruent

with the effort spent to get the rewards. That is, customers believe that they are engaging in the effort activity for its own sake and not to satisfy some extrinsic goal imposed by say a retailer. This proposition is referred to as the effort-reward congruity hypothesis (Kivetz, 2005). The effort-reward congruity hypothesis has not been studied in the context of GLPs which offer a mixed choice of rewards, and, as far as we are aware, has been overlooked in the reactance literature too.

Our research has also taken account of the occurrence of goal-reward congruity. That is, we posit that by reminding members about the goal of protecting the environment, the selection of non-eco-friendly rewards can be prevented, leading to the selection of eco-friendly rewards. This proposition is consistent with the goal compatibility effect, which states that customers are more likely to make choices based on the compatibility between salient goals and the types of effort to achieve those goals (Chernev, 2004; Pena & Yan, 2021). That is when pro-environmental goals are activated, customers are more likely to select eco-friendly rewards because these align with their goals. For consistency, we refer to this proposition as the goal-reward congruity hypothesis. Finally, as the main focus of the research we then study how differences in customers' trait reactance will affect their preferences for the different types of rewards if we take into account the effect of the effort-reward and goal-reward congruity, respectively.

To summarise, our research contributes primarily to the psychological reactance literature and particularly in the context of GLP's reward selection behaviour. Following the propositions of Kivetz (2005) regarding customer reactance, our specific contributions demonstrate the effort-reward and goal-reward congruity effects in tandem in the context of GLPs. More importantly, we pinpoint when the effort-reward congruity effect does not hold up: It is when customers have a clear pro-environmental goal. In these cases, they tend to favour goal-reward congruity instead. Secondly, we contribute to the consumer goal literature by demonstrating

that activating customers' pro-environmental goals with priming can be used to reduce the negative impact of trait reactance. That is, we demonstrate that high (vs. low) trait reactance customers are more likely to choose a reward congruent with their pro-environmental goals.

The remainder of this paper is organized as follows. Next, we present the theoretical background of our research (i.e., psychological reactance theory) which leads to the development of the hypotheses for the empirical context of our research. In section 3, we provide an overview of our studies (including one experiment and three scenario-based surveys), followed by the presentation of the design and analysis of the studies. We then proceed with a discussion of our findings, the theoretical contributions, managerial implications and limitations of our research.

2. Background

2.1 Psychological Reactance Theory

Psychological reactance theory (Brehm, 1966) posits that individuals can experience an unpleasant motivational state of psychological reactance when faced with situations which limit their intended actions. Therefore, such a motivational state will stimulate customers to restore their sense of freedom by moving in the opposite direction, away from the persuasive influence or promotion (e.g., by refusing the persuasive influence or promotion, Bertini & Aydunli, 2020; Brehm & Brehm, 1981; Richards et al., 2022). It is worth mentioning that there are two assumptions underlying the occurrence of psychological reactance (Brehm & Brehm, 1981). Firstly, individuals must believe that they have the freedom to behave in a certain way (Brehm, 1966). In other words, not all behaviour can be considered as involving the exercise of freedom. This is because individuals should be aware of their freedom and also have the ability to enact it (Kang et al., 2021; Rosenberg & Siegel, 2018; Wicklund, 2024). For example, jobless individuals waiting for government-assigned accommodation might not be considered

to have autonomy since they cannot choose their desired living place (Clee & Wicklund, 1980). In contrast, an upper-class person seeking a new house can be seen as having freedom since they feel capable of making a purchase. The second assumption is that when freedom is threatened, individuals are motivated to restore the restricted freedom. For instance, if customers find their favoured product is out of stock, their freedom to consume is curtailed as they are unable to purchase it; therefore, the desirability of unavailable products increases as a way to restore the restricted freedom (Moore & Fitzsimons, 2014). These assumptions offer researchers avenues to explore the types of freedoms, the antecedents of psychological reactance, and the consequences of psychological reactance (Rosenberg & Siegel, 2018).

Psychological reactance has been conceptualised not only as a state variable but also as a personality trait — *trait reactance* — which refers to an individual's tendency to experience psychological reactance due to their strong need for autonomy and independence particularly when they feel constrained (Allison & Flaherty, 2020; Dillard & Shen, 2005; Hong & Faedda, 1996; Martin et al., 2022; Quick et al., 2011). Research has shown that trait reactance reflects a stable, motivational personality characteristic, some individuals are more prone than others to experience psychological reactance (Dillard & Shen, 2005; Dowd et al., 1991; Hong & Faedda, 1996; Kelly & Nauta, 1997; Quick & Stephenson, 2008). In contrast to state reactance, which arises in response to specific situational triggers, such as advertising messages (Åkestam et al., 2017) or communication styles (Kavvouris et al., 2020), trait reactance represents an enduring disposition (Hall et al., 2017; Russell & Alderman, 2022). This means that when individuals are exposed to the same freedom-threatening stimulus, their responses may differ depending on their inherent level of trait reactance.

Earlier studies found that customers who are high in trait reactance are more likely to experience more state psychological reactance than those who are low in trait reactance (Quick et al., 2011; Seibel & Dowd, 2001). This is because high trait reactant customers have a

stronger need for autonomy and a greater tendency to resist policies or external influences that limit their freedom (Dillard & Shen, 2005). In the fields of communication and psychology, the reactions of individuals with high trait reactance are typically associated with less socially acceptable behaviours, such as unhealthy behaviour (Miller & Quick, 2010; Quick & Stephenson, 2008), risky behaviour (Russell et al., 2014) and non-eco-friendly behaviour (Moyer-Gusé et al., 2019). For example, if a message contains a request for organ donation, customers who are high (vs. low) in trait reactance would perceive this message as an attempt to limit their freedom and exhibit higher negative responses toward the message (e.g., resist donating their organs) (Quick et al., 2011).

Little empirical research has been conducted to examine the relationship between trait reactance and its impact on marketing tactics given that a significant proportion of such promotions impose some activity or constraint on the consumers (Amarnath & Jaidev, 2021). For instance, LPs inherently create state psychological reactance due to their potential to restrict customers' future consumption freedom and limit customers' brand choice (Kivetz, 2005). While some research acknowledges the existence of psychological reactance in the context of LPs, most studies focus on customers' negative responses as manifestations of *state* psychological reactance (e.g., measuring customers' negative reactions toward a loyalty card, Wendlandt & Schrader, 2007) and pay less attention to customers' responses that derive from *trait* reactance. A summary of the key LP studies on psychological reactance (both state and trait) is provided in Table 1. The findings in this table highlight how customers respond to psychological reactance within LPs. For instance, in response to state psychological reactance induced by LPs, customers often show less favorable attitudes toward the programmes (Chang & Wong, 2018) and may engage in negative word-of-mouth to restore their sense of freedom (Wendlandt & Schrader, 2007). Previous studies (Kivetz, 2005; Tugut & Arnold, 2011; Wendlandt & Schrader, 2007) have also examined how customers' trait reactance can influence

their responses to LPs. However, these studies did not consider when and how trait reactance affects customer decision-making specifically in the context of GLPs. More recently, Huang et al. (2025) addressed this gap by exploring how trait reactance interacts with anticipated guilt and employee physical attractiveness in shaping customers' intention to join GLPs. Their study found that trait reactance lowers participation intention when anticipated guilt is low and employees are unattractive. However, when guilt is high, this negative effect disappears, regardless of employee attractiveness. While their study advances our understanding of trait reactance in GLPs, it does not explore how trait reactance influences customer evaluations of different types of GLP rewards, particularly eco-friendly vs. non-eco-friendly reward choices. This represents a critical gap, as insights into how trait reactance shapes reward preferences can deepen our understanding of consumer resistance or acceptance of GLP reward designs. In the next section, we discuss two coping strategies that customers can use to resist or reduce their experienced psychological reactance: effort-reward congruity, and goal-reward congruity.

[INSERT TABLE 1 HERE]

2.2. GLP's Effort-Reward Congruity

Past research on LPs has emphasised that LP members reduce reactance in two ways. First, LP members could resist LP offerings either attitudinally (e.g., forming a negative attitude toward the LP (Ding et al., 2021), or behaviourally, for example, by decreasing their intention to use the LP or generating negative word-of-mouth (Wendlandt & Schrader, 2007).Second, LP members might accept LP offerings, that is, choosing the LP reward that is congruent with the effort as required by LPs (Kivetz, 2005). Specifically, Kivetz (2005) showed that members prefer LP rewards that are congruent with their LP efforts. As an illustration, if LP members are required to purchase 10 boxes of cereal as an LP effort and are prompted to choose either

three boxes of cereal or 500 frequent flyer miles as their reward, they would then prefer three boxes of cereal. This is because the former reward (boxes of cereal) is congruent with their efforts, termed by Kivetz (2005) as effort-reward congruity preference, whereas the latter (frequent flyer miles) is not congruent with their efforts. Specifically, effort-reward congruity can be defined as the degree of alignment (i.e., match or mismatch) between the effort spent by customers when working on a task and the reward. Past research has demonstrated the importance of effort-reward congruity in the context of mitigating psychological reactance (Kivetz, 2005). The explanation for the effort-reward congruity preference is that when LP members choose an effort-congruent reward, they attribute their engagement in the LP as being intrinsically motivated rather than as being extrinsically motivated (i.e., where the extrinsic motivation is seen as being driven by the attractiveness of the LP reward). Similar to this perspective, the concept of effort-reward balance has been shown to influence individual behaviours and outcomes in organisational contexts. For example, Waszkowska et al. (2017) demonstrated that effort-reward imbalance can mediate the relationship between person–organisation fit and perceived stress, suggesting that the balance between effort and reward plays a central role in influencing perceptions and reactions.

In the context of a GLP that offers a mixture of eco-friendly vs. non-eco-friendly rewards, we contend that, all else being equal, LP members may be more likely to select non-green rewards if the rewards are congruent with the efforts required to get them, even if the non-green rewards are irrelevant to the objective of the GLP to promote pro-environmental behaviours.

Another consideration when examining GLP members' reactance reduction, is that many consumption activities are goal-directed (Bagozzi et al., 1999). Our research focuses on the role of salient pro-environmental goals that GLP members have when they are engaging in pro-environmental behaviour (Kalamas et al., 2014; Wong et al., 2021). This research examines

how GLP members' salient pro-environmental goals could influence their preferences for GLP rewards, as a way of reducing psychological reactance. The role of GLP members' salient pro-environmental goals in reducing psychological reactance has not been examined in past studies. Specifically, we propose that when GLP members have a salient pro-environmental goal, they will seek compatibility between their pro-environmental goals and the reward in order to achieve their pro-environmental goals. Therefore, in this case, GLP members are more likely to choose eco-friendly rewards compatible with their salient pro-environmental goals. We term this goal-reward congruity preference. In the next section, we will explain this in more detail.

2.3. GLP's Goal-Reward Congruity

Goals are desired end states that direct consumer behaviour (Bagozzi & Dholakia, 1999; Higgins et al., 2020). It has been demonstrated that customers' consumption behaviour is largely influenced by their salient goals, which represent the highest levels of goal activation within their minds (Bryksina, 2020; Laran & Wilcox, 2011). Salient goals can be made prominent through priming, which shifts customers' attention to cues relevant to these goals (Walsh, 2014). In the context of GLP, members' pro-environmental goals can vary, and such goals can be emphasised through priming to encourage behaviours required by green LPs. The goal congruity perspective further enriches this understanding by highlighting that individuals actively seek roles and behaviours that align with their valued goals (Diekman et al., 2020). This perspective proposes that the social structure shapes both individuals' internalised psychology and external opportunities, and individuals navigate this structure by pursuing roles or actions that afford opportunities to achieve their goals. In the GLP context, the rewards offered represent these affordances, and members are likely to engage with rewards that fulfil their salient goals.

Customers typically pursue their salient goals by seeking compatibility between the reward choices and these goals, known as goal-congruent rewards. Choosing a reward that aligns with their salient goal can make LP members "feel right," enhancing their perception of making progress towards achieving their goals (Aaker & Lee, 2001; Etkin & Ratner, 2013; Higgins et al., 2003; Sharif & Woolley, 2021; Zhang et al., 2024). Previous LP literature suggests that LP members prefer rewards congruent with their consumption goals (Lee et al., 2021; Suh & Yi, 2012), and our research extends this by examining how such preferences might reduce reactance. When GLP members have salient pro-environmental goals, they are likely to seek rewards that align with these goals, as suggested by the goal compatibility effect. Non-eco-friendly rewards are likely to be disregarded despite being congruent with the GLP efforts, as they do not support the pro-environmental pursuits of LP members. Hence, we define a GLP's goal-reward congruity as the alignment between members' goals and the types of the GLP rewards. This concept, documented in the literature as the goal-compatibility effect (Chernev, 2004), is consistent with our term 'goal-reward congruity' to maintain consistency with the 'effort-reward congruity' term used earlier.

Past research has shown that customers' consumption behaviours can be goal-directed (Bayuk, 2015; Bryksina, 2020). In the GLP context, we expect members concerned about protecting the environment to choose eco-friendly rewards. However, according to goal-depletion theory (Walsh, 2014), high-level goals like environmental protection, which are abstract and long-term in nature, can be depleted when individuals are tempted to pursue more immediate and tangible low-level goals, such as completing reward points. This distinction aligns with the concept of goal hierarchies, where low-level goals focus on short-term material gains, while high-level goals reflect broader, long-term objectives (Bayuk, 2015; Bryksina, 2020). In such cases, non-eco-friendly rewards may be chosen, facilitating the effort-congruity effect. However, if members are reminded of their high environmental goals before making a

reward choice, these goals can become salient again, leading them to select eco-friendly rewards and facilitating the goal-congruity effect.

Therefore, our research proposes that effort-reward congruity preference and goal-reward congruity preference explain GLP members' reward choices. Specifically, when GLP members do not have a salient pro-environmental goal, they are more likely to choose non-eco-friendly rewards congruent with the GLP efforts to reduce psychological reactance – described as the effort-reward congruity hypothesis (Kivetz, 2005). Conversely, when GLP members have salient pro-environmental goals, they are more likely to choose eco-friendly rewards compatible with those goals. This rationale is based on the prioritisation of their conscious desire to protect the environment, thereby restoring their consumption freedom and reducing any psychological reactance induced by green LP offerings. We hypothesise:

H1a. In a GLP that offers a mixture of eco-friendly and non-eco-friendly rewards, members are more likely to choose non-eco-friendly rewards if the non-eco-friendly rewards are aligned with the efforts required to get the rewards.

H1b When the higher goal of protecting the environment is made salient the eco-friendly rewards will be preferred.

2.4. The Effect of Members' Trait Reactance

Trait reactance reflects an individual's proneness to experience psychological reactance as induced by different situations. In the domain of consumer behaviour, Dillard and Shen (2005) investigated how customers with different levels of trait reactance would react to high versus low threat messages about the consequences of not flossing and binge drinking. More recently, Martin et al. (2022) considered how trait reactance affects how customers perceive messages

about the regulation of the crypto currency market. They found that those high (versus low) in trait reactance are more likely to feel angry when they feel that cryptocurrency regulation restricts what they can do in the cryptocurrency market.

In addition to the aforementioned studies regarding the influence of trait reactance on behaviour, there is also a need to consider whether trait reactance influences the preference for effort-reward congruity in our GLP context. We posit that effort-reward congruity is more likely to occur for members that are high in trait reactance (vs. low). This is because customers who are high in trait reactance (vs. low) will be more sensitive to any attempts to reduce psychological reactance (Kivetz, 2005). However, when members are made aware of their higher goal of protecting the environment (i.e., their pro-environmental goals are assumed not to be depleted), they may be more likely to be attracted to the eco-friendly reward. The reason is that such a reward is compatible with their salient pro-environmental goal. The members' trait reactance in this context will strengthen their preference for goal-reward congruity. That is, we predict that members who are high (vs. low) in trait reactance will be more sensitive to the compatibility between the types of GLP reward and their higher goal of protecting the environment. Thus, we propose the following:

H2. When GLP members are not reminded about their higher goal of protecting the environment prior to making reward selection, the level of trait reactance will be positively related to the choice of the non-eco-friendly reward, supporting the effort-reward congruity preference. In contrast, when they are made aware of their higher goal of protecting the environment, their trait reactance will be positively related to the choice of the eco-friendly rewards, supporting the goal-reward congruity preference.

3. Overview of studies

Across the four studies (one experiment and three online survey-based studies) that we use, we test for the occurrence of goal-reward congruity preference and effort-reward congruity preference in the context of GLPs. In Study 1, we have two objectives. First, we study whether the effort-reward congruity preference can explain LP members' preference for non-eco-friendly rewards that are congruent with GLP effort when their pro-environmental goals are not made salient (i.e., the no-goal condition). Second, we test if by making LP members' pro-environmental goals salient, they would prefer eco-friendly rewards that are congruent with their pro-environmental goals (i.e., the pro-environmental goal condition). In Studies 2a and 2b, we replicate the no-goal condition of Study 1 and examine whether the effort-reward congruity preference can also be attributed to reactance reduction in the context of a GLP. Specifically, we want to test whether trait reactance can help explain green LP members' preference for non-eco-friendly rewards that are congruent with GLP effort over eco-friendly rewards. Finally, in Study 3, we replicate the pro-environmental goal condition of Study 1 and aim to determine whether the goal-reward congruity preference can also be attributed to reactance reduction. Figure 1 provides the visualization of our studies.

[INSERT FIGURE 1 HERE]

3.1 Stimuli Selection

We employed commonly used daily products to ensure participants were familiar with the options. To confirm this, we conducted a pilot test with 241 Chinese participants (53.1% female, Mage = 33, age range: 20–58), recruited from a professional research agency based in Shenzhen, China. Note that these participants are excluded from the main study. Participants rated their level of familiarity with eight products (laundry liquid, 100% recycled toilet paper,

shampoo, organic cooking oil, dairy-based cream, plant-based cream, shower gel, and a zero-waste shampoo bar) using a 7-point Likert scale (1 = not at all familiar to 7 = very familiar). The results indicate that participants were familiar with all the products, as the mean familiarity scores for all items exceeded the midpoint of the 7-point scale (laundry liquid: Mean = 5.97, t (240) = 30.67 , $p < .001$; 100% recycled toilet paper: Mean = 5.14, t (240) = 13.10, $p < .001$, shampoo: Mean = 6.01, t (240) = 11.02, $p < .001$, organic cooking oil: Mean = 5.60, t (240) = 19.46, $p < .001$, dairy-based cream: Mean = 5.10, t (240) = 10.42, plant-based cream: Mean = 5.03, t (240) = 10.34, shower gel: Mean = 5.95, t (240) = 29.70, and a zero-waste shampoo bar: Mean = 4.61, t (240) = 5.49) . This confirms the appropriateness of the selected stimuli (i.e. choice of products) for the main study. This pilot test ensured that the reward stimuli were relevant to and easily recognisable by participants, reducing the potential for confounding effects due to unfamiliarity with the options presented.

4. Study 1

In this study, we test H1a and H1b. That is, members would prefer non-eco-friendly rewards over eco-friendly rewards under the condition that they are not reminded about their pro-environmental goal (H1a). In contrast (H1b), when members are reminded about their pro-environmental goal, they are more likely to choose eco-friendly over non-eco-friendly rewards.

4.1. Method

We cooperated with a professional research agency in China to collect data from a total of 331 Chinese participants (47.4% females, $Mean_{age}$ = 30, $Maximum_{age}$ = 45, $Minimum_{age}$= 20). To ensure that only residents of mainland China participated, the agency utilized a filtering system before sending the questionnaires to its panel members. All participants signed a consent form- this is required by the University of the authors. Participation was voluntary and

none of the participants received any financial incentives. The questions were translated into Chinese. We randomly allocated participants to one of the two experimental conditions in a one-factor (goal conditions: pro-environmental goal vs. no goal) between-subject design.

In both experimental conditions, participants were asked to read a fictitious scenario. They were informed that there is a GLP that supports pro-environmental behaviours. Next, participants are informed that they can engage in a GLP activity to earn reward points by collecting empty laundry liquid bottles. Subsequently, they are told that they must accumulate 10 reward points, and they can choose between a bottle of laundry liquid (i.e., non-eco-friendly reward) or a pack of 100% recycled toilet paper as their reward (i.e., eco-friendly reward). We randomised the presentation order of reward choices to avoid the order effect—the unintended influence caused by the order in which reward choices are presented, which might affect respondents' reactions. For example, a reward presented earlier may be viewed more favorably than one presented later (Perreault, 1975). The monetary value of the two GLP rewards was identical (i.e., worth 100 Chinese Yuan).

Only one additional sentence was added to the scenario for the pro-environmental goal condition (i.e., "Your goal is to protect the environment") to elicit participants' pro-environmental goal. The detailed scenario presented is shown in the Appendix. In the pro-environmental goal condition, after reading the scenario, participants were asked to answer a manipulation check item [i.e., "Your goal is to protect the environment", (1 = strongly disagree; 7 = strongly agree)].

Moreover, in both experimental conditions, participants were asked to report their understanding of the scenario and indicate their choice of reward and report a realism check item [i.e., "Please indicate that the scenario described above is" (1 = very unrealistic; 5 = very realistic)]. Finally, participants were asked to indicate their reward preference and report their demographic information.

4.2. Results

Using the one sample t-test, with the midpoint of the 7-point Likert scale (4) as the comparison value, the mean of the manipulation check item (i.e., "Your goal is to protect the environment") in the pro-environmental goal condition was significantly higher than the scale midpoint. Thus, the manipulation of the salient pro-environmental goal was successful (Mean = 5.49, $t(187) = 4.41$, $p < .001$).

For the realism check, our result indicates that the mean of the realism check question (i.e., "Please indicate that the scenario described above is") is significantly higher than the midpoint of the 5-point bipolar scale (3). Thus, participants in both experimental conditions generally agreed on the realism of the assigned scenarios (Mean = 4.10, $t(330) = 27.41$, $p < .001$). Moreover, the one sample t-test on the ease of processing (e.g., "The scenario is___ to understand") suggested that the mean of the ease of understanding was significantly greater than the midpoint of the 5-point bipolar-scale (3), demonstrating that participants did not perceive any difficulty in processing the assigned scenarios (Mean = 4.02, $t (330) = 21.44$, $p < .001$).

Our results show that the percentage of participants who chose a package of 100% recycled toilet paper was 41.3% in the no goal condition (59 out of 143) vs 58% in the pro-environmental goal condition (109 out of 188). The differences between reward choices were significant in both conditions (no goal condition: $\chi^2 (1) = 4.37$, $p < .05$; pro-environmental goal condition: $\chi^2 (1) = 4.79$, $p < .05$). In addition, we assess the proportion difference by using D2prop SPSS macro (Daryanto, 2020), which revealed the significant difference in the proportion difference of choosing a package of 100% recycled toilet paper (eco-friendly reward) between the pro-environmental goal and no goal conditions ($\Delta P_{eco} = 58\% - 41.3\% = 16.7\%$, two-sided p-value $< .05$). The 95% Agresti-Caffo confidence interval was [5.9%, 27.2%]. Thus, H1a and H1b respectively are supported.

5. Study 2a

Having demonstrated the GLP's effort-reward congruity contention in our first study, our aim in conducting Study 2a is to test whether members' trait reactance can influence the GLP effort-reward congruity preference.

5.1. Method

We collected data from the same Chinese research agency as in Study 1. We obtained a usable sample of 205 (50.2% females, $Mean_{age}$ = 35, $Maximum_{age}$ = 55, $Minimum_{age}$= 21). Participants were presented with a scenario that described how they were attracted by a GLP and would earn reward points by collecting empty shampoo bottles. Next, they were told that they had accumulated 10 reward points, which could be redeemed against one of two types of GLP reward: a bottle of shampoo (non-eco-friendly reward) vs. a bottle of organic cooking oil (eco-friendly reward). The monetary value of the two GLP rewards was identical. We randomized the presentation order of the reward choice to reduce the order effect. In addition, we used one sentence in the scenarios to highlight the eco-friendly characteristics of organic cooking oil ("Organic cooking oil is safe and environmentally friendly as no chemical products are used in its raw materials and processing"). The detailed scenario presented is shown in the Appendix. After going through the scenario, all participants were asked to answer the realism check, assess their understanding of the scenario, indicate their reward preference, and provide demographic information similar to Study 1. In addition, participants were asked to respond to a series of statements measuring trait reactance using the scale from existing literature (Hong & Faedda, 1996).

5.2. Results

The level of realism and the ease of understanding the scenarios were both higher than the midpoint of the 5-point bipolar scale, supported by one sample t-test ($Mean_{realism}$ = 4.32, t (204) = 22.73, p < .001; $Mean_{ease}$ = 4.49, t (204) = 28.44, p < .001). We conducted confirmatory factor analysis (CFA) via R package lavaan (Rosseel, 2012) to validate the trait reactance scale, and the results yielded an acceptable fit for the data (χ^2 (41) = 95.93, CFI = .96; TLI = .94, RMSEA = .08, SRMR = .05, p < .001).

Our results revealed that 71% of participants chose a non-eco-friendly reward (i.e., bottle of shampoo, 145 out of 205; χ^2 (1) = 35.24, p < .001) congruent with GLP efforts (i.e., collecting 10 empty shampoo bottles), showing GLP's effort-reward congruity, replicating results of Study 1.

To focus on the role of trait reactance, we use binary logistic regression model where the type of reward is the dependent categorical variable (0 = bottle of shampoo, 1 = bottle of organic cooking oil). Trait reactance is the focal independent variable and gender, and age are the control variables. First, we use gender and age in the null model, and then we add the trait reactance in the final model. The addition of trait reactance into the model significantly improves the model fit; null -2LL (null model log-likelihood) = 246.46, final -2LL (final model log-likelihood) = 239.31, χ^2 (3) = 8.55, p < .05. The Hosmer-Lemeshow test shows an acceptable fit for the model (χ^2 (8) = 1.79, p > .05). Our results reveal that the coefficient for trait reactance is significant and negative (β = - .4; p < .01; 95%CI = .50, .90; choice: 0 = shampoo, 1 = organic cooking oil). That is, if members of the GLP are not prompted to recall their higher goal of environmental protection before choosing a GLP reward, their trait reactance will be positively related to the choice of the bottle of shampoo, supporting the effort-reward congruity preference.

6. Study 2b

To test the internal validity of our findings in Study 2a, we replicated the results in Study 2b using a different GLP reward design to assess the robustness of our conclusions. More specifically, we accounted for product familiarity as a control variable to enhance the reliability of our analysis.[1]

6.1. Method

The same Chinese research agency that collected data for studies 1 and 2a also collected data for this study yielding a usable sample of 285 participants (55.4% female, $Mean_{age}$ = 33, $Maximum_{age}$ = 59, $Minimum_{age}$ = 19). Participants were presented with a scenario in which they were drawn to a GLP and informed they could earn reward points by collecting empty dairy-based cream bottles. They were then told they had accumulated 10 reward points, which could be redeemed for one of two GLP rewards: a bottle of dairy-based cream (non-eco-friendly reward) or a bottle of plant-based cream (eco-friendly reward). Both rewards had identical monetary value. To minimise order effects, the presentation order of the rewards was randomised.

The scenario included a sentence highlighting the eco-friendly characteristics of plant-based cream: "Plant-based cream is eco-friendly because it reduces environmental impact by lowering greenhouse gas emissions, conserving water, and avoiding deforestation associated with dairy production." The detailed scenario is displayed in the Appendix. Following the scenario, participants completed a realism check which assessed their understanding of the scenario, indicated their reward preference, and provided demographic information (e.g., gender, age, employment status). Additionally, they responded to the same statements used in Study 2a to measure trait reactance, using the scale developed by Hong and Faedda (1996),

[1] We thank one of the reviewers for the suggestion to conduct this additional study.

and rated their familiarity with each reward on a scale from 1 (not at all familiar) to 7 (very familiar).

6.2. Results

The levels of realism and ease of understanding of the scenarios are both significantly higher than the midpoint of the 5-point bipolar scale, as confirmed by a one-sample t-test ($Mean_{realism}$ = 4.26, t (286) = 28.66, $p < .001$; $Mean_{ease}$ = 4.32, t (286) = 34.75, $p < .001$). Concerning product familiarity, familiarity with both a bottle of dairy-based cream and a bottle of plant-based cream exceeds the midpoint of the 7-point bipolar scale, demonstrating high familiarity with the reward choices ($Mean_{dairy}$= 4.70, t(286) = 15.89, $p < .001$; $Mean_{plant}$ = 5.57, t(286) = 31.42, $p < .001$). We validated the trait reactance scale using CFA via the R package lavaan (Rosseel, 2012). The analysis yields an acceptable fit for the data (χ^2 (30) = 79.10, CFI = .97; TLI = .96, RMSEA = .08, SRMR = .03, $p < .001$). Our findings show that 57.8% of participants selected a non-eco-friendly reward (i.e., a bottle of dairy-based cream; 166 out of 287 participants; $\chi^2(1) = 7.06$, $p < .01$). This choice aligns with the GLP's effort-reward congruity (i.e., collecting 10 empty dairy-based cream bottles), replicating the results of Studies 1 and 2a.

Furthermore, we employed a binary logistic regression model, where the reward type was the dependent variable (0 = dairy-based cream, 1 = plant-based cream). Trait reactance served as the focal independent variable, with gender, age, and product familiarity included as control variables. First, we ran a null model with only the control variables, then added trait reactance to the final model. Adding trait reactance significantly improved the model fit (null -2LL = 378.90; final -2LL = 324.62; $\chi^2(5) = 62.69$, $p < .001$). The Hosmer-Lemeshow test indicated acceptable model fit ($\chi^2(8) = 8.15$, $p < .05$). Our results revealed that the coefficient for trait reactance was significant and negative ($\beta = -.47$, $p < .001$, 95% CI = .38, .59). This indicates

that if GLP members are not prompted to recall their environmental protection goals before choosing a reward, higher trait reactance is associated with selecting the non-eco-friendly reward. These findings further support the effort-reward congruity preference while ruling out the influence of product familiarity.

7. Study 3

Although the pro-environmental condition in Study 1 provides initial evidence for our goal-reward congruity hypothesis, what we have not demonstrated so far is whether participants' trait reactance impacts the goal-reward congruity preference. Thus, we conduct Study 3, replicating the pro-environmental condition in Study 1 to examine whether heterogeneity in the goal-reward congruity preference could be partly attributed to customers' trait reactance differences. We anticipate that customers who are high in trait reactance would be more likely to maintain goal-reward congruity preference compared to those who are low in trait reactance. That is, customers who are high (versus low) in trait reactance are more likely to choose an eco-friendly reward only when they are reminded about the goal of the GLP (i.e., protecting the environment).

7.1. Method

We collected data from 516 Chinese participants (59.1% females, $Mean_{age}$ = 31, $Maximum_{age}$ = 52; $Minimum_{age}$ = 22) from the Chinese research agency, consistent with Studies 1 and 2. All participants signed the consent form and did not receive any incentive. Participants were asked to read a real story to increase their awareness about environmental protection in order to induce pro-environmental goals. The story describes a winner from China who was awarded the 2018 Young Champions of the Earth for Asia and the Pacific for her devotion to raising concern about marine conservation and providing education programmes

for divers (United Nations Environment Programme, 2018). After reading the story, participants were asked to imagine that they were attracted by a GLP and would earn LP reward points by collecting empty shower gel bottles. Next, they were told that they had accumulated 10 GLP reward points, which could be redeemed against one of two types of GLP reward: a bottle of shower gel (non-eco-friendly reward) vs. a zero-waste shampoo bar (eco-friendly reward). The details of the scenario are displayed in the Appendix. The monetary value of the two green LP rewards was identical (i.e., worth 100 Chinese Yuan). The presentation order of the reward choices was randomized to reduce the order effect.

In addition, participants were informed of the eco-friendly characteristics of the zero-waste shampoo bar ("The zero-waste shampoo bar is an environmentally friendly product and does not use any plastic packaging"). Later, participants were asked to respond to the goal orientation item which also served as a manipulation check item [i.e., "Your goal is to protect the environment", (1 = strongly disagree; 5 = strongly agree)]. Next, participants were asked to answer about the level of realism and understanding of the scenario using the same items as in Studies 1 and 2. Finally, they were asked to indicate their reward choice, report demographic information and trait reactance using the same measure ($\alpha = .96$) which we have used in Studies 2a and 2b.

7.2. Results

The results from this study indicate that the means of manipulation, realism, and ease of understanding checks were all significantly greater than the midpoint of the 5-point bipolar scale (3) ($Mean_{manipulation} = 4.10$, $t\ (515) = 25.36$, $p < .001$; $Mean_{realism} = 4.13$, $t\ (515) = 30.68$, $p < .001$; $Mean_{ease} = 4.22$, $t\ (515) = 37.19$, $p < .001$). Our CFA results revealed a good model fit of trait reactance measurement ($\chi^2\ (41) = 143.51$, CFI = .98; TLI = .97, RMSEA = .07, SRMR = .02, $p < .001$).

Concerning the choice of rewards, 55.4% of participants chose a zero-waste shampoo bar (286 out of 516; χ^2 (1) = 6.08, $p < .05$) congruent with pro-environmental goals. To study the effect of trait reactance, we use a binary logistic regression model where the GLP reward choice is the categorical dependent variable (0 = a bottle of shower gel, 1 = a zero-waste shampoo bar). Trait reactance and goal orientation are the independent variables and gender, and age are the control variables. We also include the measure of goal orientation in the model to further explore whether psychological reactance would still explain the preference for goal-reward congruity when goal compatibility exists.

We first entered gender and age (i.e., null model). Next, we entered the manipulation check item as this also served as a measure of pro-environmental goal orientation (i.e., model 1) and finally the trait reactance (i.e., final model). The results indicate that the model containing trait reactance significantly improved the model fit (null-2LL [null model log-likelihood] =705.47, model 1-2LL [model 1 with initial predictors log-likelihood] = 701.88, final-2LL [final model log-likelihood] = 686.87, $\chi 2$ (4) = 22.37, $p < .001$). Our results show that participants who have more pro-environmental goal orientation (i.e., "Your goal is to protect the environment") would be more likely to prefer zero-waste shampoo over shower gel ($\beta = .23$; $p < .05$; 95%CI = 1.04, 1.51; choice: 0 = shower gel, 1 = zero-waste shampoo bar). In addition, our results suggest that when members are aware of their higher goal of protecting the environment, their trait reactance will be positively related to the choice of the zero-waste shampoo bar ($\beta = .22$; $p < .001$; 95%CI = 1.12, 1.40). These results overall support H2.

To explore the moderation effect of trait reactance on the relationship between goal condition and reward choice, we also conducted a floodlight analysis highlighting the JN-region of significance using PROCESS (Hayes, 2017). The results showed that the effect of the goal condition on eco-friendly reward choice becomes significant above the threshold value

of 3.74. Beyond this point, as trait reactance increases, eco-friendly rewards are more likely to be selected over non-eco-friendly rewards. The results of Studies 1-3 are displayed in Table 2.

[INSERT TABLE 2 HERE]

8. Discussion

Across four studies, our findings demonstrate the importance of designing GLP reward schemes to promote pro-environmental behavior (PEB). We showed that when LP members do not have a salient pro-environmental goal, they are more likely to choose the non-eco-friendly reward that is congruent with the LP effort (Studies 1-2). This finding aligns with the effort-reward congruity hypothesis proposed by Kivetz (2005). We also suggest an alternative explanation for such reward preference in the context of GLPs. The non-eco-friendly reward that is congruent with the GLP requirement allows GLP members to reduce their efforts in order to complete the LP required efforts (i.e., collecting 10 empty shampoo bottles). This would bring them one step closer to completing the next round of LP requirements (i.e., LP members only need to collect nine more empty shampoo bottles). If this is the case, LP members should prefer the non-eco-friendly rewards regardless of the levels of psychological reactance (i.e., the association between trait reactance and the preference for non-eco-friendly rewards should be insignificant). However, we find that LP members' trait reactance is significantly positively related to their preference for non-eco-friendly rewards (i.e., Studies 2a and 2b). We showed that when GLPs reward their members with a mixture of non-eco-friendly and eco-friendly products, members may not choose eco-friendly rewards, which can undermine the main purpose of such a reward scheme. In addition, our research supports the goal–reward congruity hypothesis by showing that when LP members possess salient pro-environmental goals, they are more likely to select eco-friendly rewards that align with those

goals (Studies 1 and 3). Hence, our findings are therefore insightful in designing GLPs reward schemes to achieve the principal goal of fully engaging customers in pro-environmental behaviour.

8.1 Theoretical contributions

Our research makes three main contributions to the existing literature. Firstly, we contribute to the psychological reactance theory by uncovering the boundary condition of the effort-reward congruity hypothesis (Kivetz, 2005). While previous LPs studies predominantly examined how LP members respond negatively toward LP offerings in order to reduce psychological reactance (e.g., Chang & Wong, 2018; Ding et al., 2021; Huang et al., 2025; Wendlandt & Schrader, 2007), our research uniquely demonstrates how GLP members might react positively to LP offerings as a way of reducing their psychological reactance. We showed that GLP members prefer eco-friendly rewards rather than non-eco-friendly rewards when their pro-environmental goals are made salient by priming, which we refer to as goal-reward congruity hypothesis. Specifically, we find that when GLP members have salient pro-environmental goals, they prefer eco-friendly rewards over non-eco-friendly rewards. Therefore, we demonstrate that the goal-reward congruity hypothesis works better than the effort-reward congruity hypothesis in explaining LP members' reward preferences when GLP members' pro-environmental goals are salient. Our research contributes to prior literature on LPs by establishing how GLP members can leverage their reward choice to reduce psychological reactance when they have a salient pro-environmental goal.

Secondly, our research adds further insights into the prior work on goals (Aaker & Lee, 2001; Etkin & Ratner, 2013; Higgins et al., 2003; Sharif & Woolley, 2021) by demonstrating that the influence of salient pro-environmental goals can contribute to GLP members' reactance reduction. In addition, while previous literature predicts that customers would prefer rewards

that are compatible with their most salient goal in order to pursue or achieve their goal (Aaker & Lee, 2001; Etkin & Ratner, 2013; Higgins et al., 2003; Sharif & Woolley, 2021) previous LP literature has also found evidence supporting the idea that LP members prefer LP rewards congruent with their consumption goals literature (Lee et al., 2021; Suh & Yi, 2012). However, these earlier findings about goal-congruent reward preferences do not consider why GLP members who have a greater tendency to experience psychological reactance show a greater preference for goal-congruent rewards (i.e., eco-friendly rewards in this research). Our findings support the view that GLP members who have a greater tendency to experience psychological reactance are more likely to choose the eco-friendly rewards compatible with their salient pro-environmental goals. Our explanation is that eco-friendly rewards can help them achieve their salient pro-environmental goals and subsequently reduce the psychological reactance induced by GLP offerings. Thus, we demonstrated that LP members' psychological reactance could strengthen the effect of goal compatibility (Chernev, 2004; Pena & Yan, 2021; Sokolova & Krishna, 2021) or the goal priming effect (Walsh, 2014). This finding contributes to the goal-congruity LP literature (Lee et al., 2021; Suh & Yi, 2012) by identifying the role of trait reactance in GLP reward selection.

Thirdly, our research contributes to the PEB literature by showing that PEB can be promoted via GLP reward schemes. Echoing Winterich (2019), retailers can use GLPs to encourage PEB (e.g., recycling). However, as explained in the previous section, consumers can react negatively toward GLPs, if the rewards are not congruent with their pro-environmental goals (e.g., effort-reward congruency) demotivating their PEB. We show that priming pro-environmental goals significantly increases GLP members' likelihood of choosing eco-friendly rewards, even when non-eco-friendly alternatives are present. This finding aligns with prior research indicating that goal priming can enhance PEB (e.g., Hao et al., 2024; Thøgersen & Alfinito, 2020). Our key contribution is to show that in the scheme were GLPs also offer non-

eco-friendly rewards, members' PEB can be enhanced if their pro-environmental goals can be made salient.

8.2 Managerial implications

Our findings offer some suggestions for the design of GLPs and in particular regarding motivations and rewards. We suggest that marketers should not necessarily rely on eco-friendly rewards to attract or motivate GLP members' pro-environmental behaviours. Specifically, when GLP members do not have a salient pro-environmental goal, offering non-eco-friendly rewards congruent with LP members' efforts is effective since these rewards can reduce the negative influence of psychological reactance induced by GLP offerings. Conversely, marketers can offer GLP members eco-friendly rewards when their pro-environmental goals are salient because GLP members tend to choose eco-friendly rewards compatible with their salient pro-environmental goals to reduce psychological reactance. In order to promote the choice of eco-friendly rewards, marketers can make GLP members' pro-environmental goals salient. Marketers can use promotional messages to highlight the LP members' pro-environmental goals for all targeted LP members. For example, the UK's leading pharmacy, health and beauty retailer *Boots* promotes its recycling schemes by persuading LP members to feel good about themselves by helping the planet (Boots, 2022). Both leading brands employed a GLP, communicating the goals of the programme to benefit the environment. However, companies need to be aware that GLPs can lead to reactance because it restricts members' future consumption freedom. To avoid this, it is important that the GLP rewards and the goals of the programme are clearly communicated and congruent. That is, when customers see that the rewards match with their salient pro-environmental goals, they are less likely to resist and are more likely to exhibit PEB (e.g., choosing eco-friendly rewards).

8.3 Limitations and directions for future research

Our research has some limitations, which offer avenues for future research. First, this research only focuses on the role of pro-environmental goals in LP members' reward preferences. Future research could explore more boundaries to the effort-reward congruity hypothesis as well. For example, LP members often have a variety of salient goals in the context of LPs, for example, pursuing health (Daryanto et al., 2010), enjoying entertainment (Hwang & Choi, 2020), making social comparisons (Chan & Briers, 2019), as well as hedonic and utilitarian (Suh & Yi, 2012) goals. Thus, future research could investigate whether goal-reward congruity hypothesis generalises to other types of LP members (e.g., health-conscious LP members) in different LP contexts. Second, we acknowledge that in real-world scenarios, the number of reward points could influence redemption choices, as higher or lower balances may shift customers' preferences for different types of rewards. Future research could examine how varying reward point balances impacts reward selection behaviours in GLPs, as this would provide a more comprehensive understanding of consumer decision-making in such programmes. Third, our research is limited to a specific culture (i.e., China). Because the nature of consumers' psychological reactance could vary in different cultures (e.g., collectivism vs. individualism) (Song et al., 2018), future research could explore the replicability of our findings across other cultures. Finally, given the attitude-behavioural gap in the consumer pro-environmental behaviour literature (Chi et al., 2021), further exploration of our goal-reward congruity hypothesis in a field experiment setting would represent a potential extension for future research.

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Appendix

Study 1: Scenarios

[No goal condition]

Imagine that you are attracted by XYZ laundry liquid brand's green loyalty programme. In this green loyalty programme, you will engage in a wide range of recycling activities. One activity is collecting reward points by collecting empty XYZ laundry liquid bottles.

You can receive 1 green loyalty programme reward point for returning each bottle. Once you have accumulated **10** green loyalty programme reward points, then you can choose one of the rewards from (1) a bottle of laundry liquid worth 100 CNY; or (2) a package of 100% recycled toilet paper worth 100 CNY.

Now, you have **10** green loyalty programme reward points and you can redeem these against one of the green loyalty programme rewards from the above options.

[Pro-environmental goal condition]

Imagine that you are attracted by XYZ laundry liquid brand's green loyalty programme. In this green loyalty programme, you will engage in a wide range of recycling activities. One activity is collecting reward points by collecting empty XYZ laundry liquid bottles. **Your goal is to protect the environment.**

You can receive 1 green loyalty programme reward point for returning each bottle. Once you have accumulated **10** green loyalty programme reward points, then you can choose one of the rewards from (1) a bottle of laundry liquid worth 100 CNY; or (2) a package of 100% recycled toilet paper worth 100 CNY.

Now, you have 10 green loyalty programme reward points and you can redeem these against one of the green loyalty programme rewards from the above options.

Study 2a: Scenarios

Imagine that you are attracted by XYZ shampoo brand's green loyalty programme. In this green loyalty programme, you will engage in a wide range of recycling activities. One activity is collecting reward points by collecting empty XYZ shampoo bottles.

You can receive 1 green loyalty programme reward point for returning each bottle. Once you have accumulated 10 green loyalty programme reward points, you can choose one of the rewards from (1) a bottle of shampoo worth 100 CNY; or (2) a bottle of organic cooking oil worth 100 CNY.

Now, you have **10** green loyalty programme reward points and you can redeem these against one of the green loyalty programme rewards from the above options.

Note: Organic cooking oil is safe and environmentally friendly as no chemical products are used in its raw materials and processing.

Study 2b: Scenarios

Imagine that you are attracted by XYZ dairy-based cream brand's green loyalty programme. In this green loyalty programme, you will engage in a wide range of recycling activities. One activity is collecting reward points by collecting empty XYZ dairy-based cream bottles.

You can receive 1 green loyalty programme reward point for returning each bottle. Once you have accumulated 10 green loyalty programme reward points, you can choose one of the rewards from (1) a bottle of dairy-based cream worth 100 CNY; or (2) a bottle of plant-based cream worth 100 CNY.

Now, you have **10** green loyalty programme reward points and you can redeem these against one of the green loyalty programme rewards from the above options.

Note: Plant-based cream is eco-friendly because it reduces environmental impact by lowering greenhouse gas emissions, conserving water, and avoiding the deforestation associated with dairy production.

Study 3: Scenario

Miao Wang is the one of two Young Champions of the Earth for Asia and the Pacific. She was the Founder of *Better Blue* in April 2017 for marine protection. Since 2018, *Better Blue*, managed by the *ChinaNext* Foundation, aims to integrate the resources of the diving industry in order to support divers and diving centres to participate in marine-related programmes in 20 cities across China.

She said: "I founded *Better Blue* because I realized that our oceans don't have a voice. Everyone should take responsibility for protecting this blue planet. I could see the passion of other divers, and I realized that this was our unique strength. People are always afraid of being different. They will feel safe and powerful in a group, community and network [such as *Better Blue*]".

Imagine that you are attracted by XYZ shower gel brand's green loyalty programme. In this green loyalty programme, you will engage in a wide range of recycling activities. One activity is collecting reward points by collecting empty XYZ shower gel bottles. You can receive 1 green loyalty programme reward point for returning each bottle. Once you have accumulated **10** green loyalty programme reward points, you can choose one of the rewards from (1) a bottle of shower gel worth 100 CNY; or (2) zero-waste shampoo bar worth 100 CNY. Now, you have **10** green loyalty programme reward points and you can redeem these against one of the green loyalty programme rewards from the above options. **Note: The zero-waste shampoo bar is an environmentally friendly product and does not use any plastic packaging.**

Table 1
Previous LP studies examining psychological reactance

Author (Year)	Outcome of responses to state psychological reactance	Findings	Journal
Chang &Wong (2018)	Level of programme loyalty	When customers experience more psychological reactance, they will have less loyalty toward the LP.	*Service Business*
Ding et al. (2021)	Anger Attitude Behavioural intention	When customers perceive that their freedom is being threatened by LPs, it can trigger feelings of anger, generate a negative attitude towards the company, and decrease their intention to revisit the hotel. The impact of this effect is further intensified by the degree to which customers perceive their freedom is important.	*International Journal of Hospitality Management*
Huang et al. (2025)	Behavioural intention	When anticipated guilt is low and service employees are unattractive, trait reactance reduces intention to join GLPs. But high guilt cancels the effect of reactance, no matter how attractive the staff are.	*International Journal of Contemporary Hospitality Management*

Sharma et al. (2024)	Behavioural intention	When customers experience more psychological reactance, they will be less likely to enrol in an LP.	*Journal of Retailing and Consumer Services*
Shirai (2023)	Evaluation	Psychological reactance decreases customers' positive evaluations of an LP.	*Journal of Service Marketing*
Wendlandt & Schrader (2007)	Willingness to participate Word-of-mouth (WOM) Behavioural intention	When customers experience more psychological reactance, they will be less willing to participate in an LP, will generate more negative WOM and will have less repurchase intention.	*Journal of Consumer Marketing*
Kivetz (2005)	Reward choice	Customers who are high (vs. low) in trait reactance will be more likely to choose rewards congruent with their efforts.	*Journal of Consumer Research*
Tugut & Arnold (2011)	Reward choice	Customers who are high (vs. low) in trait reactance prefer utilitarian rather than hedonic rewards.	*Advances in Consumer Research*

Wendlandt & Schrader (2007)	The level of state psychological reactance	Customers' trait reactance is positively associated with state psychological reactance. When customers' trait reactance is high (vs. low), they will experience a higher level of state psychological reactance.	*Journal of Consumer Marketing*

Table 2.
Research design and reward preference from Studies 1–3

Study	Condition	GLP Effort	Reward Preference
1 (one-factor between subject design)	No goal (n = 143)	10 empty laundry liquid bottles	**laundry liquid** vs. 100% recycled toilet paper
	Pro-environmental goal (n = 188)		laundry liquid vs. **100% recycled toilet paper**
2a (online survey)	No goal (n = 205)	10 empty shampoo bottles	**shampoo** vs. organic cooking oil: (When green LP members have a greater tendency to experience psychological reactance, shampoo will be preferred).
2b (online survey)	No goal (n = 287)	10 empty dairy-based cream bottles	**Dairy-based cream** vs. plant-based cream: (When GLP members have a greater tendency to experience psychological reactance, dairy-based cream will be preferred).

3 (online survey)	Pro-environmental goal (n = 516)	10 empty shower gel bottles	shower gel vs. **zero-waste shampoo bar** (When green LP members have a greater tendency to experience psychological reactance, zero-waste shampoo bar will be preferred).

Notes: Rewards shown in bold were preferred in each study.

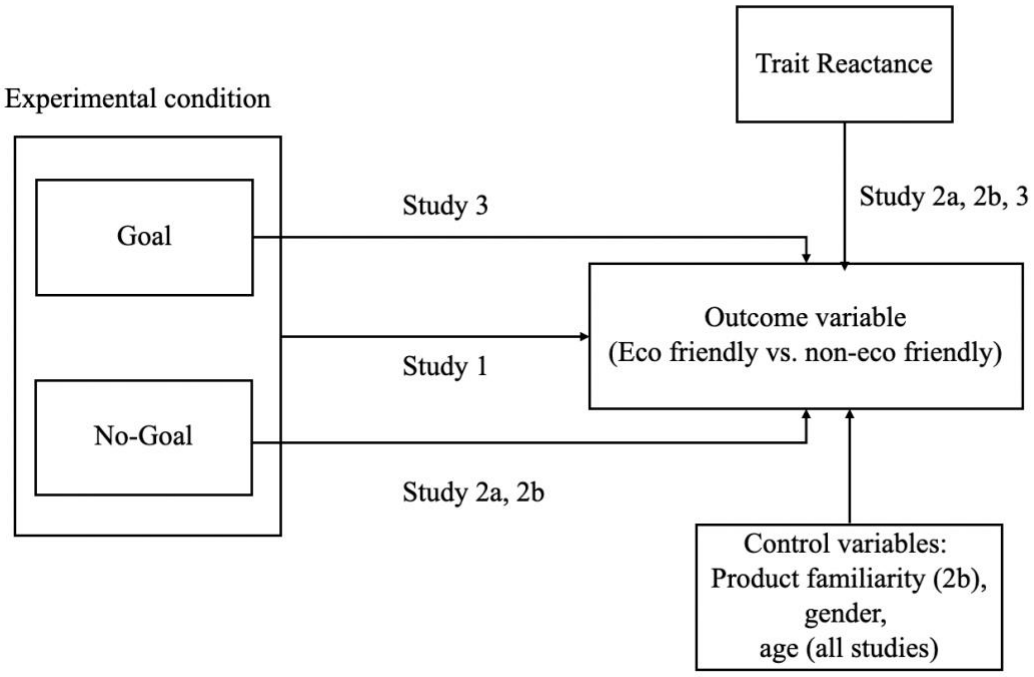

Figure 1: Visualization of our studies.