



MASTER THESIS MARKETING
BUSINESS ADMINISTRATION

The Power of Rewards: How Motivation and Brand Awareness Shape Participation in Ideation Contests

To What Extent Does Motivation Mediate the Relationship Between Reward Type (Monetary vs. Non-Monetary) and Solvers' Intention to Participate in an Ideation Contest, and to What Extent Does Brand Awareness Moderate the Effect of Reward Type on Motivation?

Nijmegen School of Management

Radboud University

June 14, 2025

Name: Stacey Buijserd

Student number: s1153444

1st examiner: Hanif A. Widyanto

2nd examiner: Marleen Hermans

Abstract

Ideation contests enable firms to gather innovative ideas from external individuals (solvers). However, the findings of earlier studies on how reward type influences participation intention and brand awareness in this relationship are inconsistent. This study employed a 2 x 2 between-subjects experimental design among 135 Dutch respondents who evaluated a cookie flavour contest with either monetary or non-monetary rewards and either a familiar or unfamiliar brand. Established scales captured brand awareness, motivation, and participation intention.

A one-way ANOVA, ANCOVA and Hayes PROCESS analyses were used and revealed no direct effect of reward type on participation intention. When motivation was added, reward type indirectly predicted participation intention, indicating a full mediation effect. Brand awareness did not moderate either the direct relationship or the mediated pathway.

The results suggest that rewards boost participation intention only when aligned with the solver's motivational needs. Brand awareness did not affect these relationships. Contest designers should, therefore, invest in designing contests that align with the solver's motivational needs, autonomy, competence and relatedness rather than solely relying on reward types or brand familiarity.

Table of content

Abstract.....	2
Table of content	3
Introduction.....	5
Literature Review	8
Conceptual model.....	13
Methods	14
Results	18
Data Preparation	18
Sample and descriptive statistics.....	19
Reliability and Construct Validity.....	19
Reliability Analysis	19
Factor Analysis	20
Hypothesis testing.....	21
Assumptions	21
One-Way ANOVA.....	22
Mediation Analysis (PROCESS Model 4)	23
Moderation Analysis (PROCESS Model 1 and 7)	24
Covariates.....	25
Discussion and Conclusion	27
Summary and Interpretation of Findings	27
Theoretical Implications	29
Practical Implications.....	30
Limitations and Future Research.....	30
Conclusion	32
References	33
Appendices	40
Appendix 1: Scenarios	40
Appendix 2: Measurement Scales	43
Appendix 3: Manipulation Check and Attention Check	44
Appendix 4: Correlation Matrix, Descriptive Statistics Scales and Outliers	45
Correlation Matrix	45
Descriptive Statistics Scales	45
Outliers	46
Appendix 5: Descriptive Statistics Demographics	48



Appendix 6: Reliability Testing & Factor Analysis	51
Reliability testing	51
Factor Analysis	59
Appendix 7: One-Way Anova	64
Assumptions	64
Results.....	66
Appendix 8: Mediation Testing.....	67
Assumptions	67
Results	69
Appendix 9: Moderation Testing.....	72
Assumptions	72
Results	74
Appendix 10: Covariates	81
ANCOVA.....	81
Mediation	82
Moderation	85



Introduction

Ideation contests have gained significant attention over the past few years and have been widely used for crowdsourcing innovative ideas from individuals. During such contests, a brand (the seeker) presents a creative task online to a broad group of independent participants (solvers) (Bayus, 2013). The solvers are invited to develop creative and innovative solutions to the provided task. The participant(s) with the best idea wins the contest (Jiang & Wang, 2020). A well-known example of an ideation contest is by the snack brand Lays. They launched an ideation contest in The Netherlands called “Maak De Smaak”. The 2010 contest winner was the flavour “Patatje Joppie”, which remains a popular chip flavour in the Netherlands 15 years later (Lays, 2025; Nibbering et al., 2017). The contest winner received €25,000 and 1% of the flavour’s turnover. With over 675,000 submissions and 6 million bags sold, the campaign was relaunched in 2012 due to its strong public engagement (Nibbering et al., 2017).

Despite the success stories and growing popularity, these contests do not consistently achieve the desired effectiveness in terms of participation rates and idea quality. A common challenge faced by firms is attracting a sufficient number of high-quality solver responses (Piller et al., 2012; Steils & Hanine, 2016). The success of ideation contests relies not just on the volume of submissions but also on the quality, originality and relevance (Bettiga & Lamberti, 2019; Boudreau & Lakhani, 2013; Salgado et al., 2020; Zheng et al., 2011). Therefore, it is essential for businesses to understand what motivates individuals to participate in ideation contests, as well as which conditions influence this motivation (Pollok et al., 2019; Ye & Kankanhalli, 2017). These insights can help businesses design more effective contests and contribute to the theory of participation intention in ideation contests.

Earlier research has identified several drivers of participation, including individual traits (e.g. creativity and expertise), social influences (e.g., peer influence and identity) and contest design (e.g., task clarity, platform usability) (Steils & Hanine, 2016; Zhou, 2011). However, motivation is widely recognised as one of the most important antecedents of participation intention (Ye & Kankanhalli, 2017). Motivation is often measured via The Self-Determination Theory (SDT), which makes a distinction between autonomous (internal) and controlled (external) motivation (Ryan & Deci, 2000). Rewards systems are an important tool to influence a potential participants’ motivation. Research mainly distinguishes between -monetary rewards. (e.g. cash prizes) and non-monetary rewards (e.g. recognition) (Jeppesen & Frederiksen, 2006) However, the literature presents mixed findings regarding the effectiveness of rewards: while some studies report a direct increase in participation intention (Ye & Kankanhalli, 2017), others suggest that monetary rewards may undermine intrinsic motivation (Deci et al., 1999). Still, there is also evidence suggesting that such rewards may enhance internal motivation under certain

conditions (Eisenberger & Cameron, 1996). This inconsistency has left the interaction between reward types, motivation, and participation intention insufficiently understood (Boudreau & Lakhani, 2013; Deci & Ryan, 1985; Eisenberger & Cameron, 1996; Ye & Kankanhalli, 2017).

Furthermore, although reward types have been widely studied, they are often examined separately, making it challenging to compare their relative effectiveness. Only a limited number of studies have combined monetary and non-monetary rewards within one theoretical framework (Ihl et al., 2019). At the same time, the mediating role of motivation is well established (Deci & Ryan, 1985; Gagné & Deci, 2005), but few studies have examined how this mechanism functions across different reward types within the same model. As a result, it remains unclear how these reward types differentially influence solver motivation and participation intention. Integrating both reward types and motivation in a single study will allow for a more precise comparison and help identify the conditions under which one type may be more effective than the other.

Moreover, previous studies have paid limited attention to contextual moderators that might shape how individuals interpret and respond to rewards in ideation contests. This gap has led to a shortage of comprehensive models that explain the interaction between contextual factors, motivation, participation intention and reward types (Zhao et al., 2023). Especially, brand-related factors such as brand awareness have received little attention in this context. Prior branding literature primarily focuses on purchasing behaviour, while the underlying psychological mechanisms, such as trust, perceived value, and emotional connection, are also relevant for participation intention in ideation contests (Aaker, 1991; Keller, 1993). In both contexts, individuals make a voluntary decision to engage with a brand, whether by buying their products or contributing ideas (Ajzen, 1991; Keller, 1993). Therefore, insights from branding and consumer research may offer valuable ideas in explaining participation behaviour in ideation contests.

Earlier branding literature on purchasing intention has revealed that brand awareness increases trust (Benhardy et al., 2020), perceived value (Aaker, 1991), willingness to purchase (Keller, 1993), customer loyalty and engagement (Alba & Hutchinson, 2000; Stokburger-Sauer et al., 2012). Within the literature on ideation contests, brand awareness has been studied to a limited extent. Existing studies suggest that ideation contests can enhance brand awareness and image (Füller, 2010; Wang et al., 2016, p. 2), and brand attachment can enhance participation intention (Shulga et al., 2018), but it remains unclear whether and how brand awareness influences the relationship between reward types and participation intention. Therefore, this study will contribute to the existing literature by examining whether brand awareness moderates the effect of reward types on motivation and participation intention.

Through the integration of earlier mentioned constructs, the study provided theoretical and practical contributions to the literature with clear relevance. From a theoretical perspective, it advances our understanding of participation behaviour in ideation contests by integrating reward type, motivation and brand awareness into a single conceptual model. Specifically, the study extends SDT (Ryan & Deci, 2000) by examining how motivation mediates the relationship between different types of rewards, brand awareness, and participation intention in a digital co-creation setting. This addresses the call for more research on motivational dynamics in relation to contextual factors, providing a better understanding of how reward types combined affect participation intention and motivation (Boudreau & Lakhani, 2013; Eisenberger & Cameron, 1996; Ihl et al., 2019; Zhao et al., 2023). In addition, by introducing brand awareness as a moderator, the study moves beyond traditional views that treat brand-related variables solely as predictors of behaviour. Instead, it highlights their role in shaping the psychological mechanisms, such as perceived value or legitimacy, through which rewards influence participation intention.

On a practical level, the findings will support marketers and innovation managers in designing more effective ideation contests. By aligning reward structures with both the brand's positioning and participants' motivational profiles, businesses can increase both the quantity and quality of submissions. Moreover, the use of brand awareness can help demonstrate its strategic relevance, not only as a driver of recall or recognition but also in enhancing the perceived value of rewards. This can help firms align their reward strategies with different brand contexts and solver expectations, resulting in better contest outcomes.

This study will, therefore, investigate the following research question:

To what extent does motivation mediate the relationship between reward type (monetary vs. non-monetary) and solvers' intention to participate in an ideation contest, and to what extent does brand awareness moderate the effect of reward type on motivation?

Literature Review

To build a clear understanding of what participation intention entails and what factors (potentially) influence it, previous studies will be examined, and their findings will be critically analysed.

Participation Intention

Participation intention is referred to as an individual's conscious plan or willingness to engage in a specific behaviour (Ajzen, 1991). Within ideation contests, it can be seen as a strong predictor of actual participation, as evidenced by several studies that link intention to behaviour in digital engagement contexts (Osei-Frimpong, 2019; Piezunka & Dahlander, 2019). A frequently used theory in the literature on ideation contests is the Theory of Planned Behaviour (TPB). This theory offers a framework to explain behavioural intentions, suggesting that attitudes toward the behaviour and perceived social pressure influence intention (Ajzen & Fishbein, 1975).

However, this study does not adopt TPB as a central theoretical framework. Instead, TPB is used to highlight the absence of such integrative approaches within current ideation literature and to position this study within a broader theoretical context. The focus primarily lies on motivational mechanisms, as conceptualised by SDT, which are more suitable for explaining how reward types and contextual brand cues shape participation intentions. As such, TPB is referred to in this study not as a guiding framework but to contextualise the relevance of participation intention and to emphasise the need for deeper motivational integration through SDT.

Within ideation contests, participation intention is often linked to a variety of cognitive and emotional factors. Key antecedents are for example, social identity, perceived usefulness, enjoyment, and the opportunity for self-expression (van Zomeren et al., 2008; Zhou, 2011). More recent studies have demonstrated how digital features, such as interactivity, community feedback, and gamification, can enhance emotional engagement and sustain interest (Leung et al., 2015; Singh et al., 2022). These features can increase both extrinsic and intrinsic motivations by providing participants with a more immersive and rewarding experience.

Despite these findings, the literature still lacks an explanation of how these elements interact within a single framework. Few studies provide a logical framework that connects reward types with user psychology (Boudreau & Lakhani, 2013; Deci & Ryan, 1985; Eisenberger & Cameron, 1996; Ye & Kankanhalli, 2017). While numerous studies have explored participation intention and the effect of individual reward types, research examining both monetary and non-monetary rewards together remains limited (Cao et al., 2024; Ihl et al., 2019).

Furthermore, contextual factors such as brand awareness are rarely included as a moderating factor in the ideation contests literature. While these factors could potentially influence how participants respond to rewards offered (Füller, 2010; Wang et al., 2016). As a result, there is still little insight into how different reward types and contextual factors, including brand awareness that might influence people's intention to participate.

Therefore, in this study, a more complex framework is proposed that views participation intention as the result of a motivational process influenced by reward type and brand-related cues rather than as an individual concept. This framework will enable a more in-depth understanding of solver behaviour in ideation contests and provide practical guidelines for enhancing engagement efforts.

Type of Reward (Monetary vs. Non-Monetary) in ideation contests

The type of reward offered in an ideation contest is widely recognised as a key factor influencing a solver's motivation and participation intention. Research mainly distinguishes between monetary rewards (e.g. cash prizes) and non-monetary rewards (e.g. recognition) (Jeppesen & Frederiksen, 2006). While monetary rewards are often linked to extrinsic motivation, non-monetary rewards are considered to enhance intrinsic motivation, which is mainly triggered by a person's interest, enjoyment or a sense of personal fulfilment (Deci & Ryan, 1985; Ryan & Deci, 2000).

However, in the literature, this distinction is not always agreed on. While monetary rewards are predominantly regarded as effective in boosting participation intention by enhancing the perceived value and competitiveness of the ideation contest (Ye & Kankanhalli, 2017), some studies also raise concerns about the potential disadvantages of this reward type. Specifically, when contests are perceived as inherently enjoyable or creatively stimulating, participants are more likely to be driven by intrinsic motives such as curiosity and self-expression (Deci et al., 1999). In these cases, introducing monetary incentives can shift attention away from the task itself toward the reward, thereby undermining intrinsic motivation. This phenomenon is also known as the over-justification effect (Deci et al., 1999). Thus, while monetary rewards can significantly boost the number of submissions, businesses should be aware that the quality or originality of the submission may decline (Boudreau et al., 2011).

While these are serious concerns, they are not universally accepted. Some scholars argue that monetary rewards can also support or strengthen intrinsic motivation, depending on how they are designed and perceived. For example, when financial rewards are performance-based, perceived as fair, or aligned with the participant's personal goals, they may enhance rather than diminish internal motivation (Eisenberger & Cameron, 1996). These findings suggest that the effectiveness of

monetary incentives is not fixed but dependent on contextual factors such as task characteristics, reward framing, and solver perceptions. This ongoing debate highlights the need to clarify the conditions under which monetary rewards yield positive or negative outcomes.

Non-monetary rewards, in contrast, are often seen as enhancing sustained engagement and delivering higher-quality contributions, especially when they strengthen psychological needs such as autonomy and competence, as described in SDT (Ryan & Deci, 2000). However, non-monetary rewards are less effective whenever the solvers' interest is low or whenever they are offered by brands with low credibility or visibility (Ihl et al., 2019). This challenges the assumption that non-monetary rewards are more authentic, or engagement driven.

Taking all this into account, these findings indicate that reward type plays an important role in determining a participant's motivation and participation; however, the influence is more complicated than often assumed. Elements such as task enjoyment, personal values and brand context may all influence and interact with the reward structure to produce different outcomes. To further investigate this, the following hypothesis is proposed:

Hypothesis 1 (H1): The type of reward (monetary vs. non-monetary) influences participation intention, such that monetary rewards lead to higher participation intention than non-monetary rewards.

Motivation in ideation contests

Reward types are considered a crucial factor in determining participation intention. However, their effect is often found to be indirect, as motivation mediates the relationship between external stimuli and behavioural outcomes such as participation (Deci & Ryan, 1985; Ryan & Deci, 2000). According to the Self-Determination Theory (SDT), the quality of motivation, ranging from controlled (extrinsic) to autonomous (intrinsic), strongly affects whether individuals choose to participate, as well as their level of engagement, creativity and persistence (Gagné & Deci, 2005; Ryan & Deci, 2000, p. 20)

Understanding this motivational process is particularly relevant in ideation contests, where participation depends on sustained cognitive effort and creative input from solvers. When motivation is intrinsic, individuals engage out of genuine interest or personal values, which tends to result in deeper learning and more original contributions (Amabile, 2018; Ryan & Deci, 2000). In contrast, extrinsic motivation, mainly when driven by rewards, can stimulate participation but may lead to more superficial engagement, particularly when the task is perceived as controlling (Deci et al., 1999)

Several empirical studies have confirmed that motivation plays a mediating role in translating reward structures into behavioural outcomes. For instance, Mustafa et al. (2023) found that creative contributions in online communities were more consistent and original when reward systems aligned with participants' intrinsic motives. Similarly, Amabile (2018) emphasized that intrinsic motivation is central to creative performance, particularly when the work environment supports autonomy and avoids controlling pressures.

Despite these insights, motivation is often oversimplified in ideation research. Many studies treat motivation as either present or absent, or reduce it to a binary distinction between intrinsic and extrinsic types (Hossain, 2018). This overlooks the nuanced nature of motivation, which varies in form and intensity and is shaped by multiple contextual variables (Gagné & Deci, 2005; Sheldon et al., 2017). Furthermore, although previous research has confirmed that reward types affect motivation, empirical models frequently fail to capture the complex interactions between different reward types, contextual factors and solver motivation in ideation settings (Boudreau et al., 2011; Hossain, 2018)

This study aims to address this gap by conceptualizing motivation as a mediating variable in the relationship between reward type and participation intention. In doing so, it offers a more comprehensive and theoretically grounded understanding of how and through which psychological mechanisms of participation intention emerge in ideation contests. This leads to the following hypothesis:

Hypothesis 2 (H2): *Motivation mediates the relationship between reward type and participation intention.*

Brand Awareness in ideation contests

Although motivation plays a central role in explaining solver participation, its strength and direction may vary depending on contextual moderators, such as brand awareness. In marketing literature, brand awareness is referred to as the consumer's ability to recognise or recall a brand when exposed to a cue or product category (Aaker, 1991; Keller, 1993). Most studies on brand awareness focus on consumer purchasing behaviour, showing that high levels of brand awareness are associated with greater trust, reduced perceived risk, and more robust relationships between consumers and brands. (Aaker, 1991; Alba & Hutchinson, 2000; Benhardy et al., 2020; Keller, 1993). Additionally, consumers tend to assign more meaning and value to interactions with brands they are familiar with. This suggests that brand awareness not only influences attitudes but also how brand-related rewards are interpreted and evaluated (Paasovaara & Luomala, 2017; Papadopoulou et al., 2023).



While these mechanisms are predominantly observed in purchasing contexts, the underlying psychological drivers, such as trust, perceived value, and emotional connection, are equally relevant when explaining participation intention in ideation contests (Ajzen, 1991; Keller, 1993). In both contexts, individuals make a voluntary decision to engage with a brand, whether by buying their products or participating in ideation contests. Therefore, insights from branding and customer psychology may offer a valuable foundation for understanding how brand awareness could influence solver responses in ideation contests.

More specifically, in ideation contest settings, brand awareness may significantly shape the solver's perception of the contest itself, and the value derived from participating, particularly in the “pre-ideation stage”. The visibility and legitimacy of the brand offering the rewards, particularly non-monetary ones, can impact their symbolic value (Ihl et al., 2019). Well-known brands, for example, could be more likely to enhance the perceived legitimacy and prestige of rewards, thereby increasing their motivational appeal (Baek & Kim, 2024). Conversely, brands with low awareness may struggle to generate the same level of participant engagement using non-monetary rewards alone (Baek & Kim, 2024; Cheema & Kaikati, 2010; Keller, 1993).

Recognition by globally familiar brands with extensive reach and followers can serve as a form of symbolic status or professional validation, especially in fields where public visibility matters (Aaker, 1991; Pereira et al., 2024). In contrast, recognition from a low-awareness brand may lack perceived value, diminishing the appeal of symbolic rewards and making tangible monetary incentives relatively more attractive (Pereira et al., 2024).

Furthermore, when participants lack a prior relationship or attachment to the brand, the motivational impact of non-monetary rewards tends to decrease. In such cases, monetary rewards may be effective in driving participation (Baek & Kim, 2024; Cheema & Kaikati, 2010). Monetary rewards may be even more effective when offered by lesser-known brands, as potential participants might perceive lower competition for the reward, which increases their willingness to participate (Boudreau et al., 2011).

Despite these potential effects, brand awareness is often overlooked in ideation contest literature. It is frequently treated as an outcome variable rather than as a contextual factor that could influence the relationship between reward type and participation intention (Füller, 2010; Wang et al., 2016). This overlooks the possibility that brand awareness moderates this effect by influencing how solvers perceive and evaluate the value of those rewards. For instance, brand awareness may determine whether non-monetary rewards are viewed as meaningful or not, and whether a monetary reward is more motivating under conditions of low brand familiarity.

Considering brand awareness as a moderator thus enables a more nuanced and context-sensitive understanding of solver behaviour in ideation contests. It shifts the focus from merely what is offered to who is offering it. These potential insights may not only enrich the existing literature but also allow companies to design ideation contests more strategically and align the reward types with their brand position and solvers' expectations.

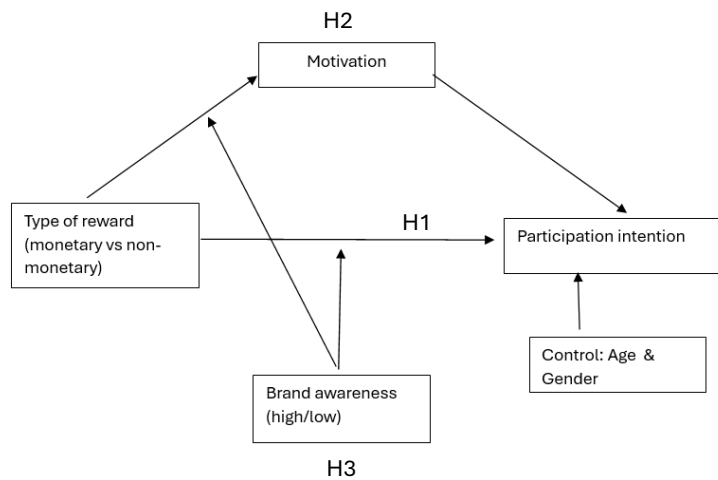
Hypothesis 3 (H3): The effect of reward type on motivation and participation intention is moderated by brand awareness, such that non-monetary rewards are more effective under high brand awareness, while monetary rewards are more effective under low brand awareness.

Conceptual model

The following conceptual model is proposed, based on the findings in the literature and research question :

Figure 1

Conceptual model



Methods

Research Design

This study employed a quantitative 2 x 2 research design, utilising an online survey. It examined the mediating effect of motivation on the relationship between the type of reward (monetary vs. non-monetary) and participation intention in an ideation contest. It also investigated whether brand awareness moderates this relationship. A between-subject design was chosen because it solely exposes a group to one condition, thereby minimising carryover effects that could arise when a solver is exposed to multiple reward types or brand awareness conditions (Field, 2013). Additionally, an experimental method was decided on, as it enabled the researcher to manipulate the independent variables (reward type and brand awareness), allowing for stronger causal inferences about the effects on motivation and participation intention. This method enhanced internal validity and facilitates the accurate interpretation of the relationships being tested (Hair et al., 2019).

Participants and Sampling

Participants were recruited through online platforms using a non-probability sampling method. A minimum sample size of 150 respondents was chosen to ensure sufficient statistical power. This sample was determined by using G*Power. Assuming a medium effect size ($f = .25$), an alpha level of .05, and a power of 0.80, a minimum of 128 participants was required (Hair et al., 2019). However, to account for potential missing data, data exclusion, and outliers, a sample of 150 was chosen. Using Qualtrics' randomisation function, participants were automatically and equally assigned to one of four experimental conditions, defined by a 2 (brand awareness: low vs. high) × 2 (reward type: monetary vs. non-monetary) between-subjects design.

Ethical Considerations

Participants were informed that their participation in this research was voluntary, and their informed consent was obtained prior to their involvement in the study. The online survey allows for anonymous participation, as no direct identifiers were collected besides gender, work situation, educational level and age, which were requested for analytical purposes. Data was stored securely, with access limited to the researcher and examiners only, ensuring confidentiality and anonymity throughout and after the study. The results were presented in a way that prevents participation identification. A potential risk is someone getting unauthorised access to the researcher's or examiner's device, leading to a data breach. However, this is an unlikely situation.

Survey Instrument

The survey adopted different existing scales (Appendix 2). To measure brand awareness, the scale developed by Yoo, Donthu and Lee (2000) was adopted. For motivation, the Situational Motivation Scale by Guay et al. (2000) was used. Lastly, to measure actual participation intention, the scale of the Theory of Reasoned Action by (Ajzen & Fishbein, 1975) was chosen. All scales were answered based on a Likert scale of 1 to 7. The survey ended with an attention and manipulation check (Appendix 3). A manipulation check was conducted to confirm that the independent variables, type of reward and brand awareness, were successfully manipulated. This strengthened the internal validity of the study and helped interpret a potential acceptance of the null hypothesis (University of Minnesota Libraries Publishing, 2016). Additionally, an attention check was included to ensure the participants were actively reading and engaging with the survey rather than responding randomly (Appendix 3). This has further enhanced internal validity and filtered out unreliable data (University of Minnesota Libraries Publishing, 2016).

Procedure

Participants were presented with one of four scenarios (Appendix 1) describing an ideation contest for one of two cookie brands (Oreo or Neo), offering either a monetary or a non-monetary reward. After reading the scenario, they completed a survey that included the Brand Awareness Scale, the Situational Motivation Scale, and the Participation Intention Scale. Within the survey, manipulation checks, and attention checks were done to ensure data quality. The study was conducted in Dutch, as the target audience is Dutch speaking. The use of participants' native language was chosen to improve the response rate and increase the accuracy of answers by minimizing language-related misunderstandings.

The cookie brands used in this study are Oreo (representing high brand awareness) and Neo (representing low brand awareness). Neo is a cookie brand sold in Lidl supermarkets that resembles Oreo in both appearance and perceived product category. As such, it serves as a suitable brand for the low brand awareness condition. A pretest was conducted to verify the effectiveness of the brand awareness manipulation. All participants exposed to the Neo condition reported that they were unfamiliar with the brand. Additional informal validation through conversations with the participants confirmed that Neo is not widely recognized, supporting its use as a low-awareness brand in this study.

Oreo was selected because of its strong brand reputation and high global recognition. While the brand occasionally faces criticism on social media regarding its marketing strategies or processed ingredients, no significant issues with brand resilience were identified. Oreo remains one of the most

iconic snack brands worldwide, mainly due to its effective branding and ability to adapt to changing consumer tastes (Farhan Masud, 2020; LeClair, 2020). These characteristics made Oreo a suitable example of a high-awareness brand for this experiment.

In each scenario, both brands introduced an open ideation contest to gather innovative ideas for a new cookie flavour. The contests were structurally identical, but the type of reward differed (monetary vs. non-monetary). These scenarios were designed to test how reward type, motivation, and brand awareness influence participants' intention in ideation contests. This setup allowed for examination of the interaction between extrinsic and intrinsic factors in the context of ideation contests.

In this study, participants were presented with two reward types: a €500 cash prize or a non-monetary reward consisting of social media recognition and having their name printed on the product packaging. The monetary reward represents a strong extrinsic incentive, consistent with prior research on ideation contests, where cash prizes typically range from €100 to €1,250 (Kireyev, 2016). Such rewards have been shown to effectively boost participation, especially in uncertain contexts (Boudreau et al., 2011; Terwiesch, 2024). Most previous studies have used amounts between €300 and €400 (Acar, 2018; Ihl et al., 2019), although higher values have also been employed (Shulga et al., 2018). A prize of €500 was chosen to align with these standards while ensuring it appealed across all age groups and was perceived as equal in value to the non-monetary reward.

The non-monetary reward targets intrinsic motivation by offering symbolic value and public visibility. This type of incentive appeals to participants seeking personal recognition or professional credibility (Van Dijk et al., 2019) and aligns with earlier studies that have explored non-monetary rewards such as feedback or enhanced reputation (Füller, 2010a; Hutter et al., 2017; von Hippel, 2006). By contrasting these two incentive types, the study examines how reward framing influences participation intention, motivation, and whether brand awareness (Oreo vs. Neo) moderates these effects.

Participants were shown one of the four different brand conditions and reward types:

Table 1*Study conditions*

Group	Brand Awareness	Reward Type
1	Oreo (High Brand awareness)	Monetary reward (€500 cash prize)
2	Oreo (High brand awareness)	Non-monetary reward (Winner gets featured on Oreo's social media and packaging of the product)
3	Neo (Low brand awareness)	Monetary reward (€500 cash prize)
4	Neo (Low brand awareness)	Non-monetary reward (Winner gets featured on Neo's social media and the packaging of the product)

Data Analysis

The data was collected through an online survey hosted on Qualtrics and was analysed using SPSS. Prior to conducting the analysis, the dataset was thoroughly screened for missing data and outliers. Missing data was handled through listwise deletion. Outliers were identified using boxplot visualizations for key variables across all four conditions. Additionally, assumption checks were performed to ensure the validity of the analysis. These assumptions included tests for normality, linearity, homoscedasticity, multicollinearity, and the independence of errors.

Descriptive statistics were used to summarize the demographic characteristics such as age, gender, work situation, and education. To ensure the reliability of the scales, Cronbach's alpha was calculated for each scenario; values above 0.70 are considered acceptable (Field, 2013). Construct validity was examined using exploratory factor analysis to confirm the existing scales and verify whether the items measured the same underlying construct. Factor loadings of 0.40 or higher are considered meaningful indicators (Hair et al., 2019).

To test the hypothesis of this study, a one-way ANOVA was first conducted to examine the main effect of reward type on participation intention. To account for potential confounding variables, an ANCOVA was conducted, including the covariates. This allowed for a more precise assessment of the effects of the independent variables on the dependent variable by accounting for differences in these demographic factors.

Afterwards, to test for the proposed mediation and moderation effect, Hayes' PROCESS macro was used. For the moderation test, Models 1 and 7 were used, and for the mediation test, Model 4 was

tested. The specific models were selected in line with the conceptual framework, and bootstrapping with 5.000 samples was employed to evaluate the significance of indirect effects and interaction terms. Both tests were conducted first, excluding the covariates, and then repeated with the covariates included to ensure the robustness of the models.

Results

The data was analysed, and this chapter will provide further insides on the results of the analysis. Firstly, this chapter will provide understanding into how the data was prepared before starting the analysis. Secondly, the sample and descriptive statistics will be discussed. Thirdly, the reliability and construct validity of the data will be discussed. Finally, the results of the hypothesis testing will be analysed and explained using ANOVA, ANCOVA, and PROCESS.

Data Preparation

Data were initially collected from 213 participants. Of these, 49 individuals withdrew from the study immediately after the introduction page, possibly due to a lack of interest or insufficient time to complete the survey. An additional 27 participants failed either the attention check, or the manipulation check, and two extreme outliers were identified based on response patterns. Participants who failed the checks generally indicated unfamiliarity with the Oreo brand or missed key scenario details, such as the brand presenting the ideation contest or the offered reward, suggesting they did not engage in reading the scenario sufficiently and, therefore, were unable to process the experimental manipulation adequately.

After performing a listwise deletion of these cases, the final sample consisted of 135 respondents (see Appendix 4). While these exclusions improved the internal validity and reliability of the dataset by removing participants who did not adequately process the experimental manipulation, the overall exclusion rate of approximately 37% is notably high. However, deleting these cases was necessary to ensure the validity and reliability of the data and to maintain its unbiased nature.

Participants were randomly assigned by Qualtrics to one of four conditions in a 2 x 2 between-subjects design, manipulating reward type (monetary vs. non-monetary) and brand awareness (high vs. low). The smallest group consisted of 27 participants, while the largest included 40. This difference may be attributed to the earlier exclusion of participants during the data-cleaning process. This could have affected the random distribution across the different conditions. To assess whether the groups were equally divided, the largest group was divided by the smallest group; $40/27 = 1,48$, which is smaller than the cutoff point of 1,5 (Field, 2013; Hair et al., 2019) and therefore it can be seen as equally divided groups.

Sample and descriptive statistics

When examining the descriptive statistics in Table 2, it is evident that the sample comprises 89 female participants (65,9%) and 46 male participants (34,1%). The participants' ages ranged from 19 to 76 years, with an average age of $M = 35.67$. In terms of educational level, most respondents have completed a bachelor's degree at HBO (44,4%), followed by MBO (20,7%) and a master's degree (16,3%). A smaller group of participants had a WO bachelor (9,6%), and the others reported completing VMBO, HAVO, or VWO.

Regarding work situations, just over half of the participants reported working full-time (51,1%), followed by being a student (23%) and being part-time employed (17,8%). A few respondents were retired (4,4%), unemployed (1,5%), or indicated another status (2,2%). Please refer to Appendix 5 for the SPSS results.

Table 2

Demographics of the population

Demographics	Categories	Statistics	%
Age	Range 19 – 76	$M = 35.67$	
Gender	Female	$N = 89$	65.9%
	Male	$N = 46$	34.1%
Education	VMBO	$N = 3$	2.2%
	HAVO	$N = 5$	3.7%
	VWO	$N = 4$	3%
	MBO	$N = 28$	20.7%
	HBO - Bachelor	$N = 60$	44.4%
	WO - Bachelor	$N = 13$	9.6%
	Master	$N = 22$	16.3%
	Work situation	Fulltime	$N = 69$
Parttime		$N = 24$	17.8%
Unemployed		$N = 2$	1.5%
Student		$N = 31$	23%
Retired		$N = 6$	4.4%
Other		$N = 3$	2.2%

Reliability and Construct Validity

Please refer to *Appendix 6* for the SPSS results of the factor analysis and reliability test.

Reliability Analysis

To test the internal consistency of the measurement scales, Cronbach's alpha was calculated for each scale and condition. For the brand awareness scale, all conditions showed a high reliability. The alpha values were all above $>.80$, ranging from .861 to .937, indicating good to excellent internal consistency. Although the Cronbach's alpha would increase after deleting the item "I am aware of the

brand”, the researcher has chosen to keep the item. This decision was made because the scale consists of only three items, and the retained item contributes conceptually by measuring general brand awareness rather than solely visual recognition. Additionally, Cronbach’s alpha was far above the acceptable cut point of .70 and therefore, no reliability risk was taken.

The motivation scale has also shown good internal consistency in most conditions, with Cronbach’s alpha’s ranging from .850 to .931. However, one exception was seen in the “Monetary + Low Brand Awareness” condition, which showed an alpha value of .686. The item “I am participating because I want others to approve of me” has a low item-total correlation in this condition, suggesting it may not align with the underlying motivational construct in this context. Whenever this item is deleted, the value will go up to .766, increasing by .08. However, since this is not a significant increase, deleting this item in all conditions will lower the alpha values of the three other conditions, and an alpha value of .686 is close to the cutoff point .70, the item has been kept in the research. This decision was made because deleting this item would leave only one external motivation item, in contrast to four internal motivation items. As a result, the scale would no longer provide a balanced or accurate representation of overall motivation. The inclusion of both intrinsic and extrinsic motivation items within one scale may also explain the lower reliability score. However, given the strong reliability scores for the other conditions and this exception still being close to the acceptable cutoff, the items were retained.

The participation intention scale has shown high Cronbach’s alpha values ranging from .887 to .942, indicating excellent reliability across all conditions. Even though the item “I intend to recommend others to participate in this ideation contest” has slightly lower correlations in some of the conditions, this item was retained as it is still above the acceptable cutoff point. It would lower Cronbach’s alpha in other conditions.

Factor Analysis

Although all scales used were previously validated items from the literature, an exploratory factor analysis (EFA) using principal axis factoring was conducted to confirm that the items within each scale measured the same underlying construct. For all scales, the rules of thumb were met. The number of responses ($n = 135$) is above the commonly recommended threshold of 50-100 (Hair et al., 2019), the KMO values ranged from .747 to .812, which is all $>.50$, and Bartlett’s test of sphericity was significant in all cases ($p <.001$).

For the brand awareness scale, one factor was extracted that explained a clear 89,68% of the variance. The factor loadings were high (ranging from .893 to .985), indicating that the items measured a strong underlying construct.



Within the motivation scale, another dominating factor was extracted, which explained 54,39% of the variance. The factor loadings varied from .488 to .889. While most items had a significant loading on this factor, items 5 and 6 (external motivation items) had lower loadings. Indicating that within this motivation factor, two kinds of motivation are tested: internal and external. This has already been confirmed in the literature and is known to the researcher. However, in this research model, motivation was measured as a whole. Since 54,39% is still considered acceptable, the factor loadings were all above .40 (Hair et al., 2019), and the literature can explain this lower variance as it measures a broader perspective of motivation (internal and external); the items are still considered to measure the same underlying construct.

Finally, within the participation intention scale, also one factor was extracted. This factor explained 74,76% of the variance. All items loaded strongly on the factor, ranging from .672 to .952. This confirms that they coherently measure the same underlying construct.

Hypothesis testing

Assumptions

Before entering the primary analysis, the assumptions for ANOVA, mediation and moderation were evaluated and met. For further explanation, please refer to Appendix 7 for the SPSS results of the one-way ANOVA, Appendix 8 for the SPSS results of the Mediation analysis, Appendix 9 for the SPSS results of the Moderation analysis, and Appendix 10 for the Covariates SPSS results.

One-way ANOVA assumptions

The Levene's test confirmed that there is homogeneity of variance ($p = .572$). Even though the Shapiro-Wilk test suggested a deviation from normality, the skewness and kurtosis in the z-scores were within the acceptable range of ± 1.96 , and the P-P plots showed that the residuals aligned with the diagonal line. This all suggests that the assumption of normality can be considered as met. Participants were randomly assigned to groups, ensuring independent observations.

Mediation Analysis assumptions

The assumptions of linearity, normality, homoscedasticity, multicollinearity and independence were also met within the mediation analysis. Although the reward type was binary, a linear relationship with motivation was still observed. The relationship between motivation and participation intention was also seen as linear. Furthermore, the residuals were normally distributed and spread around the zero. All VIF values were < 5 , indicating that there is no multicollinearity between reward type and motivation. Lastly, the random assignment ensured the independence of errors again.

Moderation Analysis assumptions

The dummy-coded predictors of reward type and brand awareness made it challenging to demonstrate linearity; no strong curvature or patterns were observed, and slight heteroscedasticity was considered acceptable, which is a common issue with dummy-coded variables (Hair et al., 2019) and therefore, this assumption is not violated. The normality of residuals was reasonable, and all VIF values were below < 5 . Lastly, the Durbin-Watson statistic (1.84) showed that the independence of errors was assured.

All these checks confirm that the data met the assumptions required for a valid ANOVA, mediation, and moderation analysis. Moreover, given the large sample size, minor deviations from assumptions are not considered problematic, as they are unlikely to compromise the robustness of the models (Hair et al., 2019).

One-Way ANOVA

The one-way ANOVA test showed a non-significant main effect of reward type on participation intention; $F(1, 133) = 1.49$, $p = .225$, partial $\eta^2 = .011$. Monetary reward: $M = 3.30$, $SD = 1.45$, non-monetary reward: $M = 2.29$, $SD = 1.56$. As noted in the literature, findings regarding this relationship have varied. While some studies have reported significant direct effects of rewards on participation intention, others suggest that the effect occurs only through the influence of other internal factors, such as motivation. This current study supports the view that rewards alone are insufficient to increase participation intention significantly. Rather, additional internal drivers might need to be activated to enhance participation intention.

Hypothesis 1

Hypothesis 1 (H1): The type of reward (monetary vs. non-monetary) influences participation intention, such that monetary rewards lead to higher participation intention than non-monetary rewards.

This hypothesis tested whether the type of reward had a direct influence on participation intention. It was expected that monetary rewards would lead to a higher participation intention than non-monetary rewards. This hypothesis is **not supported**; $F(1, 133) = 1.49$, $p = .225$, partial $\eta^2 = .011$. While the monetary condition was reported as slightly higher ($M = 3.30$, $SD = 1.45$) compared to the non-monetary condition ($M = 2.29$, $SD = 1.56$), this relationship did not appear to be significant.

This finding challenges the core assumption in the conceptual model, suggesting that the effect of reward type on participation intention may not be as straightforward. As discussed in the literature,

earlier studies present conflicting findings regarding the impact of reward types on participation intention and whether they can influence participation intention independently. One study argued that it can only exist through intrinsic motivation (Eisenberger & Cameron, 1996), while others also found significant results without considering psychological factors (Ihl et al., 2019). This outcome highlights the importance of considering and including other psychological factors in models of participation behaviour, suggesting that a one-size-fits-all assumption about reward effects may be overly simplistic.

Mediation Analysis (PROCESS Model 4)

A mediation analysis was conducted using PROCESS Model 4 by Hayes (2022) to test whether motivation has a mediating effect on the relationship between reward type and participation intention. The analyses used 5.000 bootstrap samples and applied heteroscedasticity-consistent standard errors.

The analysis showed that reward type has a significant effect on motivation ($B = 0.47$, $SE = 0.22$, $p = .038$), which suggests that participants who are exposed to monetary rewards showed higher motivation levels compared to those who received non-monetary rewards ($R^2 = .04$). Afterwards the two paths of motivation and reward type on participation intention were examined. The results showed that motivation had a substantial effect on participation intention ($B = 0.96$, $SE = 0.06$, $p < .001$), while the direct effect of reward type on participation intention was not significant ($B = -0.13$, $SE = 0.17$, $p = .448$). The model demonstrated that the combination of motivation and reward types had a strong influence on participation intention ($R^2 = .60$).

The analysis reveals that the indirect effect of reward type on participation intention through motivation was significant, with a point estimate of 0.45 and a 95% bootstrap confidence interval that did not include zero (BootLLCI = 0.03, BootULCI = 0.86). Indicating that the relationship between reward type and participation is fully mediated by motivation. The partially standardised indirect effect was 0.30, indicating that motivation played a significant role in explaining the effect of reward type on participation intention.

Thus, these insights suggest that the type of reward influences participation only indirectly, through motivation, rather than directly.

Hypothesis 2:

Hypothesis 2 (H2): Motivation mediates the relationship between reward type and participation intention.

This hypothesis proposed that motivation mediates the relationship between reward type and participation intention. Even though the direct interaction between reward type and participation intention appeared not to be significant ($B = -0.13$, $SE = 0.17$, $p = .448$), a significant indirect effect was found of reward types on participation intention via motivation as a mediator path A ($B = 0.47$, $SE = 0.22$, $p = .038$) & path B ($B = 0.96$, $SE = 0.06$, $p < .001$). This indicates a full mediation effect of motivation on the relationship between reward type and participation intention, and therefore, **hypothesis 2 is supported.**

Moderation Analysis (PROCESS Model 1 and 7)

To examine whether brand awareness influences the relationship between reward type and participation intention, a moderation analysis was conducted using PROCESS Models 1 and 7 by Hayes (2022). This model used participation intention and motivation as the dependent variables, reward type as the independent variable, and brand awareness as the moderator. The interaction term between reward type and brand awareness showed no significance ($B = -0.32$, $p = .563$), suggesting that brand awareness did not moderate the direct effect of reward type on participation intention. Both the main effect of reward type ($B = 0.44$, $p = .304$) and brand awareness ($B = 0.52$, $p = .236$) showed a positive but nonsignificant effect.

Additionally, to test whether brand awareness had a moderating effect on the indirect relationship between reward type and motivation via motivation, a moderated mediation model was analysed. PROCESS Model 7 was done to examine the moderation on the first mediation path (reward type on motivation). The interaction between reward type and brand awareness showed no significance ($B = -0.52$, $p = .266$), suggesting that the effect of reward type on brand awareness was not significantly different across the different levels of brand awareness. The conditional indirect effect was marginally significant at the low levels of brand awareness (Effect = 0.66, 95% CI [0.02, 1.32]) but not at the high levels of brand awareness (Effect = 0.15, 95% CI [-0.37, 0.69]). This pattern suggests that the mediation effect of motivation may be present, which was confirmed in Model 4, discussed earlier. However, the index of moderated mediation was not significant (Index = -0.51, 95% CI [-1.35, 0.35]), indicating that the difference in indirect effects between low and high brand awareness was not statistically significant. While a slight difference may be observed in the mediation strength,

these findings should be interpreted with caution and may require further investigation, as they were not statistically significant.

To summarise, these two models showed no evidence that brand awareness significantly moderates the direct effect of reward type on participation intention or the indirect effect through motivation. Motivation remains a significant mediator. However, the findings of this study suggest that brand awareness does not moderate the strength of this pathway.

Hypothesis 3

Hypothesis 3 (H3): The effect of reward type on motivation and participation intention is moderated by brand awareness, such that non-monetary rewards are more effective under high brand awareness, while monetary rewards are more effective under low brand awareness.

This hypothesis tested whether brand awareness has a moderating effect on the relationship between reward-type motivation and participation intention. The results showed that neither of the interaction terms had a significant effect: the interaction between Reward Type and Brand Awareness on participation intention was not significant ($B = -0.32$, $p = .563$), nor was the mediated interaction through motivation ($B = -0.52$, $p = .266$). Therefore, Hypothesis 3 is **not supported**.

Covariates

Covariates and Robustness Checks

All hypotheses were tested including covariates to further examine the robustness of the findings. The demographic variables of age, gender, education level, and work situation were included as covariates in an ANCOVA and the mediation and moderation analyses (PROCESS 1, 4, and 7).

ANCOVA

An ANCOVA was conducted to assess whether the relationship between reward type and participation intention changes when controlling for age, gender, education level, and work situation. The analysis showed that the effect of reward type was still not significant $F(1, 129) = 0.91$, $p = .341$, $\eta^2 = .007$. Although the work situation was almost significant $F(1, 129) = 3.67$, $p = .058$, none of the covariates showed a statistically significant difference. The overall model was not statistically significant ($F(5, 129) = 1.39$, $p = .233$) and explained only 5,1% of the variance in participation intention ($R^2 = .051$). Compared to the one-way ANOVA, the ANCOVA did not change meaningfully; it even explained slightly less variance. Thus, the added covariates did not clarify the relationship between reward type and participation intention.

Mediation Analysis (Model 4)

In the mediation analysis (Model 4), the initial model without covariates revealed that the direct effect of reward type on participation intention was not significant ($B = -0.13$, $SE = 0.17$, $p = .448$). However, a significant indirect effect was found through motivation as a mediator (path A: $B = 0.47$, $SE = 0.22$, $p = .038$; path B: $B = 0.96$, $SE = 0.06$, $p < .001$) with a bootstrap confidence that did not include zero, indicating a full mediation effect.

To test the robustness of this finding, the four covariates were included. In the adjusted model, the effect of reward type on motivation became non-significant, assuming a 95% confidence interval ($B = 0.39$, $SE = 0.22$, $p = .082$). However, the effect remained in the expected positive direction. Although the effect of reward type on motivation was not statistically significant, the effect size was relatively large. This suggests a potentially meaningful association that may have lost significance after including covariates, possibly due to limitations in sample size or increased variance. The effect of motivation on participation intention remained statistically significant ($B = 0.97$, $SE = 0.06$, $p < .001$). However, the indirect effect was no longer statistically significant ($Effect = 0.38$, 95% CI $[-0.02, 0.79]$), as the confidence interval included zero.

These insights suggest that although Hypothesis 2 is supported within the primary analysis, the mediation effect becomes less robust and insignificant when controlling for covariates. Motivation remains a central predictor of participation intention; however, its mediating role may depend on individual characteristics, such as age. Therefore, results need to be interpreted carefully.

Moderation Analysis (Model 1 and Model 7)

In the moderation model (Model 1), the interaction between reward type and brand awareness showed no significant difference $B = -0.43$, $p = .422$. Including covariates did not alter the results; in fact, the interaction effect slightly decreased ($B = -0.32$, $p = .563$).

In Model 7, which tested a moderated mediation, the interaction between reward type and brand awareness on motivation was also not significant ($B = -0.68$, $p = .129$). The conditional indirect effect of rewards on participation through motivation showed a significant effect at the lower levels of brand awareness ($Effect = 0.80$, 95% CI $[0.15, 1.40]$). However, it did not show any significance at the high brand awareness level levels ($Effect = 0.14$, 95% CI $[-0.36, 0.70]$), resulting in the moderated mediation not being significant ($Index = -0.65$, 95% CI $[-1.43, 0.19]$), comparable to the unadjusted model. Therefore, brand awareness does not significantly moderate the effect of reward type on motivation or participation intention, regardless of whether covariates are accounted for or not.

Discussion and Conclusion

This study aimed to investigate how different types of rewards (monetary or non-monetary) influence participation intention in ideation contests and test whether this relationship is mediated by motivation and moderated by brand awareness. Based on the Self-Determination Theory (Deci & Ryan, 1985), the study suggests that intrinsic drivers, such as motivation, play a crucial role in explaining why participants choose to participate in ideation contests. The results of this study confirm this theoretical view and provide insights with both theoretical and practical implications.

Summary and Interpretation of Findings

The one-way ANOVA showed a non-significant direct effect of reward type on participation intention, meaning that H1 was not supported. Participants who were offered monetary rewards did not show a significantly higher participation intention compared to those who were not offered monetary rewards. This finding contradicts the original theoretical assumption that monetary rewards would directly increase participation intention. One possible explanation is that this assumption overlooked the complexity of motivational processes in ideation contests. As discussed in the literature review, a conflicting view existed on this direct relationship. The results of this study support the prior suggestions that extrinsic motivators such as money can crowd out intrinsic motivation, especially in cognitively demanding and creative tasks (Deci et al., 1999; Frey & Jegen, 2001). In such a context, individuals may require a sense of autonomy, purpose, or personal interest, factors that might not be activated by extrinsic rewards alone.

Although the direct effect was not supported, this does not entirely invalidate the theoretical model. A follow-up analysis investigated motivation as a mediating variable and brand awareness as a potential moderator, in line with the theoretical assumption that the effect of reward type may depend on psychological or contextual factors (Eisenberger & Cameron, 1996; Zhao et al., 2023).

Motivation appeared to be a key explaining variable. In the mediation analysis, the type of reward significantly influences motivation, which in turn strongly predicts participation intention. This full mediation model supported H2. However, when the covariates were added, the effect of reward type on motivation lost its significance at the 95% confidence level. Nevertheless, the effect remained in the expected direction and showed a relatively large effect size. Suggesting that the loss of significance may be attributed to sample size limitations or increased variance. These study findings highlight the importance of motivation in driving behaviour within ideation contests and support the idea that monetary incentives do not work directly. Instead, by enhancing motivational levels, particularly when being aligned with individuals' goals or values, participants may become more likely to engage.

In contrast, the moderation variable, brand awareness, was not significant in either the direct or indirect relationship between reward type and participation intention. Despite this, the conditional indirect effects appeared stronger under low brand awareness conditions; however, the index of moderated mediation was not significant. Resulting in H3 not being supported. One possible explanation for this non-significant effect is that participants may have had only limited exposure to or interest in the brands used in this study, making the manipulation less impactful. If participants already perceived the brands as neutral, the difference between the low and high awareness conditions may not have been psychologically meaningful enough to moderate motivation or intention. Another possibility is that brand awareness plays a more indirect role, acting through constructs such as brand identification, brand trust, emotional attachment, loyalty, and value alignment (Thomson et al., 2005). These were not included in this study, but they may explain why brand awareness, on its own, had no significant moderating effect.

This may suggest that brand awareness alone is not sufficient to change the effectiveness of reward structures; participants perhaps need to feel a deeper, emotional connection to the brand, this can be reached whenever an ideation contest aligns with their values, when they feel loyal, or when they have personal experiences with the brand (Ugalde et al., 2024).

When demographic covariates, such as age, gender, education, and work situation, were added, the results remained relatively stable, confirming the robustness of the findings. Although the mediation effect of motivation became slightly weaker, motivation remains a central variable in this relationship. An interesting, however, non-significant finding within the ANCOVA was that work situation approached significance, hinting that people's professional situation might influence how they respond to reward types. This might be an interesting area for future research.

Taken together, the findings indicate that participation intention is likely shaped by more complex dynamics than initially assumed. Rather than having a straightforward effect, the type of reward may only influence participation when it aligns with individual values or is embedded in a broader motivational context. This highlights the need to revise the theoretical model and integrate more nuanced mechanisms, such as motivational mediators or personally meaningful brand-related cues, that better capture the complexity of decision-making in ideation contests.

Theoretical Implications

This research has contributed to the academic literature on ideation contests and motivational psychology in several ways. Firstly, it reinforced the utility of the Self-Determination Theory as a robust and dynamic framework for understanding participation in ideation contests. Instead of viewing motivation solely as an intrinsic-extrinsic division, this study revealed its multidimensional nature. It emphasised the importance of motivation as a mediator between reward types and behavioural outcomes. These findings help to create a deeper understanding of the theoretical applications of SDT in complex, reward-based creative environments (Ryan & Deci, 2000).

Secondly, the study results provide strong empirical support for the idea that internal motivational processes, such as personal interest, perceived competence and intrinsic motivation, are key drivers in the relationship between reward type and participation intention. Although brand awareness was hypothesised to moderate this relationship, the lack of statistical significance suggests that being a familiar brand alone may not directly influence how participants' intentions are affected by rewards. This null finding is theoretically meaningful, as it indicates that brand familiarity may not sufficiently meet participants' core psychological needs of autonomy, competence, and relatedness (Deci & Ryan, 2000). However, brand awareness might exert its influence through alternative pathways, such as shaping initial attention, perceived credibility, and emotional resonance with the brand (Alba & Hutchinson, 2000). Moreover, future research could explore alternative ways of operationalising and measuring brand awareness to capture a potential moderating role better. These insights call into question the effectiveness of standard marketing techniques and innovation practices, highlighting the need to reinvestigate how rewards are constructed to foster more meaningful engagement.

Finally, the study findings challenge the assumed reliance on brand visibility for increasing engagement in ideation contests. Although brand awareness is a popular tool in marketing campaigns, the findings suggest that it is not sufficient to enhance the effectiveness of reward types. This leaves room for future researchers to further investigate psychological constructs, such as brand identification, brand trust, emotional attachment, loyalty, and value alignment, within ideation contests, which may have a more substantial influence on motivation and behaviour (Thomson et al., 2005).

Practical Implications

In terms of practical implications for businesses designing ideation contests, the study findings emphasize the need to think beyond merely offering rewards. The results highlight the mediating role of motivation, indicating that the type of reward influences participation intention primarily through motivational processes. Therefore, businesses should focus on enhancing participants' motivation when designing reward structures.

Specifically, the study found that monetary rewards increased participation intention more than non-monetary rewards. However, this effect was only significant when motivation was included as a mediator. This implies that simply offering a reward is not enough. It is the motivational value participants attach to the reward that matters. Thus, companies should consider communicating how the reward aligns with their potential participants' values or goals to increase the motivational impact.

The study also revealed that brand awareness did not significantly moderate the relationship between reward type and participation intention. This suggests that brand familiarity alone does not change how rewards influence motivation or participation intention. Therefore, relying on brand recognition without meaningful or motivating rewards may not be sufficient to boost participation unless deeper affective or motivational links are included. Businesses should consider implementing recognition-based strategies that enhance emotional connection, such as storytelling, value-based branding, or influencer engagement.

Lastly, the ANCOVA findings indicate that work situations might influence the effectiveness of the reward system. This implies that demographic factors affect how participants respond to different rewards. Businesses may benefit from adapting their contest strategies to different target groups, such as students versus professionals, to ensure alignment with their motivational needs.

Limitations and Future Research

Despite its contributions, this study has several important limitations that alter the strength of the conclusions. Firstly, the manipulation of reward types and brand awareness may have lacked inclusion of the important core psychological needs of autonomy, competence, and relatedness (Deci & Ryan, 2000). As a result, the manipulations of reward type and brand awareness were unsuccessful in making the manipulations relevant and noticeable. The study participants might not have perceived the rewards or brand as personally relevant or valuable, which could have weakened the observed effects. This raises concerns about whether the manipulations and scenarios were realistically framed as an actual ideation contest environment. Future researchers should carefully

redesign these manipulations and scenarios to better account for these needs and avoid overlooking potential effects or alternative explanations.

Secondly, the study measured motivation as a whole rather than differentiating between intrinsic and extrinsic motivation within the mediation path. The use of the total motivation scale, while motivation is clearly stated as more nuanced, may show different effects between more autonomous and more controlled forms of motivation. Future researchers should make a distinction between external and internal motivation, according to the SDT typology, and investigate the distinctions between these types of motivations within ideation contests.

Thirdly, this study relies solely on SDT as its core framework without integrating constructs from the TPB. This is a limitation as TPB could have provided valuable insights into how attitudes, subjective norms and perceived behavioural control shape intention, which may interact with the motivational mechanisms of SDT. By not including these constructs, the model may overlook important cognitive drivers of participation. Future researchers should consider integrating both SDT and TPB into their conceptual models to develop a more comprehensive framework that captures both motivational and cognitive influences on participation intention in ideation contests.

Fourthly, while the study accounted for covariates, the overall explanatory power of the model remains average. The full mediation model explained only 60% of the variance in participation intention, and the ANCOVA only explained 5% of the variance. This suggests that there are other unmeasured factors, such as personal traits, previous contest experience, or expertise, that might play a role in this relationship, leaving room for future studies to explore.

Fifthly, the methodology of this study presents several limitations. The study is limited in that it relies solely on a single cross-sectional survey with self-reported measures. This may introduce bias, such as social desirability bias or common method variance. A longitudinal study or real experimental field study would provide a stronger basis for testing the hypothesis proposed in this study. Moreover, after adding the covariates the mediation effect became insignificant while having relatively large sample size, indicating that the sample size may still have been too small, and therefore, potentially leading to insignificant effect sizes. As a result, the findings should be interpreted with caution. Additionally, some measurement scales consisted of only three items, limiting the possibility of removing unreliable items without compromising the validity, reliability and robustness of the construct. Future studies should aim for a larger sample size and use scales with at least five items to allow for greater flexibility in scale refinement and validation.



Finally, the generalizability of this study is limited. The sample was solely Dutch people and included more female than male participants. The gender-based differences and Dutch culture can influence how participants respond to the manipulation and their motivation towards reward systems, potentially affecting the study's results. Therefore, future studies should explore these dynamics in other cultural populations as well.

Conclusion

This study aimed to answer the research question: *“To what extent does motivation mediate the relationship between reward type (monetary vs. non-monetary) and solvers’ intention to participate in an ideation contest, and to what extent does brand awareness moderate the effect of reward type on motivation?”* The findings showed that within ideation contests, the type of reward offered matters less than the motivational processes it triggers. While monetary rewards do not directly increase participation intention, they do have a significant indirect effect via motivation. Motivation is revealed as a central mechanism that links reward incentives to behaviour. However, brand awareness did not enhance or weaken this effect. These insights call for a more nuanced understanding of how organisations can potentially engage participants in ideation contests and demonstrate a need for reward systems that address motivational needs before increasing participation intention.

However, a limitation is that other factors, such as the manipulation method, could have potentially weakened these findings. Therefore, it is suggested that future researchers employ more rigorous manipulation designs, more evident differentiation in motivation types, a more diverse and larger sample, incorporate other theories such as the Theory of Planned Behaviour (TPB), and adopt more longitudinal methods to build more substantial evidence. Until this is addressed, practitioners and researchers should be cautious about over-relying on the findings of this study and should also utilise and critically consider insights from other research.

References

- Aaker, D. A. (1991). *Managing Brand Equity*. Simon and Schuster.
- Acar, O. A. (2018). Harnessing the creative potential of consumers: Money, participation, and creativity in idea crowdsourcing. *Marketing Letters*, 29(2), 177–188.
<https://doi.org/10.1007/s11002-018-9454-9>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Ajzen, I., & Fishbein, M. A. (1975). (PDF) *Belief, attitude, intention and behaviour: An introduction to theory and research*. ResearchGate.
https://www.researchgate.net/publication/233897090_Belief_attitude_intention_and_behaviour_An_introduction_to_theory_and_research
- Alba, J. W., & Hutchinson, J. W. (2000). Knowledge Calibration: What Consumers Know and What They Think They Know. *Journal of Consumer Research*, 27(2), 123–156.
<https://doi.org/10.1086/314317>
- Amabile, T. M. (2018). *Creativity In Context: Update To The Social Psychology Of Creativity*. Routledge. <https://doi.org/10.4324/9780429501234>
- Baek, T., & Kim, J. (2024). The Differential Roles of Brand Credibility and Brand Prestige in Consumer Brand Choice | Request PDF. *ResearchGate*. <https://doi.org/10.1002/mar.20350>
- Bayus, B. L. (2013). Crowdsourcing New Product Ideas over Time: An Analysis of the Dell IdeaStorm Community. *Management Science*, 59(1), 226–244.
<https://doi.org/10.1287/mnsc.1120.1599>
- Benhardy, K. A., Hardiyansyah, H., Putranto, A., & Ronadi, M. (2020). Brand image and price perceptions impact on purchase intentions: Mediating brand trust. *Management Science Letters*, 3425–3432. <https://doi.org/10.5267/j.msl.2020.5.035>

- Bettiga, D., & Lamberti, L. (2019). Crowd Size and Crowdsourcing Performances in Online Ideation Contests. *2019 16th International Conference on Service Systems and Service Management (ICSSSM)*, 1–6. <https://doi.org/10.1109/ICSSSM.2019.8887700>
- Boudreau, K. J., Lacetera, N., & Lakhani, K. R. (2011). Incentives and problem uncertainty in innovation contests: An empirical analysis. *Management Science*, *57*(5), 843–863. <https://doi.org/10.1287/mnsc.1110.1322>
- Boudreau, K. J., & Lakhani, K. R. (2013). Using the crowd as an innovation partner. *Harvard Business Review*, *91*(4), 60–69, 140.
- Cao, Z., Feng, H., & Wiles, M. A. (2024). When Do Marketing Ideation Crowdsourcing Contests Create Shareholder Value? The Effect of Contest Design and Marketing Resource Factors. *Journal of Marketing*, *88*(2), 99–120. <https://doi.org/10.1177/00222429231191446>
- Cheema, A., & Kaikati, A. M. (2010). The Effect of Need for Uniqueness on Word of Mouth. *Journal of Marketing Research*, *47*(3), 553–563. <https://doi.org/10.1509/jmkr.47.3.553>
- Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*(6), 627–668. <https://doi.org/10.1037/0033-2909.125.6.627>
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. Springer Science & Business Media.
- Eisenberger, R., & Cameron, J. (1996). Detrimental effects of reward: Reality or myth? *American Psychologist*, *51*(11), 1153–1166. <https://doi.org/10.1037/0003-066X.51.11.1153>
- Farhan Masud, M. (2020). Marketing research and integrated marketing communication plan of Oreo. *International Journal of Research Publications*, *65*(1). <https://doi.org/10.47119/IJRP1006511120201575>
- Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics* (5th ed.). SAGE edge.
- Frey, B. S., & Jegen, R. (2001). Motivation Crowding Theory. *Journal of Economic Surveys*, *15*(5), 589–611. <https://doi.org/10.1111/1467-6419.00150>



- Füller, J. (2010). Virtual Co-Creation of New Products and its Impact on Consumers' Product and Brand Relationships. *Academy of Management Proceedings*, 2010(1), 1–6.
<https://doi.org/10.5465/ambpp.2010.54501342>
- Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, 26(4), 331–362. <https://doi.org/10.1002/job.322>
- Guay, F., Vallerand, R. J., & Blanchard, C. (2000). On the Assessment of Situational Intrinsic and Extrinsic Motivation: The Situational Motivation Scale (SIMS). *Motivation and Emotion*, 24(3), 175–213. <https://doi.org/10.1023/A:1005614228250>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate Data Analysis*. Cengage.
- Hossain, M. (2018). Motivations, challenges, and opportunities of successful solvers on an innovation intermediary platform. *Technological Forecasting and Social Change*, 128, 67–73.
<https://doi.org/10.1016/j.techfore.2017.10.018>
- Ihl, C., Vossen, A., & Piller, F. (2019). All for the Money? The Limits of Monetary Rewards in Innovation Contests with Users. *International Journal of Innovation Management*, 23(02), 1950014. <https://doi.org/10.1142/S1363919619500142>
- Jeppesen, L. B., & Frederiksen, L. (2006). Why Do Users Contribute to Firm-Hosted User Communities? The Case of Computer-Controlled Music Instruments. *Organization Science*.
<https://doi.org/10.1287/orsc.1050.0156>
- Jiang, J., & Wang, Y. (2020). A Theoretical and Empirical Investigation of Feedback in Ideation Contests. *Production and Operations Management*, 29(2), 481–500.
<https://doi.org/10.1111/poms.13127>
- Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. *Journal of Marketing*, 57(1), 1–22. <https://doi.org/10.1177/002224299305700101>
- Kireyev, P. (2016). *Prize Structure, Entry Limits, and the Design of Ideation Contests*.
- Lays. (2025). *Lay's Patatje Joppie®*. Lays Benelux. <https://www.lays.nl/producten/lays-patatje-joppie>



- LeClair, C. (2020, August 5). *How the Oreo cookie went from unknown knock-off to the world's most popular cookie, as a result of a sibling rivalry between baker brothers*. Business Insider Nederland. <https://www.businessinsider.nl/how-the-oreo-went-from-knock-off-to-worlds-favorite-2020-8/>
- Leung, X. Y., Bai, B., & Stahura, K. A. (2015). The Marketing Effectiveness of Social Media in the Hotel Industry: A Comparison of Facebook and Twitter. *Journal of Hospitality & Tourism Research*, 39(2), 147–169. <https://doi.org/10.1177/1096348012471381>
- Mustafa, S., Zhang, W., & Naveed, M. M. (2023). What motivates online community contributors to contribute consistently? A case study on Stackoverflow netizens. *Current Psychology*, 42(13), 10468–10481. <https://doi.org/10.1007/s12144-022-03307-4>
- Nibbering, D., Frasincar, F., & Vandic, D. (2017). Analysing the effect of offline media on online conversion actions. *International Journal of Web Engineering and Technology*, 12(2), 165–185. <https://doi.org/10.1504/IJWET.2017.086450>
- Osei-Frimpong, K. (2019). Understanding consumer motivations in online social brand engagement participation: Implications for retailers. *International Journal of Retail & Distribution Management*, 47(5), 511–529. <https://doi.org/10.1108/IJRDM-08-2018-0151>
- Paasovaara, R., & Luomala, H. (2017). The Effects of Brand Familiarity and Consumer Value – Brand Symbolism (In)Congruity on Taste Perception. In C. L. Campbell (Ed.), *The Customer is NOT Always Right? Marketing Orientations in a Dynamic Business World* (pp. 754–757). Springer International Publishing. https://doi.org/10.1007/978-3-319-50008-9_204
- Papadopoulou, C., Vardarsuyu, M., & Oghazi, P. (2023). Examining the relationships between brand authenticity, perceived value, and brand forgiveness: The role of cross-cultural happiness. *Journal of Business Research*, 167, 114154. <https://doi.org/10.1016/j.jbusres.2023.114154>
- Pereira, D., Silva, Joaquim, & Casais, B. (2024). Consumer Brand Engagement Fostered by Cause-Related Marketing in Emotional and Functional Brands. *Journal of Nonprofit & Public Sector Marketing*, 36(5), 685–712. <https://doi.org/10.1080/10495142.2024.2329258>



- Piezunka, H., & Dahlander, L. (2019). Idea Rejected, Tie Formed: Organizations' Feedback on Crowdsourced Ideas. *Academy of Management Journal*, 62(2), 503–530.
<https://doi.org/10.5465/amj.2016.0703>
- Piller, F., Vossen, A., & Ihl, C. (2012). From Social Media to Social Product Development: The Impact of Social Media on Co-Creation of Innovation. *Die Unternehmung*, 66(1), 7–27.
<https://doi.org/10.5771/0042-059X-2012-1-7>
- Pollok, P., Lüttgens, D., & Piller, F. T. (2019). Attracting solutions in crowdsourcing contests: The role of knowledge distance, identity disclosure, and seeker status. *Research Policy*, 48(1), 98–114.
<https://doi.org/10.1016/j.respol.2018.07.022>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78.
<https://doi.org/10.1037/0003-066X.55.1.68>
- Salgado, S., Hemonnet-Goujot, A., Henard, D. H., & de Barnier, V. (2020). The dynamics of innovation contest experience: An integrated framework from the customer's perspective. *Journal of Business Research*, 117, 29–43. <https://doi.org/10.1016/j.jbusres.2020.05.041>
- Sheldon, K., Osin, E., Gordeeva, T., & Suchkob, D. (2017). (PDF) Evaluating the Dimensionality of Self-Determination Theory's Relative Autonomy Continuum. *ResearchGate*.
<https://doi.org/10.1177/0146167217711915>
- Shulga, L. V., Busser, J. A., & Bai, B. (2018). Factors affecting willingness to participate in consumer generated advertisement. *International Journal of Hospitality Management*, 74, 214–223.
<https://doi.org/10.1016/j.ijhm.2018.05.004>
- Singh, A., Rana, N. P., & Parayitam, S. (2022). Role of social currency in customer experience and co-creation intention in online travel agencies: Moderation of attitude and subjective norms. *International Journal of Information Management Data Insights*, 2(2), 100114.
<https://doi.org/10.1016/j.ijime.2022.100114>

- Steils, N., & Hanine, S. (2016). Creative contests: Knowledge generation and underlying learning dynamics for idea generation. *Journal of Marketing Management*, 32(17–18), 1647–1669. <https://doi.org/10.1080/0267257X.2016.1251956>
- Stokburger-Sauer, N., Ratneshwar, S., & Sen, S. (2012). Drivers of consumer–brand identification. *International Journal of Research in Marketing*, 29(4), 406–418. <https://doi.org/10.1016/j.ijresmar.2012.06.001>
- Terwiesch, C. (2024). (PDF) Innovation Contests, Open Innovation, and Multiagent Problem Solving. *ResearchGate*. <https://doi.org/10.1287/mnsc.1080.0884>
- Thomson, M., MacInnis, D. J., & Whan Park, C. (2005). The Ties That Bind: Measuring the Strength of Consumers' Emotional Attachments to Brands. *Journal of Consumer Psychology*, 15(1), 77–91. https://doi.org/10.1207/s15327663jcp1501_10
- Ugalde, C., Küster, I., & Vila, N. (2024). Brand Attachment: The Moderating Effect of High and Low Involvement Products. *Journal of Consumer Sciences*, 9(2), Article 2. <https://doi.org/10.29244/jcs.9.2.185-205>
- University of Minnesota Libraries Publishing. (2016). *Research Methods in Psychology—8.1 Multiple Dependent Variables*. University of Minnesota Libraries Publishing edition, 2016. This edition adapted from a work originally produced in 2010 by a publisher who has requested that it not receive attribution. <https://doi.org/10.24926/8668.2201>
- van Zomeren, M., Postmes, T., & Spears, R. (2008). Toward an integrative social identity model of collective action: A quantitative research synthesis of three socio-psychological perspectives. *Psychological Bulletin*, 134(4), 504–535. <https://doi.org/10.1037/0033-2909.134.4.504>
- Wang, Y., Hsiao, S.-H., Yang, Z., & Hajli, N. (2016). The impact of sellers' social influence on the co-creation of innovation with customers and brand awareness in online communities. *Industrial Marketing Management*, 54, 56–70. <https://doi.org/10.1016/j.indmarman.2015.12.008>



- Ye, H. (Jonathan), & Kankanhalli, A. (2017). Solvers' participation in crowdsourcing platforms: Examining the impacts of trust, and benefit and cost factors. *The Journal of Strategic Information Systems*, 26(2), 101–117. <https://doi.org/10.1016/j.jsis.2017.02.001>
- Yoo, B., Donthu, N., & Lee, S. (2000). An examination of selected marketing mix elements and brand equity. *Journal of the Academy of Marketing Science*, 28(2), 195–211. <https://doi.org/10.1177/0092070300282002>
- Zhao, M., Saine, R., Zhu, Y., & Wu, Z. (2023). The Moderating Effects of Product and Consumer-Brand Relationship on Type of Rewards in Consumer Cocreation. *J. of Business and Management*, 28(2), 43–60. <https://doi.org/10.1504/JBM.2023.141298>
- Zheng, H., Li, D., & Hou, W. (2011). Task Design, Motivation, and Participation in Crowdsourcing Contests. *International Journal of Electronic Commerce*, 15(4), 57–88. <https://doi.org/10.2753/JEC1086-4415150402>
- Zhou, T. (2011). Understanding online community user participation: A social influence perspective. *Internet Research*, 21(1), 67–81. <https://doi.org/10.1108/10662241111104884>



Appendices

Appendix 1: Scenarios

Group 1: Oreo (High Brand Awareness) – Monetary Reward

Create the Next Big Oreo Flavour and win €500!

Join the Oreo Flavour Challenge! Oreo has been the favorite cookie of many for over a century, and now we want you to help us create our next most popular flavour! This is your chance to make your cookie. Submit your most creative flavour idea, and if your idea is selected as a winner, you will win €500 and have your idea brought to life.

How do I participate?

Submit your flavour idea through www.orea.nl/cookiechallenge.

Tell us what your cookie is about and why your flavour should be the next Oreo to be brought to life.

Check out our website and social media channels for the big reveal!

What's in it for you?

- Win €500 for your creative idea.
- Be a part of the Oreo innovation journey of your cookie.
- Buy your cookie in all Dutch supermarkets, and who knows, even abroad!

Ready to make cookie history? Submit your idea today!

Group 2: Oreo (High Brand Awareness) – Non-monetary Reward

Ever dreamed of seeing your name on an Oreo package? Now's your chance!

Join the Oreo Flavour Challenge! Oreo has been the favourite cookie of many for over a century, and now we want you to help us create our next most popular flavour! This is your chance to make your cookie. Submit your most creative flavour idea, and if your idea is selected as a winner, you'll be featured on Oreo's social media and your name will be shown on the packaging of our newest cookie creation.

How do I participate?

Submit your flavour idea through www.orea.nl/cookiechallenge.

Tell us what your cookie is about and why your flavour should be the next Oreo to be brought to life.

Check out our website and social media channels for the big reveal!

What's in it for you?

- Your flavour and name are featured on the new Oreo packaging.
- A chance to gain thousands of fans on our social media as you become the new cookie creator of Oreo.
- An amazing story to tell your friends and family as an official Oreo innovator!
- Buy your cookie in all Dutch supermarkets, and who knows, even abroad!

Ready to make cookie history? Submit your idea today!

Group 3: NEO (Low Brand Awareness) – Monetary Reward

Create the Next Big Neo Flavour and win €500!

Join the Neo Flavour Challenge! Neo is on a mission to change the cookie world—and we want *you* to help us create the newest cookie sensation! This is your chance to make your own cookie. Submit your most creative flavor idea, and if your idea is selected as a winner, you will win €500 and have your idea brought to life.

How do I participate?

Submit your flavour idea through www.neo.nl/cookiechallenge.

Tell us what your cookie is about and why your flavour should be the next Neo to be brought to life.

Check out our website and social media channels for the big reveal!

What's in it for you?

- Win €500 for your creative idea.
- Be part of the Neo innovation journey of your cookie
- Buy your cookie in all Dutch supermarkets, and who knows, even abroad!

Ready to make cookie history? Submit your idea today!

Group 4: Neo (Low Brand Awareness) – Non-monetary Reward

Ever dreamed of seeing your name on a Neo package? Now's your chance!

Join the Neo Flavour Challenge! Neo is on a mission to change the cookie world—and we want *you* to help us create the newest cookie sensation! This is your chance to make your own cookie. Submit your most creative flavour idea, and if your idea is selected as a winner, you'll be featured on Neo's social media and your name will be shown on the packaging of our newest cookie creation.

How do I participate?

Submit your flavour idea through www.neo.nl/cookiechallenge.

Tell us what your cookie is about and why your flavour should be the next Neo to be brought to life.

Check out our website and social media channels for the big reveal!

What's in it for you?

- Your flavour and name are featured on the new Neo packaging.
- A chance to gain thousands of fans on our social media as you become the new cookie creator of Neo.
- An amazing story to tell your friends and family as an official Neo innovator!
- Buy your cookie in all Dutch supermarkets, and who knows, even abroad!

Ready to make cookie history? Submit your idea today!

Appendix 2: Measurement Scales

Brand awareness scale (Yoo et al., 2000)

- I am aware of the brand.
- I can recognize the brand among other competing brands.
- I know what the brand looks like.

Motivation scale (Guay et al., 2000)

This construct will not be manipulated.

Intrinsic Motivation

- I think participating in this ideation contest would be interesting.
- I think participating in this ideation contest would be fun.
- I believe this ideation contest would help achieve my personal goals.
- I would feel I will enjoy participating in this ideation contest.

External motivation

- I am participating because I want others to approve of me.
- I am participating because I will be rewarded if I do it.

Participation intention scale (Ajzen & Fishbein, 1975):

- I expect to participate in an ideation contest.
- I plan to participate in an ideation contest.
- I want to participate in an ideation contest.
- I intend to recommend others to participate in an ideation contest.

Appendix 3: Manipulation Check and Attention Check

(University of Minnesota Libraries Publishing, 2016)

Reward Type Manipulation Check

What type of reward was offered in the contest you just participated in?

- A monetary prize (€500 cash)
- Recognition (social media/packaging feature)
- I don't remember

Brand Awareness Manipulation Check

Before participating in this contest, how familiar were you with the brand running it?

- Very familiar (I have known this brand for a long time)
- Somewhat familiar
- Not familiar at all

Attention check

Which of the following brands was used in this ideation contest?

1. Oreo
2. Neo
3. Another well-known cookie brand
4. I don't remember

Appendix 4: Correlation Matrix, Descriptive Statistics Scales and Outliers

Correlation Matrix

		PI.Total	BA.Total	MOTI.Tot
PI.Total	Pearson Correlation	1	.214*	.772**
	Sig. (2-tailed)		.013	<.001
	N	135	135	135
BA.Total	Pearson Correlation	.214*	1	.265**
	Sig. (2-tailed)	.013		.002
	N	135	135	135
MOTI.Tot	Pearson Correlation	.772**	.265**	1
	Sig. (2-tailed)	<.001	.002	
	N	135	135	135

*. Correlation is significant at the 0.05 level (2-tailed).

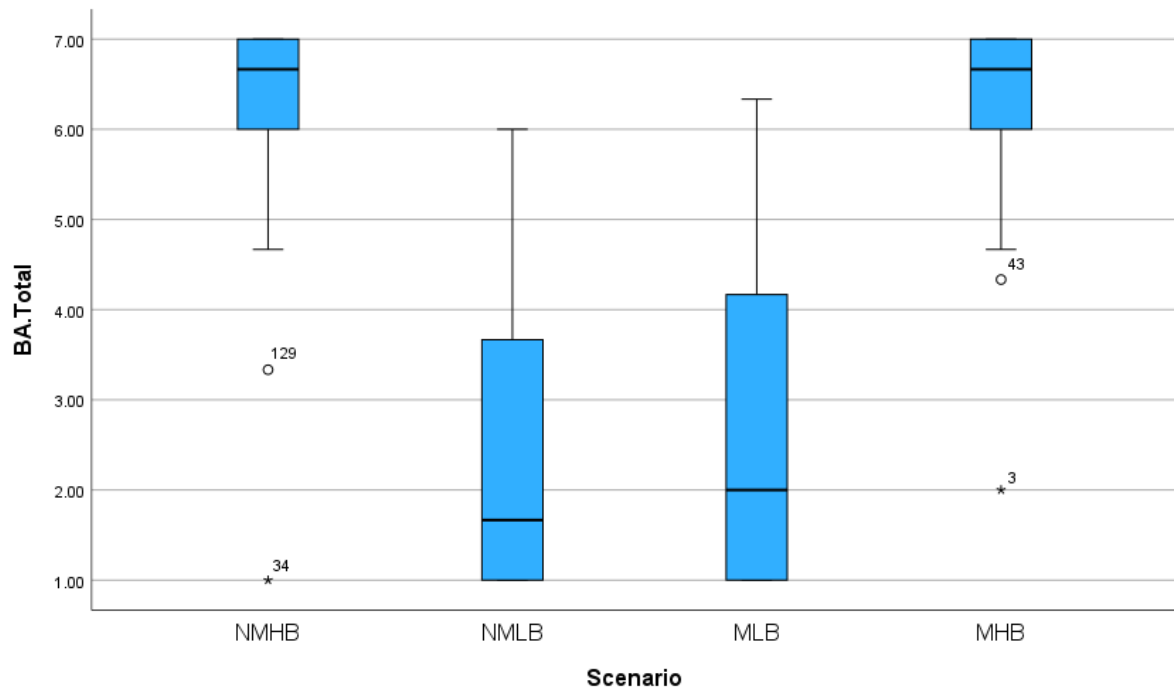
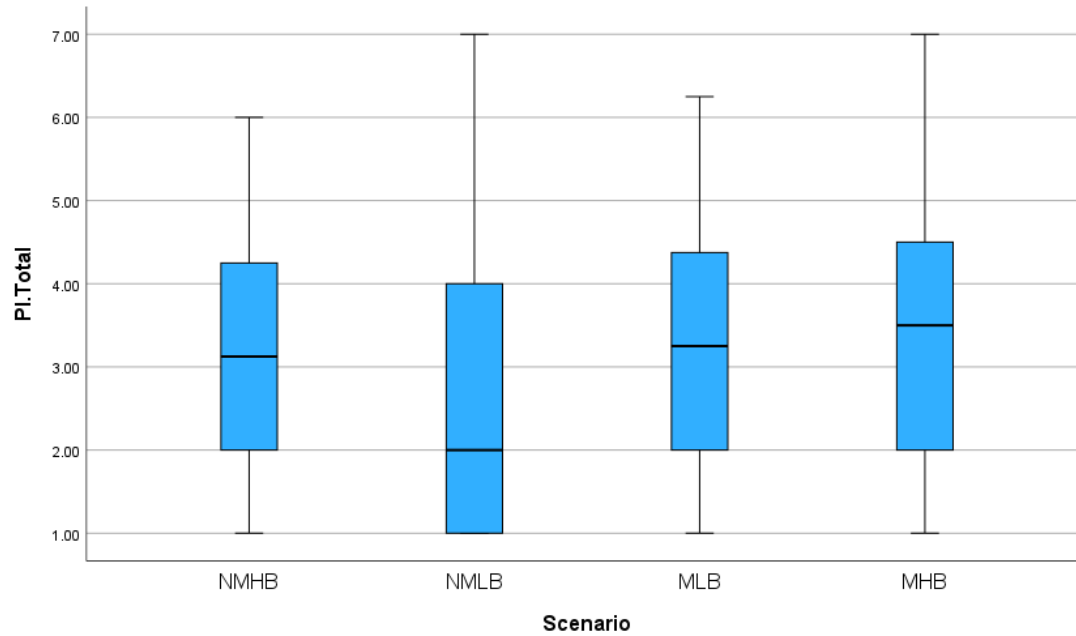
**. Correlation is significant at the 0.01 level (2-tailed).

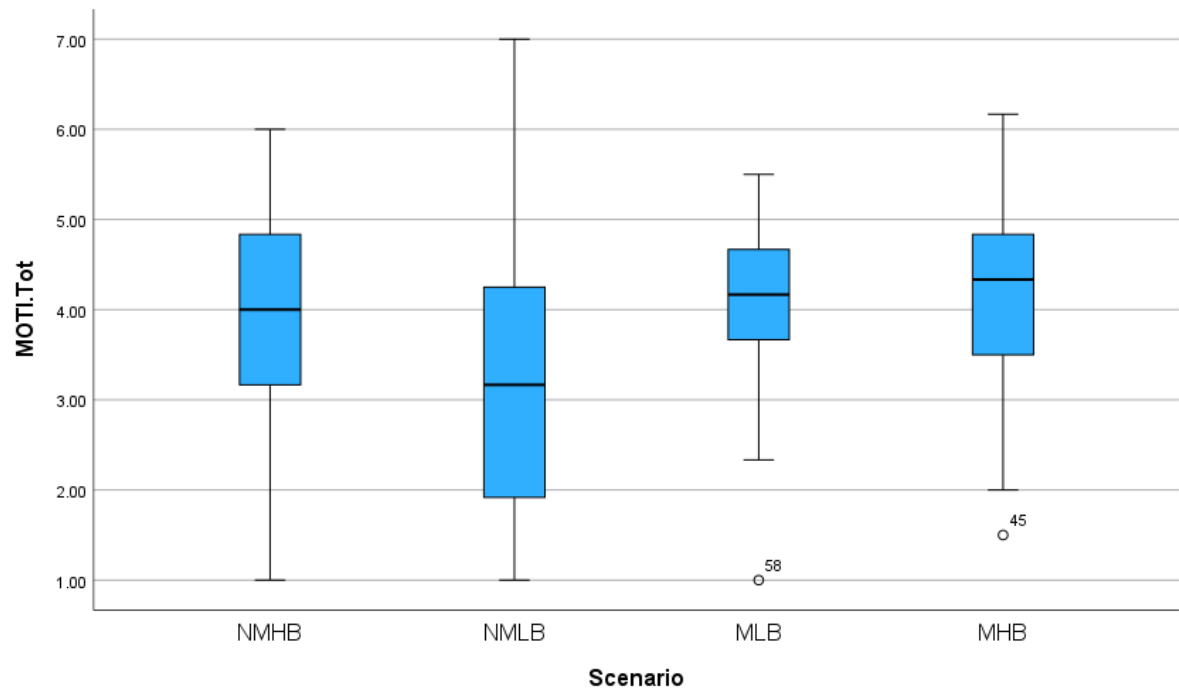
Descriptive Statistics Scales

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Std. Error	Kurtosis	Std. Error
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic		Statistic	Statistic
PI.Total	135	1.00	7.00	3.1704	1.49678	.323	.209	-.724	.414
BA.Total	135	1.00	7.00	4.4247	2.42992	-.362	.209	-1.624	.414
MOTI.Tot	135	1.00	7.00	3.9185	1.21674	-.507	.209	.274	.414
Valid N (listwise)	135								

Outliers

After analysing the boxplots, the extreme outliers * (2 cases) are removed to achieve more accurate results.





Appendix 5: Descriptive Statistics Demographics

Age

Hoe oud bent u?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19	1	.7	.7	.7
	20	1	.7	.7	1.5
	21	3	2.2	2.2	3.7
	22	3	2.2	2.2	5.9
	23	10	7.4	7.4	13.3
	24	15	11.1	11.1	24.4
	25	25	18.5	18.5	43.0
	26	4	3.0	3.0	45.9
	27	6	4.4	4.4	50.4
	28	9	6.7	6.7	57.0
	29	3	2.2	2.2	59.3
	30	1	.7	.7	60.0
	31	2	1.5	1.5	61.5
	32	3	2.2	2.2	63.7
	33	2	1.5	1.5	65.2
	34	1	.7	.7	65.9
	35	1	.7	.7	66.7
	36	3	2.2	2.2	68.9
	38	1	.7	.7	69.6
	41	1	.7	.7	70.4
	42	1	.7	.7	71.1
43	1	.7	.7	71.9	
44	2	1.5	1.5	73.3	
47	2	1.5	1.5	74.8	
50	1	.7	.7	75.6	
51	1	.7	.7	76.3	

52	2	1.5	1.5	77.8
54	1	.7	.7	78.5
55	2	1.5	1.5	80.0
56	1	.7	.7	80.7
57	2	1.5	1.5	82.2
58	4	3.0	3.0	85.2
59	1	.7	.7	85.9
60	1	.7	.7	86.7
61	3	2.2	2.2	88.9
62	3	2.2	2.2	91.1
63	4	3.0	3.0	94.1
64	3	2.2	2.2	96.3
65	1	.7	.7	97.0
68	1	.7	.7	97.8
69	2	1.5	1.5	99.3
76	1	.7	.7	100.0
Total	135	100.0	100.0	

Gender

Wat is uw geslacht?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Man	46	34.1	34.1	34.1
	Vrouw	89	65.9	65.9	100.0
	Total	135	100.0	100.0	

Educational level

Wat is het hoogste opleidingsniveau dat u heeft afgerond?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lager / voorbereidend beroepsonderwijs (lbo / vmbo)	3	2.2	2.2	2.2
	Hoger algemeen voortgezet onderwijs (havo)	5	3.7	3.7	5.9

Vorbereiden wetenschappelijk onderwijs (vwo)	4	3.0	3.0	8.9
Middelbaar beroepsonderwijs (mbo)	28	20.7	20.7	29.6
Hoger beroepsonderwijs (hbo)	60	44.4	44.4	74.1
Wetenschappelijk onderwijs (wo) - Bachelor	13	9.6	9.6	83.7
Wetenschappelijk onderwijs (wo) - Master	22	16.3	16.3	100.0
Total	135	100.0	100.0	

Work situation

Wat is uw huidige werksituatie? - Selected Choice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Voltijd werkzaam	69	51.1	51.1	51.1
	Deeltijd werkzaam	24	17.8	17.8	68.9
	Werkloos	2	1.5	1.5	70.4
	Student	31	23.0	23.0	93.3
	Gepensioneerd	6	4.4	4.4	97.8
	Anders, namelijk:	3	2.2	2.2	100.0
	Total	135	100.0	100.0	

Appendix 6: Reliability Testing & Factor Analysis

Reliability testing

Brand awareness

Monetary / High Brand Awareness (MHB)

Reliability Statistics

Cronbach's Alpha	N of Items
.861	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ik ben bekend met het merk.	12.79	3.630	.663	.908
Ik kan het merk herkennen tussen andere concurrerende merken.	12.87	4.063	.775	.772
Ik weet hoe het merk eruitziet.	12.66	4.447	.826	.752

Monetary/ Low Brand Awareness (MLB)

Reliability Statistics

Cronbach's Alpha	N of Items
.915	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ik ben bekend met het merk.	5.28	16.051	.750	.939
Ik kan het merk herkennen tussen andere concurrerende merken.	5.05	14.562	.866	.846
Ik weet hoe het merk eruitziet.	5.18	13.789	.873	.838

Non-monetary / High Brand Awareness (NMHB)**Reliability Statistics**

Cronbach's Alpha	N of Items
.937	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ik ben bekend met het merk.	12.20	8.097	.869	.917
Ik kan het merk herkennen tussen andere concurrerende merken.	12.50	6.121	.874	.931
Ik weet hoe het merk eruitziet.	12.37	7.757	.914	.883

Non-monetary / Low Brand Awareness (NMLB)**Reliability Statistics**

Cronbach's Alpha	N of Items
.895	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ik ben bekend met het merk.	5.22	16.333	.645	.967
Ik kan het merk herkennen tussen andere concurrerende merken.	4.56	12.795	.872	.778
Ik weet hoe het merk eruitziet.	4.89	12.872	.877	.773

Motivation**Non-Monetary/ High Brand Awareness**

Reliability Statistics

Cronbach's Alpha	N of Items
.850	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ik denk dat deelnemen aan deze ideeënwedstrijd interessant zou zijn.	19.33	34.230	.719	.811
Ik denk dat deelnemen aan deze ideeënwedstrijd leuk zou zijn.	18.83	34.006	.764	.803
Ik geloof dat deze ideeënwedstrijd mij zou helpen mijn persoonlijke doelen te bereiken.	21.40	37.145	.493	.851
Ik heb het gevoel dat ik het leuk zal vinden om deel te nemen aan deze ideeënwedstrijd.	19.93	33.513	.699	.813
Ik doe mee omdat ik wil dat anderen mij goedkeuring/erkenning geven.	21.37	32.654	.657	.822
Ik doe mee omdat ik ervoor beloond zal worden.	19.97	36.240	.507	.850

Non-Monetary/ Low Brand Awareness**Reliability Statistics**

Cronbach's Alpha	N of Items
.931	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ik denk dat deelnemen aan deze ideeënwedstrijd interessant zou zijn.	15.63	64.396	.849	.912
Ik denk dat deelnemen aan deze ideeënwedstrijd leuk zou zijn.	15.33	64.231	.857	.911
Ik geloof dat deze ideeënwedstrijd mij zou helpen mijn persoonlijke doelen te bereiken.	16.74	67.123	.770	.922
Ik heb het gevoel dat ik het leuk zal vinden om deel te nemen aan deze ideeënwedstrijd.	15.96	64.191	.873	.909
Ik doe mee omdat ik wil dat anderen mij goedkeuring/erkenning geven.	16.93	66.994	.797	.919
Ik doe mee omdat ik ervoor beloond zal worden.	16.26	69.199	.650	.938

Monetary/ Low Brand Awareness**Reliability Statistics**

Cronbach's Alpha	N of Items
.686	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ik denk dat deelnemen aan deze ideeënwedstrijd interessant zou zijn.	19.72	18.512	.786	.520
Ik denk dat deelnemen aan deze ideeënwedstrijd leuk zou zijn.	19.27	20.512	.672	.571
Ik geloof dat deze ideeënwedstrijd mij zou helpen mijn persoonlijke doelen te bereiken.	21.53	21.230	.466	.629
Ik heb het gevoel dat ik het leuk zal vinden om deel te nemen aan deze ideeënwedstrijd.	19.77	21.615	.553	.607
Ik doe mee omdat ik wil dat anderen mij goedkeuring/erkenning geven.	21.60	25.785	.071	.766
Ik doe mee omdat ik ervoor beloond zal worden.	19.85	23.721	.191	.730

Monetary/ High Brand Awareness**Reliability Statistics**

Cronbach's Alpha	N of Items
.838	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ik denk dat deelnemen aan deze ideeënwedstrijd interessant zou zijn.	20.47	28.743	.780	.780
Ik denk dat deelnemen aan deze ideeënwedstrijd leuk zou zijn.	19.97	30.026	.793	.784
Ik geloof dat deze ideeënwedstrijd mij zou helpen mijn persoonlijke doelen te bereiken.	21.87	28.171	.639	.807
Ik heb het gevoel dat ik het leuk zal vinden om deel te nemen aan deze ideeënwedstrijd.	20.68	28.330	.851	.768
Ik doe mee omdat ik wil dat anderen mij goedkeuring/erkenning geven.	22.00	29.405	.573	.822
Ik doe mee omdat ik ervoor beloond zal worden.	20.26	35.280	.216	.891

Participation intention

Non-Monetary/ High Brand Awareness

Reliability Statistics

Cronbach's Alpha	N of Items
.887	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ik verwacht deel te nemen aan de ideeënwedstrijd.	9.80	16.993	.878	.806
Ik ben van plan om deel te nemen aan de ideeënwedstrijd.	10.00	16.828	.842	.819
Ik wil meedoen aan de ideeënwedstrijd.	9.83	16.489	.851	.815
Ik ben van plan anderen aan te raden om deel te nemen aan de ideeënwedstrijd.	9.67	21.885	.471	.950

Non-Monetary/ Low Brand Awareness

Reliability Statistics

Cronbach's Alpha	N of Items
.942	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ik verwacht deel te nemen aan de ideeënwedstrijd.	8.04	26.806	.862	.924
Ik ben van plan om deel te nemen aan de ideeënwedstrijd.	8.07	25.379	.933	.901
Ik wil meedoen aan de ideeënwedstrijd.	8.11	25.179	.946	.896
Ik ben van plan anderen aan te raden om deel te nemen aan de ideeënwedstrijd.	7.78	27.795	.716	.970

Monetary/ Low Brand Awareness**Reliability Statistics**

Cronbach's Alpha	N of Items
.926	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ik verwacht deel te nemen aan de ideeënwedstrijd.	9.45	19.690	.847	.898
Ik ben van plan om deel te nemen aan de ideeënwedstrijd.	9.80	19.087	.908	.877
Ik wil meedoen aan de ideeënwedstrijd.	9.60	17.887	.899	.880
Ik ben van plan anderen aan te raden om deel te nemen aan de ideeënwedstrijd.	9.78	23.512	.678	.950

Monetary/ High Brand Awareness**Reliability Statistics**

Cronbach's Alpha	N of Items
.897	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ik verwacht deel te nemen aan de ideeënwedstrijd.	10.05	20.105	.687	.898
Ik ben van plan om deel te nemen aan de ideeënwedstrijd.	10.29	18.157	.849	.838
Ik wil meedoen aan de ideeënwedstrijd.	10.32	18.546	.853	.838
Ik ben van plan anderen aan te raden om deel te nemen aan de ideeënwedstrijd.	10.08	19.372	.707	.892

Factor Analysis

In terms of assumptions a need of 50 respondents is required, preferably a 100. In this study 135 responses were included, therefore this rule is met. Additionally, the Bartlett's test is significant and the KMO is above .50 with all variables, and therefore, a factor analysis can be conducted.

Brand awareness

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.747
Bartlett's Test of Sphericity	Approx. Chi-Square	498.942
	df	3
	Sig.	<.001

Communalities

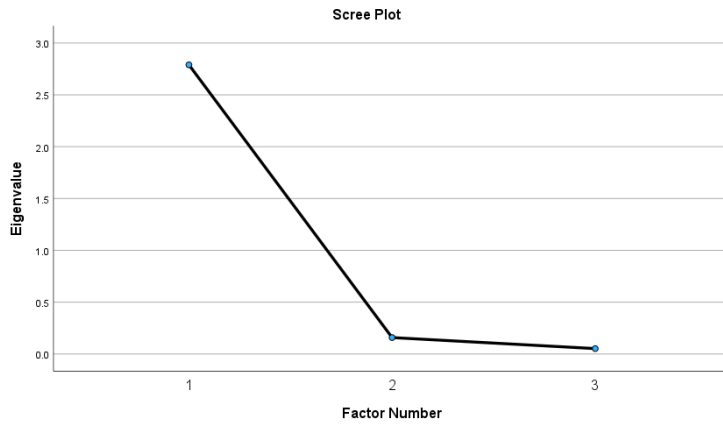
	Initial	Extraction
BA1	.781	.798
BA2	.898	.923
BA3	.913	.970

Extraction Method: Principal Axis Factoring.

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.790	92.993	92.993	2.690	89.683	89.683
2	.158	5.275	98.268			
3	.052	1.732	100.000			

Extraction Method: Principal Axis Factoring.



Factor Matrix

	Factor
	1
BA1	.893
BA2	.961
BA3	.985

Extraction Method:
Principal Axis
Factoring.

a. 1 factors extracted.
7 iterations required.

Motivation

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.812
Bartlett's Test of Sphericity	Approx. Chi-Square	463.090
	df	15
	Sig.	<.001

Communalities

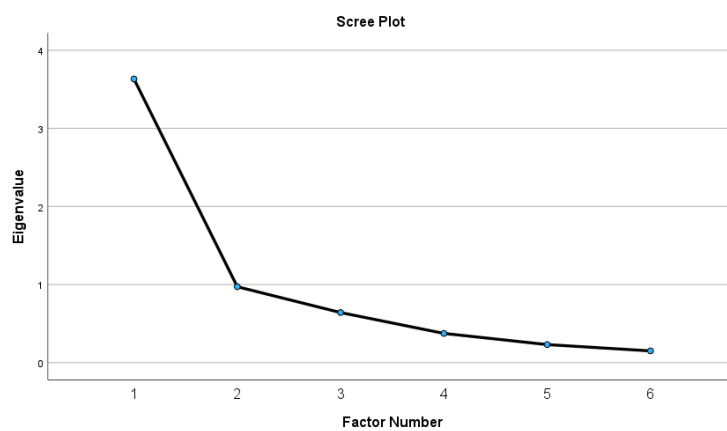
	Initial	Extraction
MOTI1	.726	.790
MOTI2	.773	.784
MOTI3	.505	.405
MOTI4	.704	.745
MOTI5	.397	.302
MOTI6	.299	.238

Extraction Method: Principal Axis Factoring.

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.632	60.541	60.541	3.263	54.389	54.389
2	.972	16.198	76.738			
3	.641	10.684	87.422			
4	.374	6.231	93.653			
5	.231	3.847	97.500			
6	.150	2.500	100.000			

Extraction Method: Principal Axis Factoring.



Factor Matrix

	Factor
	1
MOTI1	.889
MOTI2	.885
MOTI3	.636
MOTI4	.863
MOTI5	.549
MOTI6	.488

Extraction Method:
Principal Axis Factoring.

a. 1 factors extracted. 6
iterations required.

Participation intention

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.786
Bartlett's Test of Sphericity	Approx. Chi-Square	472.309
	df	6
	Sig.	<.001

Communalities

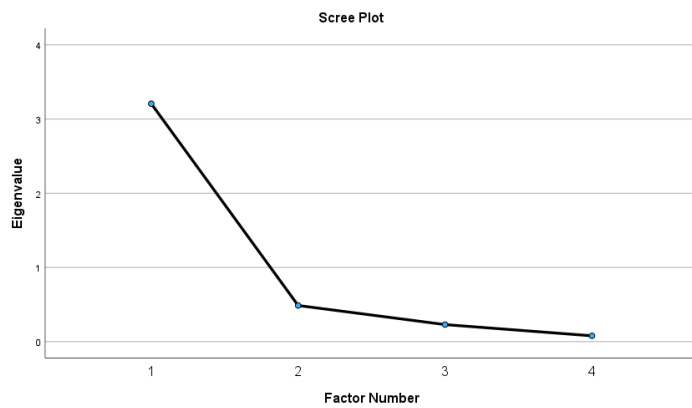
	Initial	Extraction
PI1	.707	.735
PI2	.869	.906
PI3	.851	.898
PI4	.450	.451

Extraction Method: Principal Axis
Factoring.

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.207	80.171	80.171	2.990	74.759	74.759
2	.486	12.158	92.329			
3	.229	5.725	98.054			
4	.078	1.946	100.000			

Extraction Method: Principal Axis Factoring.

**Factor Matrix**

	Factor
	1
PI1	.857
PI2	.952
PI3	.948
PI4	.672

Extraction Method:
Principal Axis Factoring.

a. 1 factors extracted. 5 iterations required.

Appendix 7: One-Way Anova

Assumptions

Homogeneity = ✓

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
PI.Total	Based on Mean	.669	3	131	.572
	Based on Median	.196	3	131	.899
	Based on Median and with adjusted df	.196	3	103.109	.899
	Based on trimmed mean	.535	3	131	.659

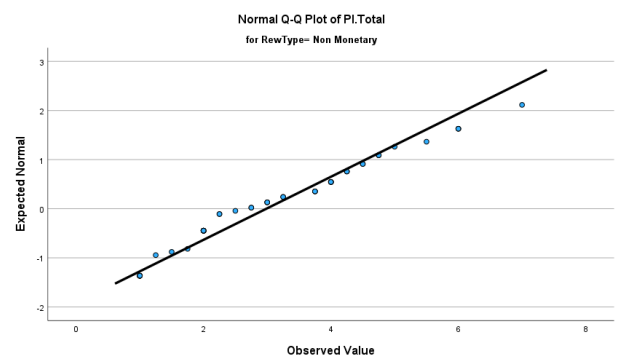
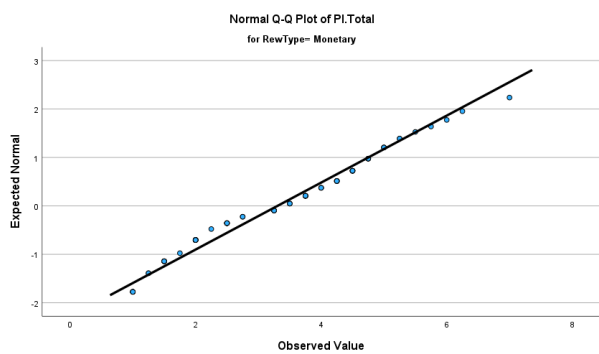
The Levene's p-value based on the mean is .572, which is above .05 and therefore it can be concluded that the variances are equal, and this assumption is met.

Normality = ✓

Tests of Normality

		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	RewType	Statistic	df	Sig.	Statistic	df	Sig.
PI.Total	Non-Monetary	.175	57	<.001	.929	57	.002
	Monetary	.124	78	.005	.964	78	.026

a. Lilliefors Significance Correction



Descriptives			
RewType		Statistic	Std. Error
PI.Total	Non Monetary	Mean	2.9868
		95% Confidence Interval for Mean	
		Lower Bound	2.5736
		Upper Bound	3.4000
	5% Trimmed Mean	2.9103	
	Median	2.7500	
	Variance	2.425	
	Std. Deviation	1.55726	
	Minimum	1.00	
	Maximum	7.00	
	Range	6.00	
	Interquartile Range	2.13	
	Skewness	.550	.316
	Kurtosis	-.511	.623
	Monetary	Monetary	Mean
95% Confidence Interval for Mean			
		Lower Bound	2.9784
		Upper Bound	3.6306
5% Trimmed Mean		3.2682	
Median		3.3750	
Variance		2.092	
Std. Deviation		1.44636	
Minimum		1.00	
Maximum		7.00	
Range		6.00	
Interquartile Range		2.50	
Skewness		.179	.272
Kurtosis		-.755	.538

The assumption of normality for participation intention is checked via the Shapiro-Wilk test and skewness and kurtosis. The Shapiro-Wilk test showed that there is a significant deviation from normality in both groups; non-monetary ($W = .929$, $p = .002$) and the monetary group ($W = .964$, $p = .026$). Even though, this suggests that normality is violated, this test is known to be sensitive in larger samples and suggesting small deviations as significant. When looking at the p-plot, it can be seen that the dots are very close to the diagonal line.

To further investigate the normality, the skewness and kurtosis were observed by using the z-scores. The non-monetary group had a skewness of .550 ($SE = .316$), resulting in a z-score of 1.74. The kurtosis was -.511 ($SE = .623$), resulting in a z-score of -.82. The monetary group it is skewness was -.179 ($SE = .272$), resulting in a z-score of -.66 and kurtosis was -.755 ($SE = .537$), which is a z-score of -1.41). All these scores are falling within the cutoff points of (+/-) 1.96, which therefore shows that there is no significant deviation from normality. Additionally, the large sample sizes per group (>30) ($n=57$ and $n=78$) and the robustness of ANOVA to moderate violations of normality whenever equal group sized are used, confirm that the data can be used in ANOVA and can be considered normal.

Independence = ✓

The assumption of independence was met, as each participant was randomly assigned to only one of the four conditions. Thus, each response collected was unique and not influenced by other scenarios, as they were only exposed to one experimental condition. This prevents any overlap or influence between conditions.

Quantitative Dependent Variable = ✓

The dependent variable, participation intention, was measured using a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). While individual Likert items are technically ordinal, the scale was treated as an interval-level measure due to its numerical structure and common practice in social science research.

Categorical Independent Variable = ✓

The independent variable reward type is categorical, with the two categories: non-monetary and monetary.

Results

Descriptives

PI.Total

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Non Monetary	57	2.9868	1.55726	.20626	2.5736	3.4000	1.00	7.00
Monetary	78	3.3045	1.44636	.16377	2.9784	3.6306	1.00	7.00
Total	135	3.1704	1.49678	.12882	2.9156	3.4252	1.00	7.00

$78/57 = 1.37 = <1.50 \rightarrow$ Indicating that the groups are equal

PI.Total

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.185	3	3.062	1.378	.252
Within Groups	291.021	131	2.222		
Total	300.206	134			

ETA

Tests of Between-Subjects Effects

Dependent Variable: PI.Total

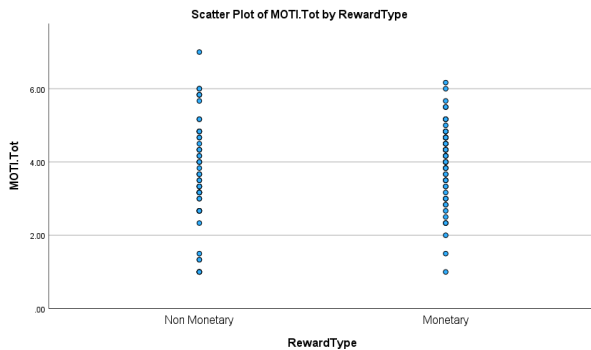
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	3.323 ^a	1	3.323	1.489	.225	.011
Intercept	1303.528	1	1303.528	583.964	<.001	.814
RewType	3.323	1	3.323	1.489	.225	.011
Error	296.884	133	2.232			
Total	1657.125	135				
Corrected Total	300.206	134				

a. R Squared = .011 (Adjusted R Squared = .004)

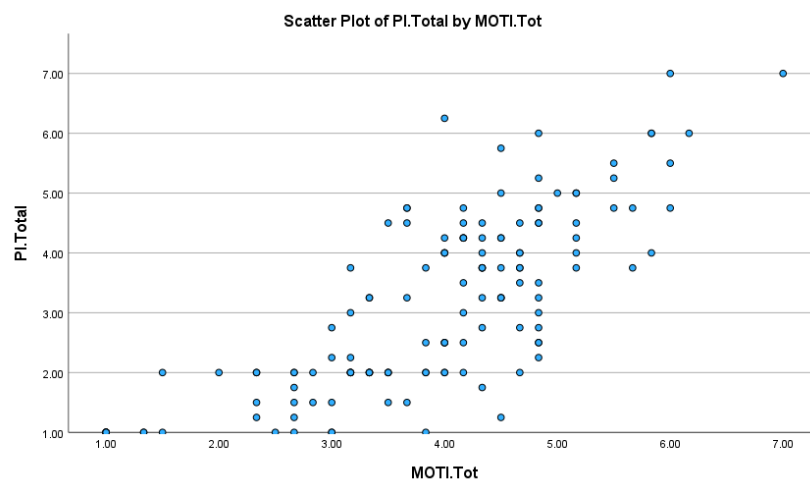
Appendix 8: Mediation Testing

Assumptions

Linearity = ✓



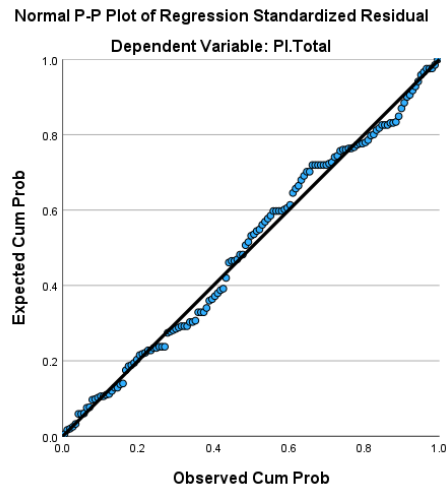
Reward Type is a binary variable, and therefore a linear line is not possible, however this assumption, $X \rightarrow m$ is still met. In these situations, a linear regression or an independent t-test can be used to examine the link; both are suitable and legitimate within the scope of the linear model.



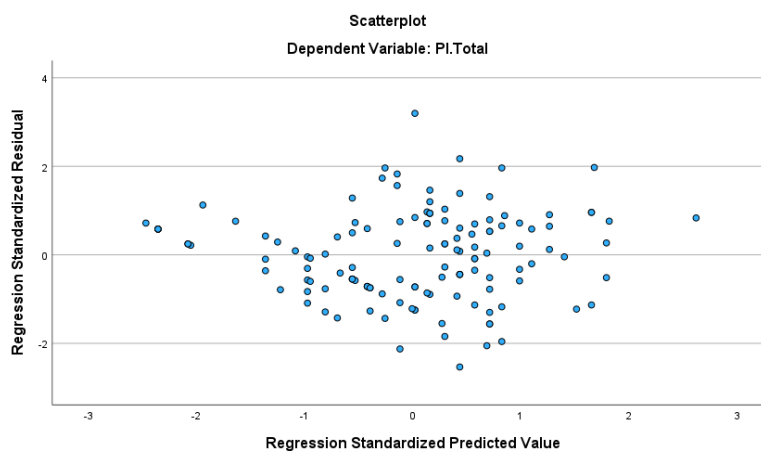
For path $M \rightarrow Y$ a linear pattern can be observed and therefore this assumption is met.

Normality = ✓

The normality assumption was already evaluated in the one-way ANOVA. To ensure validity within the mediation model, it was reassessed by inspecting the P-P plot of the regression model including motivation. The plot showed that the residuals are closely distributed around the diagonal line and therefore the normality assumptions is met.



Homoscedasticity = ✓



The dots are equally spread out around the 0 line and do not form a pattern; therefore the assumption of homoscedasticity is met.

Multicollinearity = ✓

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-.516	.282		-1.826	.070		
	RewType	-.130	.170	-.043	-.765	.446	.964	1.037
	MOTI.Tot	.960	.069	.780	13.879	<.001	.964	1.037

a. Dependent Variable: PI.Total

The VIF scores are far below < 5 , and therefore it can be concluded that there is no multicollinearity between reward type and motivation, and thus this assumption is met.

Independence = \checkmark

The assumption of independence was met, as each participant was randomly assigned to only one of the four conditions. Thus, each response collected was unique and not influenced by other scenarios, as they were only exposed to one experimental condition. This prevents any overlap or influence between conditions.

Results

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 beta *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model : 4

Y : PI.Total

X : RewType

M : MOTI.Tot

Sample

Size: 135

OUTCOME VARIABLE:

MOTI.Tot

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
.1900	.0361	1.4378	4.3787	1.0000	133.0000	.0383

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	3.6491	.1922	18.9886	.0000	3.2690	4.0292



RewType .4663 .2228 2.0925 .0383 .0255 .9070

Covariance matrix of regression parameter estimates:

	constant	RewType
constant	.0369	-.0369
RewType	-.0369	.0496

OUTCOME VARIABLE:

PI.Total

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
.7732	.5979	.9145	149.3525	2.0000	132.0000	.0000

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	-.5157	.2133	-2.4174	.0170	-.9376	-.0937
RewType	-.1299	.1707	-.7608	.4481	-.4676	.2078
MOTI.Tot	.9598	.0568	16.8847	.0000	.8474	1.0723

Covariance matrix of regression parameter estimates:

	constant	RewType	MOTI.Tot
constant	.0455	-.0065	-.0101
RewType	-.0065	.0291	-.0025
MOTI.Tot	-.0101	-.0025	.0032

***** DIRECT AND INDIRECT EFFECTS OF X ON Y *****

Direct effect of X on Y

Effect	se(HC3)	t	p	LLCI	ULCI
-.1299	.1707	-.7608	.4481	-.4676	.2078



Indirect effect(s) of X on Y:

Effect	BootSE	BootLLCI	BootULCI
MOTI.Tot	.4475	.2113	.8535

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

NOTE: A heteroscedasticity consistent standard error and covariance matrix estimator was used.

----- END MATRIX -----

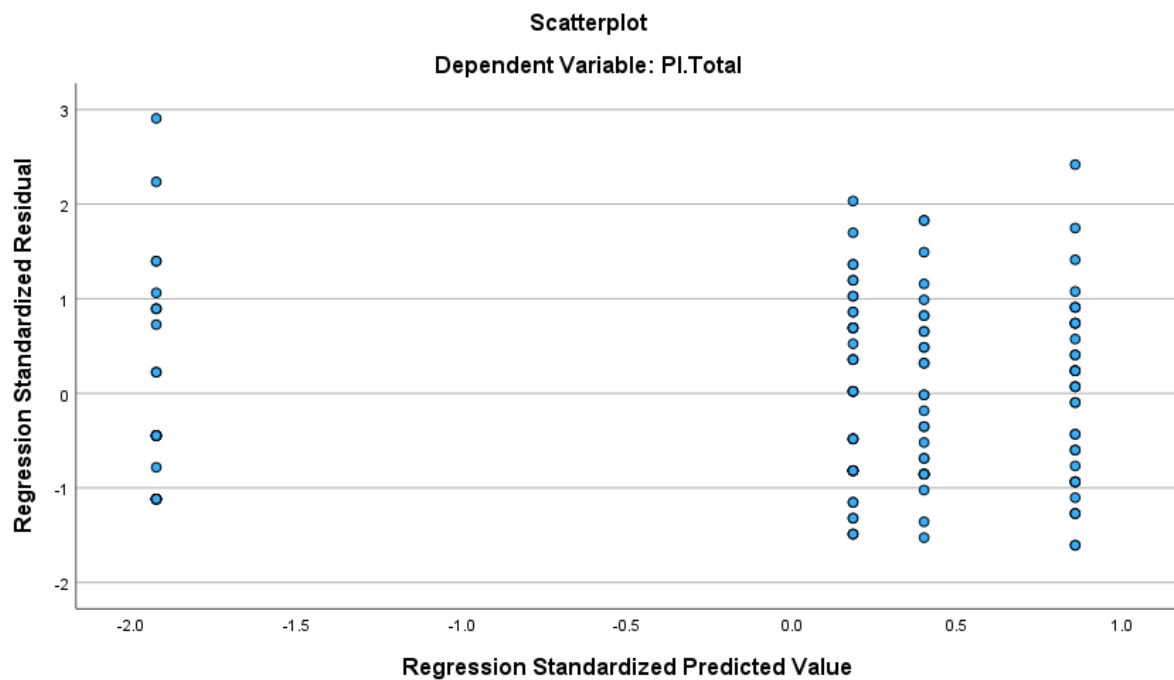


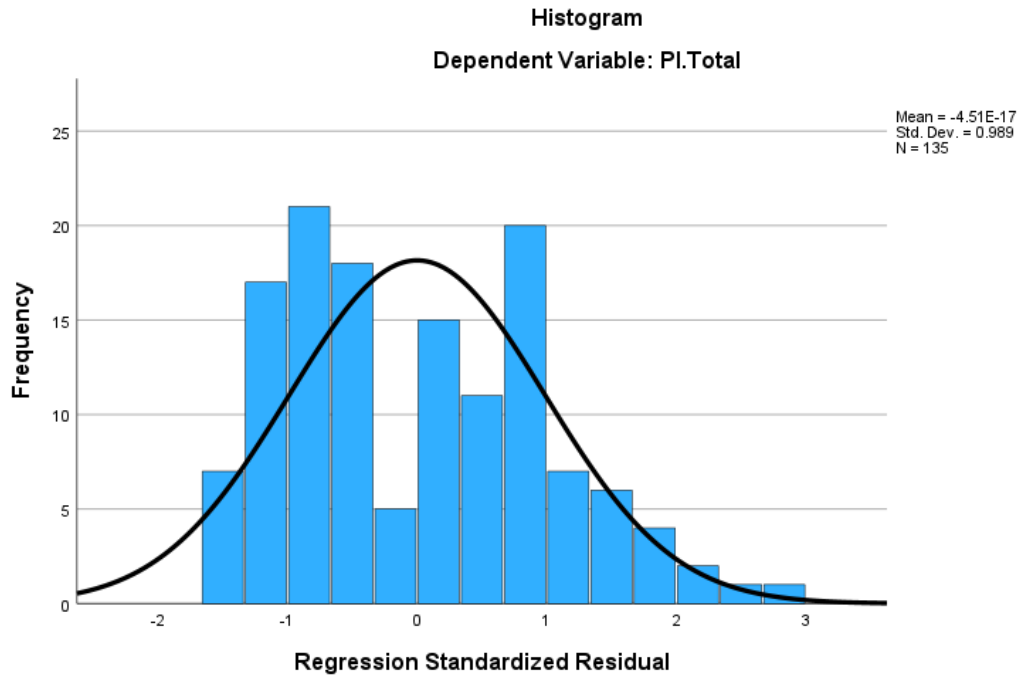
Appendix 9: Moderation Testing

Assumptions

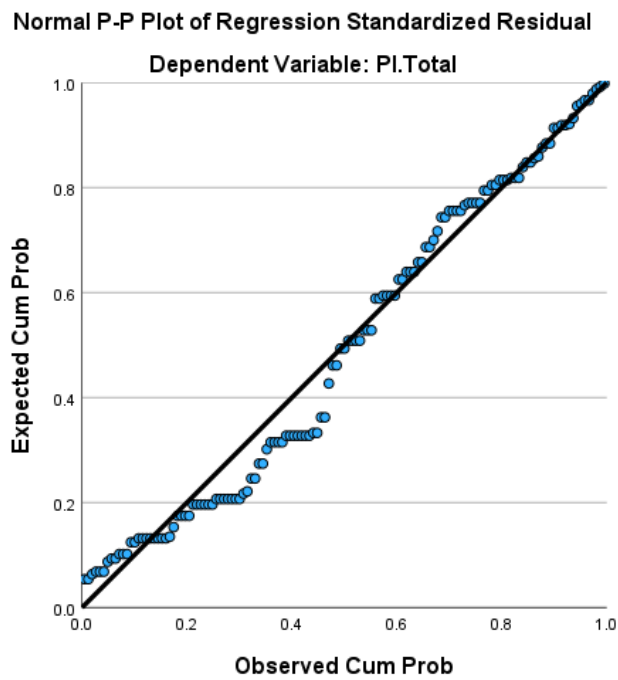
Linearity & Homoscedasticity

The plot shows a block-line pattern with distinct clusters, which is expected since the reward type and brand awareness are both dummy-coded. Therefore, a strict linearity is difficult to assess visually. However no extreme curvature or systematic patterns were observed in the residuals, thus, there is no suspicion of violating this assumption. The same upholds for the homoscedasticity, it shows a mild concern about heteroscedasticity, due to a small uneven spread. However, this is quite usual in a model with categorical predictors.





Normality of Residuals



Multicollinearity

All VIF values are below 5 and therefore the multicollinearity assumption is met.

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	2.667	.287		9.297	<.001		
	Rew_Bran	-.432	.520	-.130	-.832	.407	.301	3.322
	RewType	.552	.371	.183	1.487	.139	.489	2.043
	BranAwar	.608	.395	.204	1.539	.126	.421	2.375

a. Dependent Variable: PI.Total

Independence of Errors

The Durbin-Watson is between the acceptable range of 1.5 and 2.5 and therefore the assumption of independence of residuals is met.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.175 ^a	.031	.008	1.49048	1.841

a. Predictors: (Constant), BranAwar, RewType, Rew_Bran

b. Dependent Variable: PI.Total

Results

Model 1 = Effect of W (Brand Awareness) on path between X and Y

Without covariates

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 beta *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3



Model : 1

Y : PI.Total

X : RewType

W : BranAwar

Sample

Size: 135

OUTCOME VARIABLE:

PI.Total

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
.1749	.0306	2.2215	1.1190	3.0000	131.0000	.3438

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	2.6667	.3320	8.0327	.0000	2.0099	3.3234
RewType	.5521	.4074	1.3553	.1777	-.2538	1.3579
BranAwar	.6083	.4205	1.4466	.1504	-.2236	1.4402
Int_1	-.4323	.5365	-.8058	.4218	-1.4938	.6291

Product terms key:

Int_1 : RewType x BranAwar

Covariance matrix of regression parameter estimates:

	constant	RewType	BranAwar	Int_1
constant	.1102	-.1102	-.1102	.1102
RewType	-.1102	.1659	.1102	-.1659
BranAwar	-.1102	.1102	.1768	-.1768
Int_1	.1102	-.1659	-.1768	.2879



Test(s) of highest order unconditional interaction(s):

	R2-chng	F(HC3)	df1	df2	p
X*W	.0051	.6493	1.0000	131.0000	.4218

Focal predict: RewType (X)

Mod var: BranAwar (W)

Data for visualizing the conditional effect of the focal predictor:

Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/

RewType BranAwar PI.Total .

BEGIN DATA.

.0000 .0000 2.6667

1.0000 .0000 3.2188

.0000 1.0000 3.2750

1.0000 1.0000 3.3947

END DATA.

GRAPH/SCATTERPLOT=

RewType WITH PI.Total BY BranAwar .

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

NOTE: A heteroscedasticity consistent standard error and covariance matrix estimator was used.

----- END MATRIX -----



Model 7 = Effect of W on path between X and M**Without covariates:**

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 beta *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.comDocumentation available in Hayes (2022). www.guilford.com/p/hayes3

Model : 7

Y : PI.Total

X : RewType

M : MOTI.Tot

W : BranAwar

Sample

Size: 135

OUTCOME VARIABLE:

MOTI.Tot

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
.2885	.0832	1.3883	2.3620	3.0000	131.0000	.0743

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	3.2284	.3165	10.1992	.0000	2.6022	3.8546
RewType	.8299	.3483	2.3827	.0186	.1409	1.5190
BranAwar	.7994	.3828	2.0880	.0387	.0420	1.5567



Int_1 -.6823 .4462 -1.5290 .1287 -1.5650 .2005

Product terms key:

Int_1 : RewType x BranAwar

Covariance matrix of regression parameter estimates:

	constant	RewType	BranAwar	Int_1
constant	.1002	-.1002	-.1002	.1002
RewType	-.1002	.1213	.1002	-.1213
BranAwar	-.1002	.1002	.1466	-.1466
Int_1	.1002	-.1213	-.1466	.1991

Test(s) of highest order unconditional interaction(s):

	R2-chng	F(HC3)	df1	df2	p
X*W	.0193	2.3379	1.0000	131.0000	.1287

Focal predict: RewType (X)

Mod var: BranAwar (W)

Data for visualizing the conditional effect of the focal predictor:

Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/

 RewType BranAwar MOTI.Tot .

BEGIN DATA.

 .0000 .0000 3.2284

 1.0000 .0000 4.0583

 .0000 1.0000 4.0278

 1.0000 1.0000 4.1754

END DATA.

GRAPH/SCATTERPLOT=

 RewType WITH MOTI.Tot BY BranAwar .



OUTCOME VARIABLE:

PI.Total

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
.7732	.5979	.9145	149.3525	2.0000	132.0000	.0000

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	-.5157	.2133	-2.4174	.0170	-.9376	-.0937
RewType	-.1299	.1707	-.7608	.4481	-.4676	.2078
MOTI.Tot	.9598	.0568	16.8847	.0000	.8474	1.0723

Covariance matrix of regression parameter estimates:

	constant	RewType	MOTI.Tot
constant	.0455	-.0065	-.0101
RewType	-.0065	.0291	-.0025
MOTI.Tot	-.0101	-.0025	.0032

***** DIRECT AND INDIRECT EFFECTS OF X ON Y *****

Direct effect of X on Y

Effect	se(HC3)	t	p	LLCI	ULCI
-.1299	.1707	-.7608	.4481	-.4676	.2078

Conditional indirect effects of X on Y:

INDIRECT EFFECT:

RewType -> MOTI.Tot -> PI.Total

BranAwar	Effect	BootSE	BootLLCI	BootULCI
----------	--------	--------	----------	----------



.0000	.7966	.3158	.1481	1.4027
1.0000	.1417	.2685	-.3632	.6973

Index of moderated mediation (difference between conditional indirect effects):

Index	BootSE	BootLLCI	BootULCI
BranAwar	-.6549	.4134	-1.4318 .1853

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

NOTE: A heteroscedasticity consistent standard error and covariance matrix estimator was used.

----- END MATRIX -----



Appendix 10: Covariates

ANCOVA

Levene's Test of Equality of Error Variances^a

Dependent Variable: PI.Total

F	df1	df2	Sig.
1.738	1	133	.190

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Age + Gender + Educa + WorkSit + RewType

Tests of Between-Subjects Effects

Dependent Variable: PI.Total

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	15.332 ^a	5	3.066	1.389	.233	.051
Intercept	24.930	1	24.930	11.289	.001	.080
Age	1.554	1	1.554	.704	.403	.005
Gender	1.414	1	1.414	.640	.425	.005
Educa	.127	1	.127	.057	.811	.000
WorkSit	8.097	1	8.097	3.667	.058	.028
RewType	2.017	1	2.017	.913	.341	.007
Error	284.874	129	2.208			
Total	1657.125	135				
Corrected Total	300.206	134				

a. R Squared = .051 (Adjusted R Squared = .014)

Mediation

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 beta *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model : 4

Y : PI.Total

X : RewType

M : MOTI.Tot

Covariates:

Age Gender Educa WorkSit

Sample

Size: 134

OUTCOME VARIABLE:

MOTI.Tot

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
.3272	.1071	1.3839	3.3212	5.0000	128.0000	.0075

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	3.5324	.7632	4.6284	.0000	2.0223	5.0426
RewType	.3929	.2243	1.7515	.0822	-.0509	.8367
Age	-.0033	.0076	-.4311	.6671	-.0183	.0117



Gender	-.0710	.2252	-.3151	.7532	-.5165	.3746
Educa	-.0164	.0780	-.2099	.8340	-.1707	.1379
WorkSit	.2239	.0698	3.2078	.0017	.0858	.3621

Covariance matrix of regression parameter estimates:

	constant	RewType	Age	Gender	Educa	WorkSit
constant	.5825	-.0505	-.0031	-.0829	-.0466	-.0078
RewType	-.0505	.0503	-.0001	.0055	.0026	-.0028
Age	-.0031	-.0001	.0001	-.0001	.0002	.0001
Gender	-.0829	.0055	-.0001	.0507	.0010	-.0031
Educa	-.0466	.0026	.0002	.0010	.0061	.0001
WorkSit	-.0078	-.0028	.0001	-.0031	.0001	.0049

OUTCOME VARIABLE:

PI.Total

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
.7814	.6106	.9162	48.7882	6.0000	127.0000	.0000

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	-.7440	.7621	-.9763	.3308	-2.2521	.7641
RewType	-.1208	.1756	-.6879	.4928	-.4684	.2267
MOTI.Tot	.9737	.0610	15.9560	.0000	.8529	1.0944
Age	-.0032	.0059	-.5435	.5878	-.0150	.0085
Gender	.2725	.1920	1.4190	.1583	-.1075	.6525
Educa	-.0085	.0890	-.0950	.9244	-.1845	.1676
WorkSit	-.0506	.0620	-.8165	.4157	-.1733	.0720

Covariance matrix of regression parameter estimates:

	constant	RewType	MOTI.Tot	Age	Gender	Educa	WorkSit
--	----------	---------	----------	-----	--------	-------	---------



Moderation

Model 1

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 beta *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model : 1

Y : PI.Total

X : RewType

W : BranAwar

Covariates:

Age Gender Educa WorkSit

Sample

Size: 134

OUTCOME VARIABLE:

PI.Total

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
.2531	.0641	2.2197	1.1705	7.0000	126.0000	.3244

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	2.4238	1.0431	2.3237	.0217	.3596	4.4879
RewType	.4399	.4265	1.0314	.3044	-.4042	1.2840



BranAwar	.5243	.4406	1.1901	.2362	-.3476	1.3962
Int_1	-.3241	.5588	-.5801	.5629	-1.4299	.7816
Age	-.0058	.0098	-.5969	.5516	-.0252	.0135
Gender	.2274	.2781	.8178	.4150	-.3229	.7778
Educa	-.0311	.1285	-.2418	.8093	-.2853	.2231
WorkSit	.1559	.0940	1.6581	.0998	-.0302	.3419

Product terms key:

Int_1 : RewType x BranAwar

Covariance matrix of regression parameter estimates:

	constant	RewType	BranAwar	Int_1	Age	Gender	Educa	WorkSit
constant	1.0880	-.0597	-.0938	.1420	-.0040	-.1431	-.1059	-.0023
RewType	-.0597	.1819	.1214	-.1820	-.0010	-.0027	.0012	-.0137
BranAwar	-.0938	.1214	.1941	-.1942	-.0011	.0156	.0018	-.0112
Int_1	.1420	-.1820	-.1942	.3122	.0003	-.0014	-.0096	.0118
Age	-.0040	-.0010	-.0011	.0003	.0001	-.0001	.0003	.0001
Gender	-.1431	-.0027	.0156	-.0014	-.0001	.0773	.0016	.0016
Educa	-.1059	.0012	.0018	-.0096	.0003	.0016	.0165	-.0025
WorkSit	-.0023	-.0137	-.0112	.0118	.0001	.0016	-.0025	.0088

Test(s) of highest order unconditional interaction(s):

	R2-chng	F(HC3)	df1	df2	p
X*W	.0027	.3365	1.0000	126.0000	.5629

Focal predict: RewType (X)

Mod var: BranAwar (W)

Data for visualizing the conditional effect of the focal predictor:

Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/

RewType BranAwar PI.Total .



BEGIN DATA.

.0000	.0000	2.7522
1.0000	.0000	3.1921
.0000	1.0000	3.2765
1.0000	1.0000	3.3923

END DATA.

GRAPH/SCATTERPLOT=

RewType WITH PI.Total BY BranAwar .

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

NOTE: A heteroscedasticity consistent standard error and covariance matrix estimator was used.

----- END MATRIX -----

Model 7

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 beta *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model : 7

Y : PI.Total

X : RewType

M : MOTI.Tot

W : BranAwar



Covariates:

Age Gender Educa WorkSit

Sample

Size: 134

OUTCOME VARIABLE:

MOTI.Tot

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
.3777	.1426	1.3498	2.5968	7.0000	126.0000	.0155

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	3.1390	.8307	3.7789	.0002	1.4951	4.7828
RewType	.6767	.3706	1.8261	.0702	-.0566	1.4101
BranAwar	.6855	.3847	1.7818	.0772	-.0758	1.4468
Int_1	-.5232	.4685	-1.1167	.2662	-1.4503	.4039
Age	-.0023	.0078	-.2943	.7690	-.0178	.0132
Gender	-.0402	.2224	-.1808	.8568	-.4803	.3999
Educa	-.0194	.0841	-.2303	.8183	-.1858	.1471
WorkSit	.2072	.0734	2.8218	.0056	.0619	.3526

Product terms key:

Int_1 : RewType x BranAwar

Covariance matrix of regression parameter estimates:

	constant	RewType	BranAwar	Int_1	Age	Gender	Educa	WorkSit
constant	.6900	-.1549	-.1319	.1965	-.0031	-.0825	-.0547	-.0017
RewType	-.1549	.1373	.1081	-.1397	-.0002	.0106	.0093	-.0079
BranAwar	-.1319	.1081	.1480	-.1524	-.0004	.0136	.0058	-.0064

Int_1	.1965	-.1397	-.1524	.2195	.0000	-.0148	-.0135	.0073
Age	-.0031	-.0002	-.0004	.0000	.0001	-.0001	.0002	.0001
Gender	-.0825	.0106	.0136	-.0148	-.0001	.0495	.0005	-.0029
Educa	-.0547	.0093	.0058	-.0135	.0002	.0005	.0071	-.0005
WorkSit	-.0017	-.0079	-.0064	.0073	.0001	-.0029	-.0005	.0054

Test(s) of highest order unconditional interaction(s):

	R2-chng	F(HC3)	df1	df2	p
X*W	.0107	1.2471	1.0000	126.0000	.2662

Focal predict: RewType (X)

Mod var: BranAwar (W)

Data for visualizing the conditional effect of the focal predictor:

Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/

RewType BranAwar MOTI.Tot .

BEGIN DATA.

.0000 .0000 3.3296

1.0000 .0000 4.0063

.0000 1.0000 4.0150

1.0000 1.0000 4.1686

END DATA.

GRAPH/SCATTERPLOT=

RewType WITH MOTI.Tot BY BranAwar .

OUTCOME VARIABLE:

PI.Total

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
---	------	-----	--------	-----	-----	---



.7814 .6106 .9162 48.7882 6.0000 127.0000 .0000

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	-.7440	.7621	-9.763	.3308	-2.2521	.7641
RewType	-.1208	.1756	-.6879	.4928	-.4684	.2267
MOTI.Tot	.9737	.0610	15.9560	.0000	.8529	1.0944
Age	-.0032	.0059	-.5435	.5878	-.0150	.0085
Gender	.2725	.1920	1.4190	.1583	-.1075	.6525
Educa	-.0085	.0890	-.0950	.9244	-.1845	.1676
WorkSit	-.0506	.0620	-.8165	.4157	-.1733	.0720

Covariance matrix of regression parameter estimates:

	constant	RewType	MOTI.Tot	Age	Gender	Educa	WorkSit
constant	.5808	.0156	-.0110	-.0021	-.0783	-.0531	-.0003
RewType	.0156	.0308	-.0023	.0000	-.0066	-.0016	-.0015
MOTI.Tot	-.0110	-.0023	.0037	.0000	.0005	.0001	-.0012
Age	-.0021	.0000	.0000	.0000	.0001	.0001	.0000
Gender	-.0783	-.0066	.0005	.0001	.0369	.0016	.0016
Educa	-.0531	-.0016	.0001	.0001	.0016	.0079	-.0010
WorkSit	-.0003	-.0015	-.0012	.0000	.0016	-.0010	.0038

***** DIRECT AND INDIRECT EFFECTS OF X ON Y *****

Direct effect of X on Y

Effect	se(HC3)	t	p	LLCI	ULCI
-.1208	.1756	-.6879	.4928	-.4684	.2267

Conditional indirect effects of X on Y:

INDIRECT EFFECT:

RewType -> MOTI.Tot -> PI.Total



BranAwar	Effect	BootSE	BootLLCI	BootULCI
.0000	.6589	.3391	-.0161	1.3236
1.0000	.1495	.2697	-.3736	.6866

Index of moderated mediation (difference between conditional indirect effects):

	Index	BootSE	BootLLCI	BootULCI
BranAwar	-.5094	.4353	-1.3504	.3534

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

NOTE: A heteroscedasticity consistent standard error and covariance matrix estimator was used.

----- END MATRIX -----

