DESIGNED BY AI?

CONSUMER IMPATIENCE AS A RESPONSE TO AWARENESS OF AI CREATION IN PRODUCT DESIGN

Michael Arteaga

Kristie Hermosillo

Monica Moisa

FACULTY PROJECT LEAD:

Yi (Fionna), Xie, PhD

INTRODUCTION

WHY IT MATTERS: THE AI-IMPATIENCE EFFECT

As AI invades design, consumers may feel threatened—becoming more impatient as a result.

RESEARCH PROBLEM (MICHAEL)

- **Context**:
  - AI is reshaping product design and marketing, challenging traditional views of human creativity and innovation.
- **Knowledge Gap**:
  - Research is limited on consumer responses to AI-designed products, particularly regarding its impact on decision-related impatience.
- **Specific Focus**:
  - Explores how AI involvement in product design influences consumer impatience, and the mediating role of self-importance threat.
- **Relevance**:
  - Findings offer guidance for consumer-focused AI design strategies and address key concerns for industries integrating AI into creative processes.

ANALYTICS OBJECTIVES (MICHAEL)

- **Investigate the AI-impatience effect:**
  - AI creation renders consumers to choose smaller but sooner rewards
- **Examine the *mediating* role of self-importance threat:**
  - AI creation renders consumers to have higher willingness to pay for expedited shipping
- **Examine the *moderating* role of self-importance threat:**
  - Framing AI creation as facilitative to humans

HYPOTHESIS DEVELOPMENT (KRISTIE)

H1: AWARENESS OF AI CREATION IN PRODUCT DESIGN INCREASES CONSUMER IMPATIENCE

H2: SELF-IMPORTANCE THREAT MEDIATES THE AI-IMPATIENCE EFFECT

H3: THE ROLE OF AI (DOMINANT VS. FACILITATIVE) MODERATES THE AI-IMPATIENCE EFFECT

HYPOTHESIS DEVELOPMENT (CONT.) (KRISTIE)

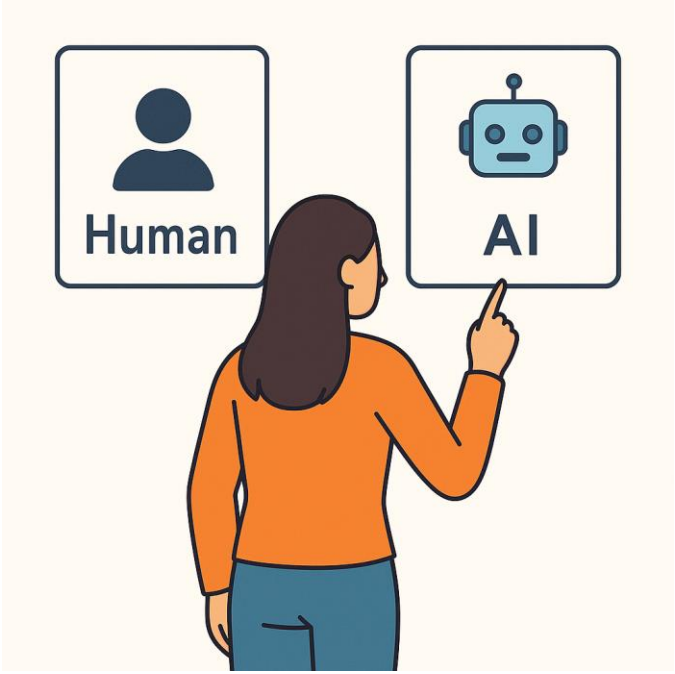
AI impacts go beyond how people rate the product itself

Study 1:

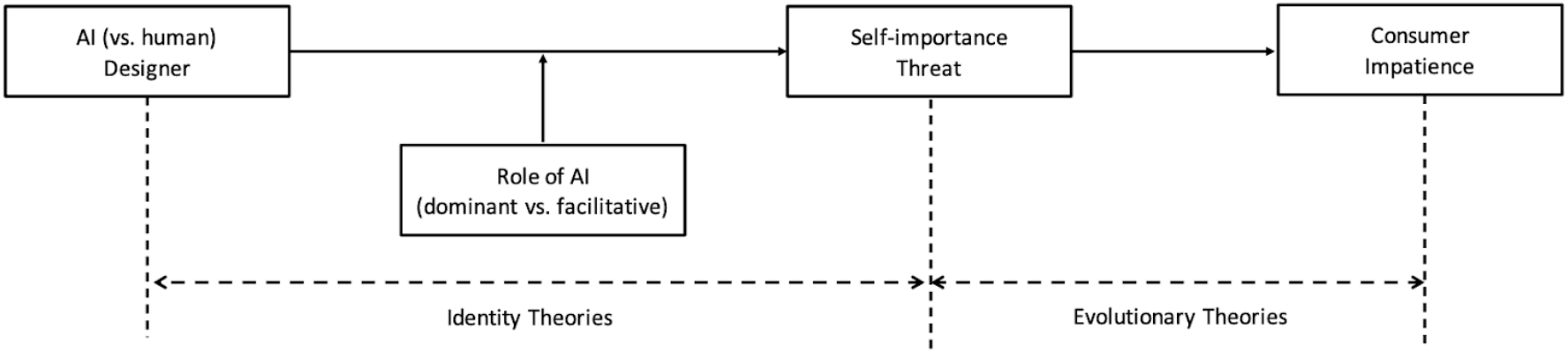
- AI design led to faster reward choices
- People paid more for faster shipping with AI

Study 2:

- Framing AI as a *helper* reduced impatience, especially for those feeling threatened



CONCEPTUAL FRAMEWORK (KRISTIE)



ANALYTICS OBJECTIVES (KRISTIE)

- **Analytics Objective #1 (Monica):** Investigate the AI-impatience effect; AI creation renders consumers to choose smaller but sooner rewards.

- **Analytics Objective #2 (Michael):** Examine the mediating role of self-importance threat; AI creation renders consumers to have higher willingness to pay for expedited shipping.

- **Analytics Objective #3(Kristie):** Examine the moderating role of self-importance threat; Framing AI Creation as Facilitative to Humans.

STUDY 1 – OBJECTIVE (MONICA & MICHAEL)

Does AI Design Increase Impatience?

STUDY 1 – ANALYTICS OBJECTIVE AO#1 (MONICA)

- Was to test the hypothesized AI-impatience effect in an incentive-compatible context
- We operationalized consumer impatience as participants' choice between a "smaller but sooner reward" vs. a "larger but later reward"

H1: AWARENESS OF AI CREATION IN PRODUCT DESIGN INCREASES CONSUMER IMPATIENCE

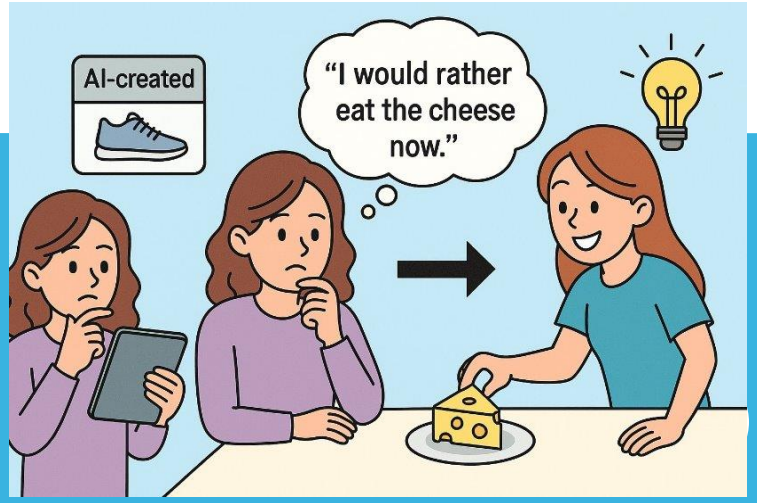
STUDY 1 - ANALYTICS OBJECTIVE AO#1 (MONICA)

- **Analytics Objective #1:** Investigate the AI-impatience effect; AI creation renders consumers to choose smaller but sooner rewards.
  - DESCRIPTIVE ANALYTICS: To test whether AI-designed products influence consumer impatience (H1), we ran pre-analysis ANOVA in SPSS and summary statistics in R.

STUDY 1 – AO#1 DESCRIPTIVE ANALYTICS (MONICA)

METHODS

- The survey questions were meant to evaluate the participant's decision making for reward choice preference using Likert scale ratings (strongly disagree = 1 to strongly agree = 7).
  - *"Imagine that you are given a gift of imported Swiss cheese. Although you want to eat the cheese now, you know that waiting will improve its taste. How will you choose? Please indicate your disagreement or agreement to the following statements:*
    - *I would rather eat the cheese right away.*
    - *I would rather eat the cheese now.*
    - *I would rather eat the cheese in the distant future.*
    - *I would rather wait and eat it later.*



STUDY 1 – AO#1 DESCRIPTIVE ANALYTICS (MONICA)

RESULTS

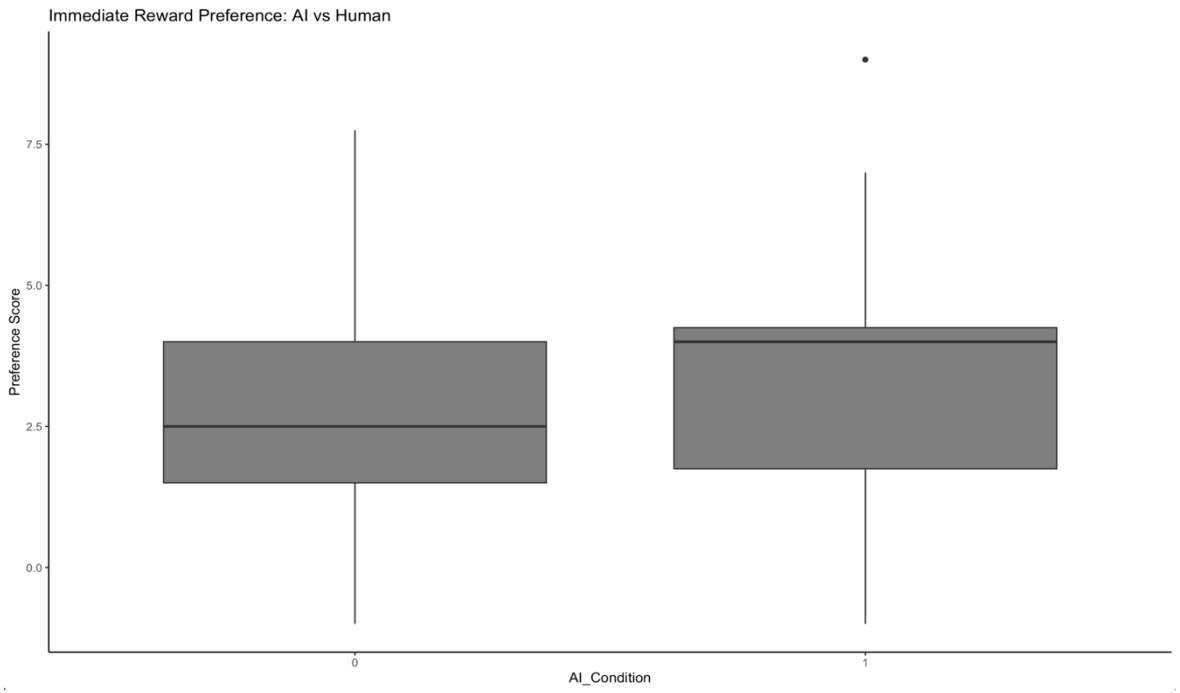
Descriptives

Reward_Preference

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
.00		77	2.9643	2.06900	.23578	2.4947	3.4339	-1.00	7.75	
1.00		77	3.5065	2.04994	.23361	3.0412	3.9718	-1.00	9.00	
Total		154	3.2354	2.07069	.16686	2.9057	3.5650	-1.00	9.00	
Model	Fixed Effects			2.05950	.16596	2.9075	3.5633			
	Random Effects				.27110	-.2093	6.6801			.09191

- Pre-analysis SPSS ANOVA
  - *The mean for AI condition is 3.506, larger that Human Condition 2.964. SD and Std Error show that the mean is statistically solid but there is some spread.*

STUDY 1 – AO#1 DESCRIPTIVE ANALYTICS (MONICA)



HUMAN AI

Participants under the **AI condition (1)** seem to lean more toward **immediate gratification**, possibly suggesting that AI condition exposure influence more impulsive or short-term decisions.

STUDY 1 – AO#1 DESCRIPTIVE ANALYTICS (MONICA)

ANOVA

Reward_Preference

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11.319	1	11.319	2.669	.104
Within Groups	644.711	152	4.242		
Total	656.030	153			

- Pre-analysis SPSS ANOVA
  - *P-value is small but not statistically significant (target p-value <0.05, however it is close to 0.1 so it might indicate a trend or marginal effect worth exploring further.*

STUDY 1 – AO#1 DESCRIPTIVE ANALYTICS (MONICA)

Consumer_Impatience – binary indicator

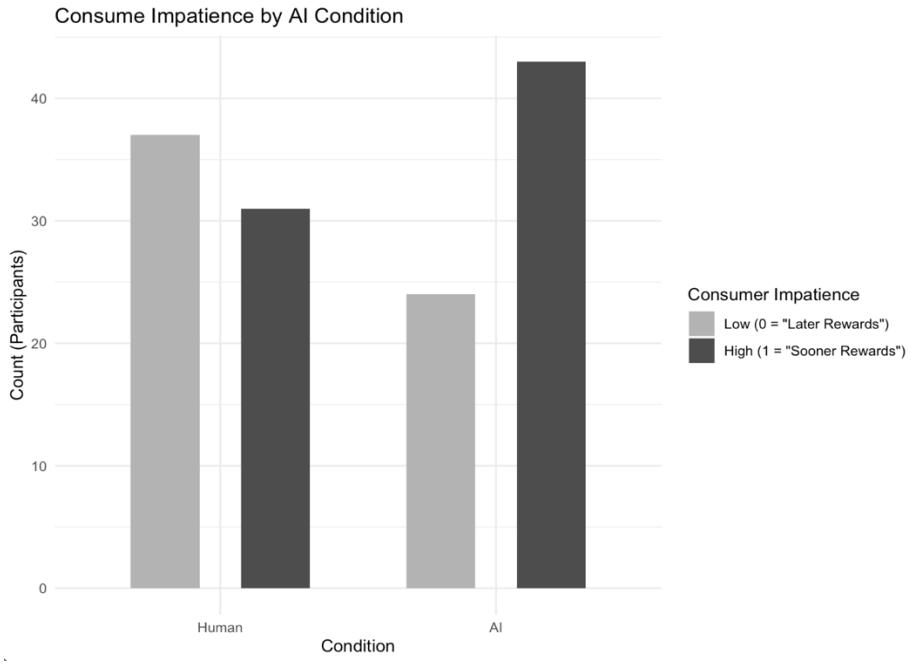
- 1 = Preference_Score > = 3.5 and <7

"Sooner Rewards"

- 0 = Preference_Score >1 and < 3.5

"Later Rewards"

AI_Condition (1 = AI created, 0 = Human created)



STUDY 1 – AO#1 SUMMARY STATISTICS (MONICA)

Characteristic	Overall N = 153[1]	0 N = 77[1]	1 N = 76[1]
Age	22.3 (5.4)	21.2 (3.6)	23.4 (6.6)
Gender			
Female	77 (50%)	33 (43%)	44 (58%)
Male	76 (50%)	44 (57%)	32 (42%)
Preference_Score	3.23 (2.08)	2.96 (2.07)	3.50 (2.06)
Consumer_Impatience			
0	61 (45%)	37 (54%)	24 (36%)
1	74 (55%)	31 (46%)	43 (64%)

[1] Mean (SD); n (%)

FIGURE 1.3: Descriptive Analytics Table

INSIGHTS:

- Our student population sample consists of 50% males and 50% females.
- More females (58%) were in AI_Created (1) condition group, while more males were exposed to the Human_Created (0) condition.
- Preference_Score for Sooner Rewards is higher than the mean for 1 = AI_Created)
- Consumer_Impatience (1 = Sooner Reward) is higher for 1= AI_Created) 64% vs. 46%.
- Manipulation or grouping had a real effect on people's immediate desire to eat the cheese.

STUDY 1 – AO#1 PREDICTIVE ANALYTICS (MONICA)

To examine the relationship between AI-created product awareness and consumer impatience we employed Logistic regression on participants' choice of reward (binary 1= Sooner Reward, 0 = Later Reward.)

term	estimate	std.error	statistic	p.value
(Intercept)	-0.1769307	0.2434853	-0.7266587	0.46743507
AI_Condition1	0.7600770	0.3524309	2.1566693	0.03103144

Logistic Regression Model Summary

STUDY 1 – AO#1 PREDICTIVE ANALYTICS (MONICA)

The summary of this model shows that:

- the main effect of AI_Condition remains significant as p-value is 0.03.
- the AI condition effect ($\beta_1 = 0.760$), means that moving from Human (0) to AI (1) increases the log-odds of impatience by 0.760.
- In term of odds ratio (OR), $OR=\exp(0.760)\approx 2.14$ is 2.14. Meaning that participants in the AI condition have 2.14 times the odds of being impatient, relative to those in the human condition.

STUDY 1 – AO#1 (MONICA)

CONCLUSION

- Awareness of AI-creation alone made consumers more impatient
- Under the AI condition, people were more likely to choose immediate rewards.
- The statistical results suggests the AI Impatience effect is small but meaningful

Recommendation for next steps:

- Investigate self-importance as a potential mediator (AO#2).
- Test whether AI framing influences this effect further (AO#3).

STUDY 1 – ANALYTICS OBJECTIVE AO#2 (MICHAEL)

- Study 1 also aimed to provide additional evidence for the robustness of the AI-impatience effect with a different product and a different operationalization of consumer impatience. In addition, it landed additional support to the underlying mechanism of self-importance threat.

H2: SELF-IMPORTANCE THREAT MEDIATES THE AI-IMPATIENCE EFFECT

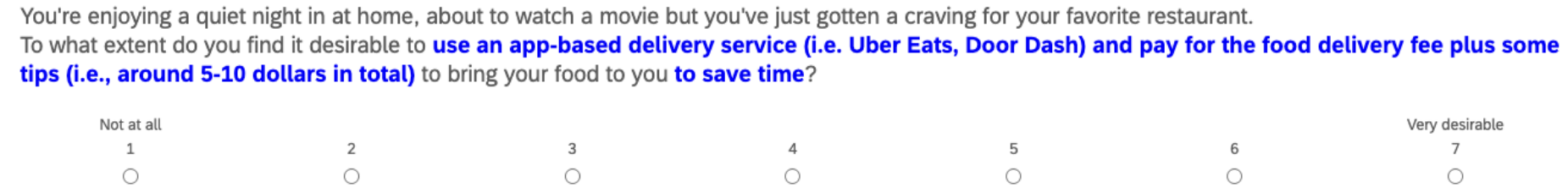
STUDY 1 - ANALYTICS OBJECTIVE AO#2 (MICHAEL)

- **Analytics Objective #2 (Michael):** Examine the AI-impatience effect; AI creation renders consumers to have higher willingness to pay for expedited shipping.
  - DESCRIPTIVE ANALYTICS: Measure consumer impatience by their willingness to pay for expedited delivery and show that the effect is mitigated by highlighting AI's facilitator role to humans (H2).

STUDY 1 - AO#2 DESCRIPTIVE ANALYTICS (MICHAEL)

METHODS

- The survey questions were meant to evaluate the participant's willingness to pay for expedited services using Likert scale ratings (i.e. strongly disagree = 1 and strongly agree = 7).


You're enjoying a quiet night in at home, about to watch a movie but you've just gotten a craving for your favorite restaurant.
To what extent do you find it desirable to **use an app-based delivery service (i.e. Uber Eats, Door Dash) and pay for the food delivery fee plus some tips (i.e., around 5-10 dollars in total)** to bring your food to you **to save time**?

Not at all						Very desirable
1	2	3	4	5	6	7
○	○	○	○	○	○	○

STUDY 1 - AO#2 DESCRIPTIVE ANALYTICS (MICHAEL)

Measuring Self-importance threat

Among the filtering questions:

"To what extent do you think that your self-importance is threatened when reading about the product development model?" (1= not at all, 7= very much so; adapted from Jin, He, and Zhang 2014; Rucker, Dubois, and Galinsky 2011).

"My identity as a human being is threatened by the creation model of the video"

"My importance as a human being is challenged by the creation model of the video" (1= strongly disagree, 7= strongly agree).

- **Self-importance threat index (reliability statistics, Cronbach's α = .909)**

STUDY 1 - AO#2 DESCRIPTIVE ANALYTICS (MICHAEL)

RESULTS

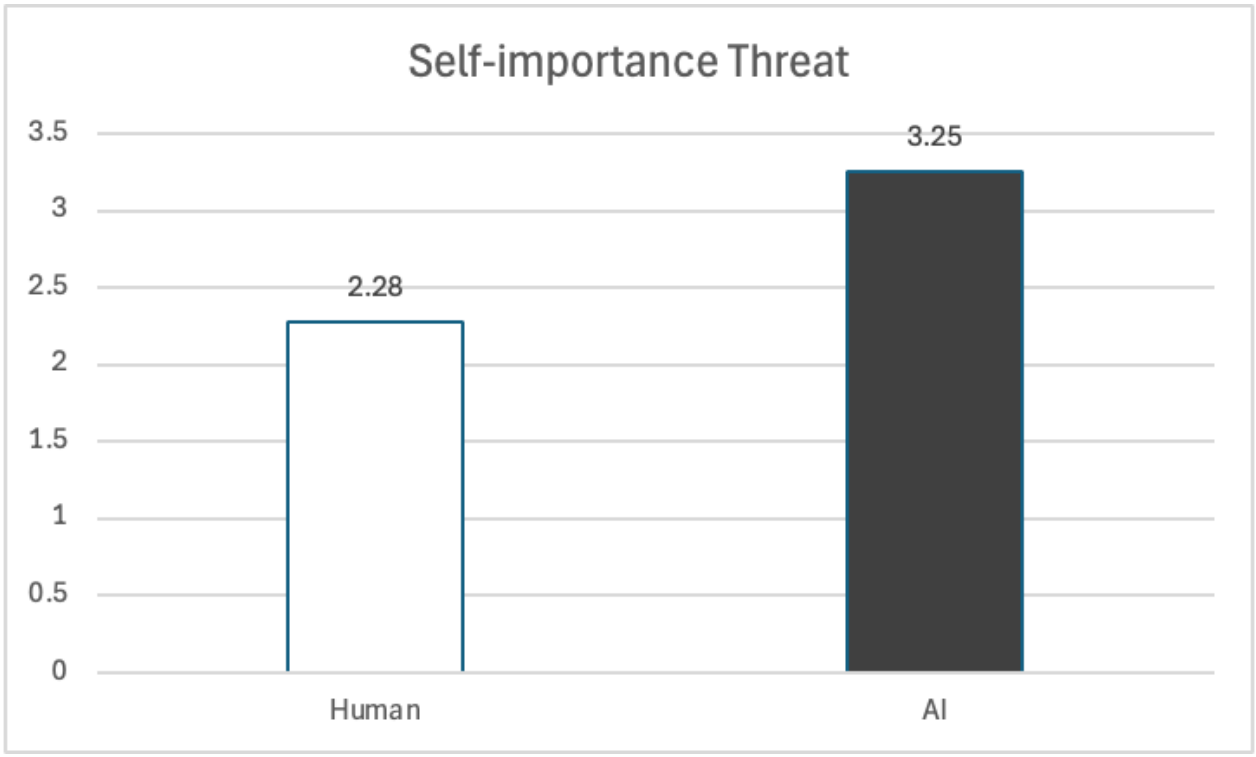
Descriptives

You're enjoying a quiet night in at home, about to watch a movie but you've just gotten a craving for your favorite restaurant. ...

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
.00		78	3.15	1.744	.197	2.76	3.55	1	6	
1.00		77	3.92	2.211	.252	3.42	4.42	1	7	
Total		155	3.54	2.020	.162	3.21	3.86	1	7	
Model	Fixed Effects			1.990	.160	3.22	3.85			
	Random Effects				.384	-1.35	8.42			.244

- Descriptive Analytics completed in SPSS

AO#2 – DESCRIPTIVE ANALYTICS (MICHAEL)



AO#2 – DESCRIPTIVE ANALYTICS (MICHAEL)

ANOVA

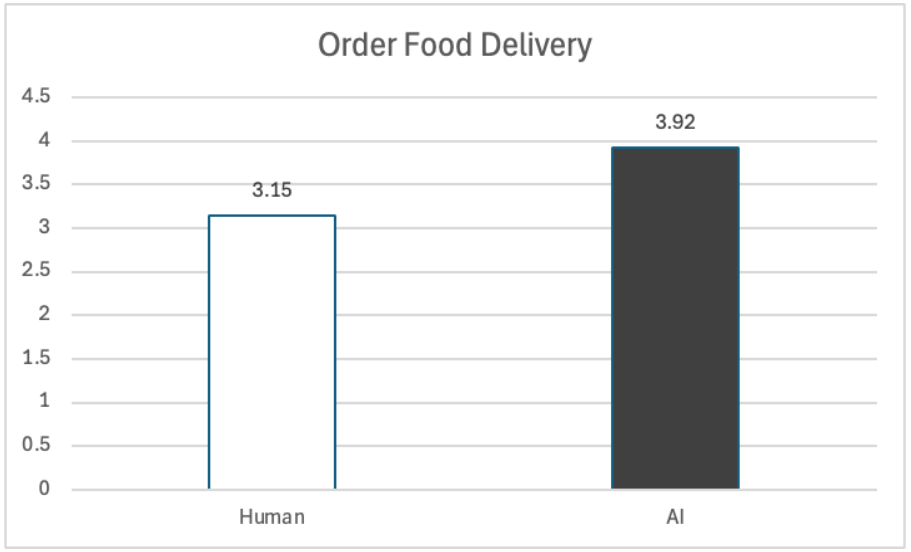
You're enjoying a quiet night in at home, about to watch a movie but you've just gotten a craving for your favorite restaurant. ...

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	22.869	1	22.869	5.777	.017
Within Groups	605.686	153	3.959		
Total	628.555	154			

- Our descriptive analytics for AO #2 shows that our question pertaining to respondents' willingness to pay for expedited or convenient services is statistically significant in our data.

AO#2 – PREDICTIVE ANALYTICS (MICHAEL)

The ANOVA analysis revealed that participants in the AI-Video condition (Mean_AI = 3.15, SD = 1.744) were more likely to order the delivery service than those in the human-designer condition (Mean_Human = 3.15, SD = 1.744; $F(1, 151) = 5.777$, $p = .017$).



AO#2 – PREDICTIVE ANALYTICS (MICHAEL)

Analytics Objective #2:

- **Method**: Mediation Analysis using Hayes' PROCESS Macro in SPSS (Model 4).
- **Justification**: PROCESS Mediation Analysis allows us to determine whether the effect of AI on impatience is indirectly influenced by self-importance threat.
- Apply a **one-way ANOVA** to compare consumer evaluations of time-saving shipping methods, using a **1-to-7 rating scale**.

AO#2 - DISCUSSION (MICHAEL)

- By showing that reviewing an AI- (vs. human-) designed video increased participants' actual willingness to choose a time-saving product or service, Study 2 provides the necessary evidence to support our hypothesized AI-impatience effect.

STUDY 1 - AO#2 (MICHAEL)

CONCLUSION

- In this study, once consumers were aware of the expedited service or product being offered in order to get a reward sooner, they became more aware and opted to save money in lieu of time. They were not eager to opt for the quicker gratification. Our results suggest that these questions present statistically significant data.

- Recommendation: Explore moderation through framing AI as a facilitator (AO #3).

STUDY 2 – OBJECTIVE (KRISTIE)

Does framing AI as a helper attenuate the effect?

ANALYTICS METHODS TO EMPLOY BY ANALYTICS OBJECTIVES (KRISTIE)

Analytics Objective #3: To test whether **framing AI as facilitator vs. a dominant creator moderates the AI-Impatience effect (H3)**

- Examine whether the effect attenuates when AI creation is not deemed threatening. To test these goals, **we framed AI creation as facilitative to human designers rather than as a replacement of designers (H3).**
- This objective will seek to examine the moderating role of self-importance threat and assess the perceived influence of AI in the product design, depending on AI framing.

STUDY 2 - ANALYTICS OBJECTIVE AO#3 (KRISTIE)

H3: THE ROLE OF AI (DOMINANT VS. FACILITATIVE) MODERATES THE AI-IMPATIENCE EFFECT

- **Analytics Objective #3 (Kristie):** To test whether framing AI as facilitator vs. a dominant creator moderates the AI-Impatience effect (H3)

STUDY 2: POSITIONING AI AS A HELPER TO HUMAN

METHODS

311 prolific works
Mage = 39.88, 51.4% female
One-way (AI vs. control vs. AI-as-helper) ANOVA design

Control

The video you just watched was uploaded to social media by a content creator and got 260k views. This video was created by **a professional videographer**. **The videographer** generates videos by compiling **visual and auditory recordings**, editing them to enhance their quality, and ultimately producing a video that aligns with the given instructions or criteria provided by clients.

AI

The video you just watched was uploaded to social media by a content creator and got 260k views. This video was created by **AI (artificial intelligence). AI** generates videos following prompts, utilizing **algorithms** trained on **large datasets of visual and auditory information.** It interprets the prompts to generate or manipulate visual and auditory elements, thereby producing a video that aligns with the given instructions or criteria specified in the prompts.

STUDY 4: POSITIONING AI AS A HELPER TO HUMAN (WTP)

AI-as-helper

The video you just watched was uploaded to social media by a content creator and got 260k views. This video was created by **a professional videographer with the help of artificial intelligence. AI helped the videographer generate** videos by utilizing **algorithms** trained on **large datasets of visual and auditory information.** It interprets the prompts to generate or manipulate visual and auditory elements, editing them to enhance their quality, and ultimately produces a video that aligns with the given instructions or criteria provided by clients.

Measuring Consumer Impatience (Shaddy and Lee 2020)

Imagine that you just did some shopping at your local grocery store. The store is very crowded, so the checkout lines are long (**the estimated wait time is 20 minutes**).

You notice that there are very few people in the self-checkout lanes so the wait will be relatively short. However, you have **15 items** in your shopping cart, and the signs above the self-checkout lanes indicate that they are to be used by customers with **10 or fewer items**.

What is the probability that you would use the self-checkout lanes to avoid the 20-minute wait?

Not at all likely						Very likely
1	2	3	4	5	6	7
○	○	○	○	○	○	○

ANALYTICS METHODS TO EMPLOY BY ANALYTICS OBJECTIVES (KRISTIE)

Analytics Objective #3:

- **Method**: One-way ANOVA and Moderation Analysis using Hayes' PROCESS Macro in SPSS (Model 1).

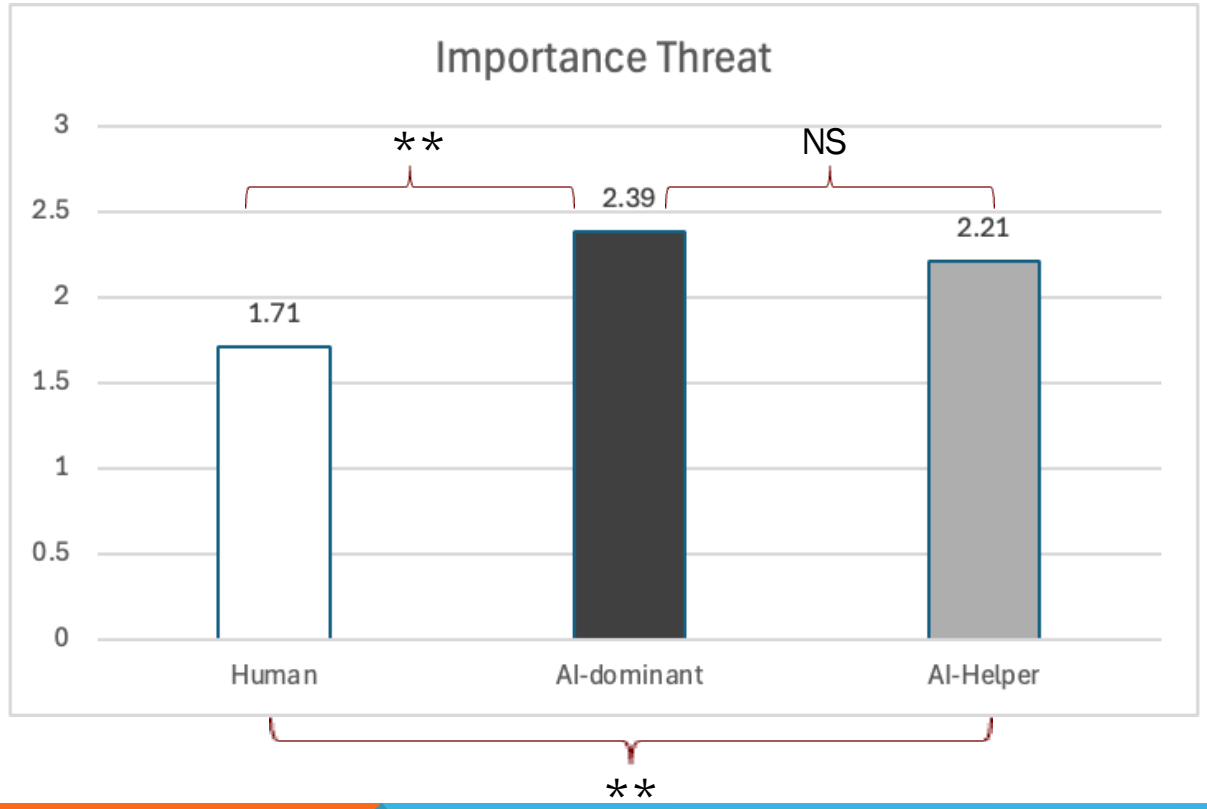
- **Justification**:
  - One-way ANOVA assesses the interaction between AI framing (dominant vs. facilitative) and AI design awareness on consumer impatience; used to analyze differences in impatience based on AI framing condition; is appropriate because we are comparing mean impatience scores across two categorical conditions (AI as facilitator vs. dominant creator)
  - Hayes' PROCESS moderation analysis confirms whether the strength of the effect depends on AI framing. (To be done in Chapter 5)

AO#3 – DESCRIPTIVE ANALYTICS (KRISTIE)

Analytics Objective #3:

- Method: One-way ANOVA using SPSS
- Justification:
  - A one-way ANOVA (3-cell) was conducted to test whether AI framing (AI-helper=2, AI –dominant = 1, Human = 0) had a significant effect on consumer impatience.
  - The dependent variable was the willingness to break the rule.
  - This method is appropriate for comparing mean scores between two independent groups.

AO#3 – DESCRIPTIVE ANALYTICS (KRISTIE)

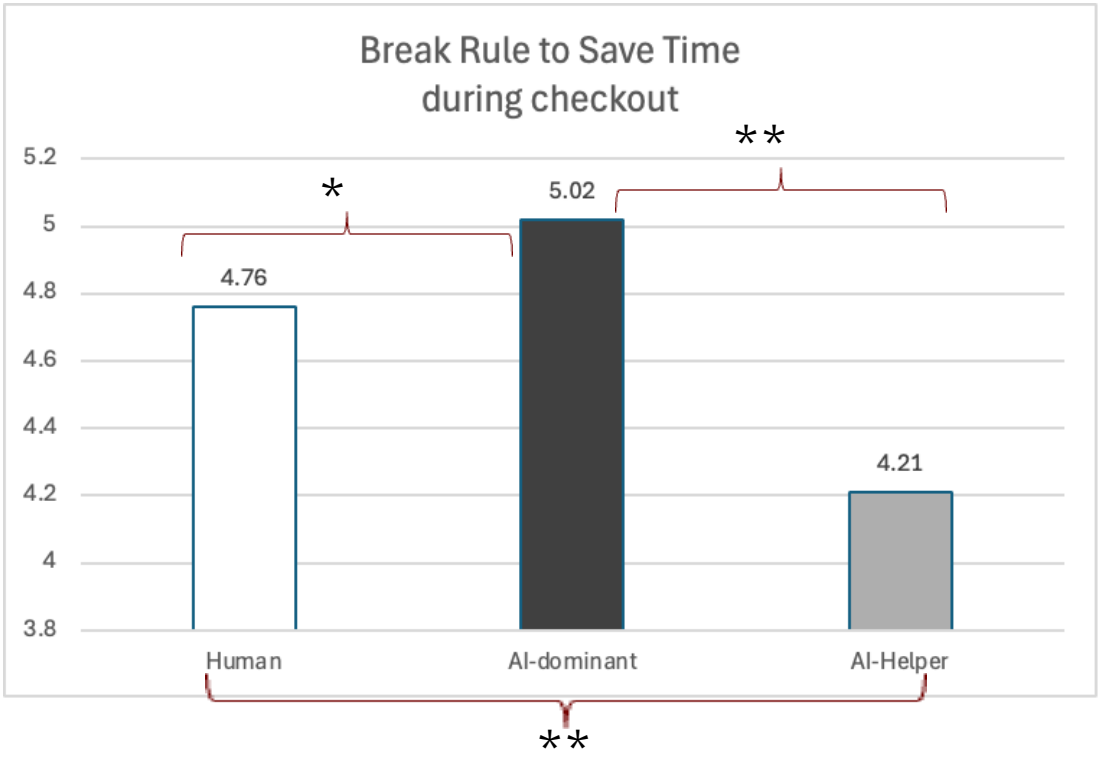


Condition	Mean (M)	SD	N
Human-Designed	1.71	1.172	104
AI-Dominant	2.39	1.472	105
AI-helper	2.21	1.517	102

Participants in the AI-helper and AI-dominant conditions both reported significantly higher perceived threat than the Human condition.

** P <.05

AO#3 – DESCRIPTIVE ANALYTICS (KRISTIE)



Condition	Mean (M)	SD	N
Human-Designed	4.76	2.046	104
AI-Dominant	5.03	1.978	105
AI-helper	4.21	2.182	102

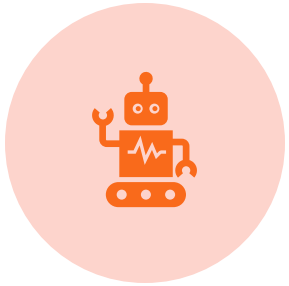
Participants in the AI-helper condition reported significantly lower likely to break rules to save time $F(2, 310) = 4.24$, $p = .015$.

** P <.05
* P <.1

DISCUSSION

AO#3 - DISCUSSION (KRISTIE)

AI FRAMING MADE PARTICIPANTS MORE IMPATIENT — EVEN IN AN UNRELATED CONTEXT.

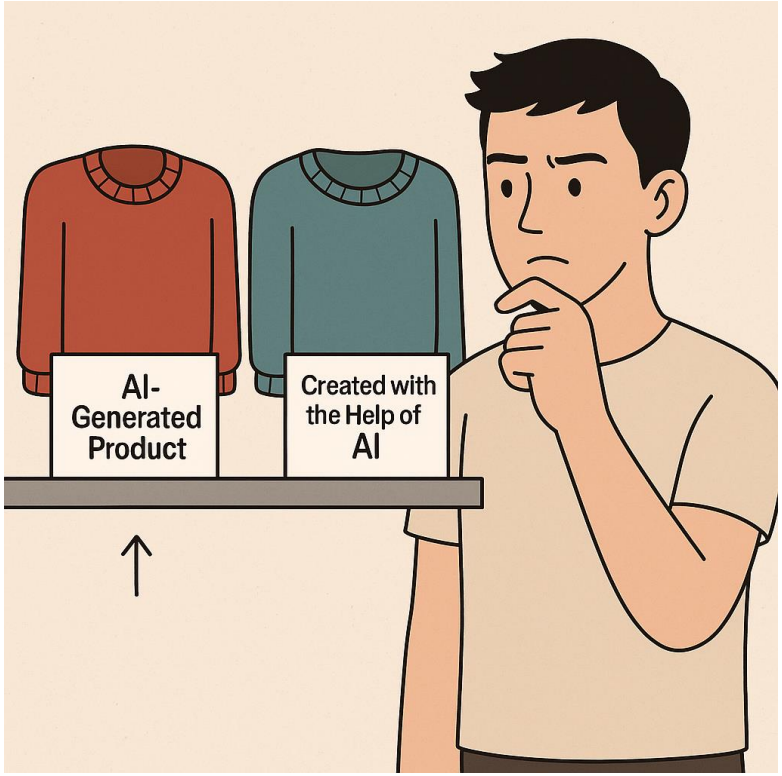


THIS EFFECT WAS STRONGEST WHEN AI WAS DESCRIBED AS ACTING INDEPENDENTLY.

FRAMING AI AS A *FACILITATOR* REDUCED THIS IMPATIENCE EFFECT.

STUDY 2 - RECOMMENDATIONS (KRISTIE)

- Don’t overemphasize AI as the solo creator
- Frame AI as a support tool to reduce backlash
- Marketers should watch for psychological effects



DISCUSSION AND CONCLUSION (KRISTIE)

Key Takeaways

Objective: This study aims to explore how AI involvement in product design impacts consume impatience, preference for smaller but sooner rewards and willingness to pay for expedited services.

Focus: Investigating the meditating role of self-importance threat and testing strategies like framing AI as a facilitative tool.

Planned Implementation

- Conduct experiments to measure behavioral shifts caused by AI creation in product design.
- Use binary logistic regression, one-way ANOVA, and mediation analysis to test hypotheses and analyze data.
- Collect data from diverse U.S. consumers using our structured survey via Prolific and Qualtrics.

Future Directions

- **Validation:** Verify proposed effects through statistical analysis.
- **Expansion:** Explore cultural differences, long-term consumer behavior impacts, and industry-specific applications.
- **Application:** Develop practical insights for marketers to position AI effectively in product creation narratives.

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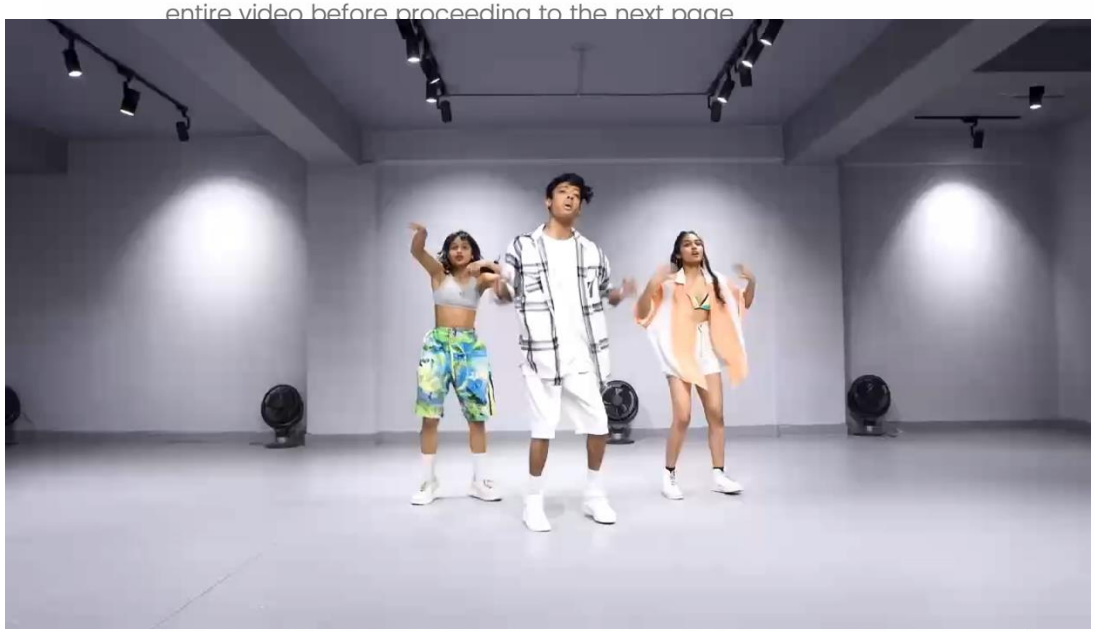
APPENDICES

Study 1
Survey link:
https://cpp.pdx1.qualtrics.com/jfe/preview/previewId/74bdfd27-3eed-4d4f-9430-1c194e8b462d/SV_8Ag8dqhFmJFbr5Y?Q_CHL=preview&Q_SurveyVersionID=current

Please watch the video below. Make sure to complete watching the entire video before proceeding to the next page



The video you just watched was uploaded to social media by a content creator and got 260k views. This video was created by **a professional videographer**. **The videographer** generates videos by compiling **visual and auditory recordings**, editing them to enhance their quality, and ultimately producing a video that aligns with the given instructions or criteria provided by clients.

What's your overall attitude toward this video?

negative	○ ○ ○ ○ ○ ○ ○ ○ ○	positive
bad	○ ○ ○ ○ ○ ○ ○ ○ ○	good
unfavorable	○ ○ ○ ○ ○ ○ ○ ○ ○	favorable

The video you just watched was uploaded to social media by a content creator and got 260k views. This video was created by **AI (artificial intelligence). AI** generates videos following prompts, utilizing **algorithms** trained on **large datasets of visual and auditory information.** It interprets the prompts to generate or manipulate visual and auditory elements, thereby producing a video that aligns with the given instructions or criteria specified in the prompts.

What's your overall attitude toward this video?

negative	○ ○ ○ ○ ○ ○ ○ ○ ○	positive
bad	○ ○ ○ ○ ○ ○ ○ ○ ○	good
unfavorable	○ ○ ○ ○ ○ ○ ○ ○ ○	favorable

APPENDICES

https://docs.google.com/document/d/1fmKfw03AKvxo7Y6gfUREOffa8hiaT52dFbcTiQS0oG4/edit?tab=t.0