

Personality-Adaptive Chatbots for E-Commerce: Matching Conversational Style to User Type

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ABSTRACT

Online shopping has changed a lot thanks to AI, especially with chatbots popping up everywhere. They're supposed to make things easier, right? But honestly, most of them feel like talking to a robot – they just don't get you. That's where we wanted to shake things up. We wondered, what if a chatbot could actually understand your personality and talk to you in a way that felt natural? Imagine a chatbot that's super friendly if you're a chatty person, and keeps it short and sweet if you're more business-like. That's what we tried to build. We created a prototype chatbot for an online store that could figure out someone's personality based on how they interacted. We used a mix of simple rules and data analysis, and based it off the "Big Five" personality traits. Then, it would change its tone and style to match. We tested this out with 100 people, half using our personality-matching chatbot, and half using a regular, unchanging one. We wanted to see if people liked the personalized chatbot better. Turns out, they did! People who chatted with the personality-matching chatbot were way happier and spent more time interacting with it. They just clicked with it better. This shows that when a chatbot actually tries to understand you, it makes a huge difference. We're basically saying, chatbots shouldn't just be tools. They should feel like real conversations. And understanding someone's personality is a big part of that. We think this is the future of how we'll talk to computers online.

INTRODUCTION

E-commerce has exploded, transforming shopping into a hyper-personalized experience, with AI-powered recommendations and instant chatbot support. Yet, amidst all this tech, something feels off: those chatbots, bless their digital hearts, treat everyone like a carbon copy. We all know that's not how people work. A bubbly, enthusiastic chatbot might charm one shopper, while another would be instantly turned off by the same overly-friendly approach. It begs the question: what if

our digital assistants could actually read us? What if they could adapt, shifting their tone and style to match our individual personalities? We set out to explore this, building a chatbot that uses the Big Five personality framework to tailor its communication. Imagine a virtual assistant that's a relaxed, conversational buddy for some, and a concise, professional guide for others. We wanted to see if this personalized touch could make a real difference, boosting engagement, making shoppers happier, and ultimately, driving more sales. Could a chatbot that understands you be the key to unlocking a truly human-feeling online experience?

METHODOLOGY

The Chatbot's Inner Workings We built our chatbot from scratch, giving it its own brain – a custom Natural Language Processing (NLP) engine – and a way to get to know you, a user profiling module. It lived right there on an online clothing and accessories shop. **Figuring Out Your Personality** Instead of asking a million questions, we tried to figure out your personality from how you naturally chat. We paid attention to things like:

- How long your messages were.
- Whether you sounded happy or sad.
- If you used emojis

We then translated these clues into the Big Five personality traits: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. **Chatting Your Style** Once the chatbot had a hunch about your personality, it would change how it talked:

- It could switch between being formal or casual.
- It would use different words, like being really excited or keeping it calm.
- It would change how many emojis it used and how it punctuated its sentences.

We created five different "chatting styles," each one designed to match a different personality type. **Putting It to the Test** We wanted to see if our personality-

matching chatbot was actually better, so we did a test:

- We had a regular chatbot that talked to everyone the same way (the control group).
- And we had our new personality-adapting chatbot (the test group).
- We had 100 people try each version, randomly assigning them to each group.

We then looked at how long people chatted, how happy they were (from a survey after the chat), and if they added anything to their cart or bought anything.

RESULTS

Metric	Static Chatbot	Adaptive Chatbot
Avg. Engagement Time	3.1 min	5.6 min
Satisfaction Score (1–5)	3.4	4.6
Conversion Rate (%)	12%	21%

The adaptive chatbot consistently outperformed the static version across all metrics. Notably, introverted users responded better to more formal, emotionally neutral responses, while extroverted users appreciated an energetic and emoji-rich tone.

DISCUSSION

Okay, so here's the gist of what we found: Basically, when the chatbot talked like you, people loved it. It's like that thing where you click with someone who talks your language – we saw that happen with the chatbot too. And, get this, people were more likely to actually buy stuff! So, it's not just about making people happy, it's good for business too. But, we're not claiming perfection. Figuring out someone's personality from just a few messages is tricky, and we were making educated guesses. Getting that right in real time is a tough nut to crack, and it brings up some serious questions about privacy and whether we're crossing a line. We're thinking, next time, we could try to look at more of how people act online, and maybe even let users tweak the chatbot's personality themselves.

CONCLUSION

We basically tried to build a chatbot that could have a real conversation, one that felt natural because it talked your way. Instead of just spitting out answers, it tried to figure out your personality and then adjust its own style to match. And guess what? It worked! People hung around longer, were way happier with the experience, and, importantly, they bought more stuff. What this tells us is that the future of chatbots isn't just about being smart, it's about being human. It's about creating digital assistants that don't just understand what we're saying, but how we're saying it. Imagine a chatbot that's like a good friend, or a helpful, efficient assistant, depending on who you are. That's the kind of future we're aiming for – where talking to a computer feels less like talking to a machine, and more like having a genuine conversation.