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Perceiving Charisma Through Avatars and Humans: The Role of Trust and Follower Personality

Lea vom Kolke

Master in Human Resources Management and Organizational Consulting

Supervisor:
PhD Maria Teresa de Almeida, Adjunct Assistant Professor,
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BUSINESS SCHOOL

Department of Human Resources and Organizational Behavior

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Acknowledgement

Completing my Master's degree marks the end of an unforgettable year and a half in Lisbon - a time of stepping out of my comfort zone, facing challenges, embracing cultural differences but most importantly growing both personally and professionally.

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All in all, this research phase reminded me that it is not a solo accomplishment but rather the result of a collective effort involving individual drive and persistence but also the encouragement and energy of my support system. Again, thank you very much for accompanying my final academic project!

Resumo

A liderança carismática é descrita como a capacidade de comunicar de forma visionária, emocional e baseada em valores, por meio do uso de táticas concretas de liderança carismática verbais e não verbais. Investigação recente confirma que a integração destas táticas na comunicação de líderes humanos aumenta a percepção do líder como carismático. Com o crescente uso da inteligência artificial, surge a questão de saber se as táticas de liderança carismática's podem ser transmitidas com um efeito carismático comparável por meio de avatares gerados por inteligência artificial. Com base na teoria do sinal, este estudo investiga se a natureza do líder (humano versus avatar) influencia a percepção da liderança carismática, e se essa relação é mediada pela confiança no líder e moderada pelas características de personalidade dos seguidores. Para responder a estas questões, foi conduzido um estudo experimental online no qual um total de 137 participantes foi distribuído aleatoriamente em quatro condições, podendo assistir a um discurso carismático ou neutro por parte de um líder humano ou um líder avatar. Os resultados de uma ANCOVA e de uma análise de mediação moderada revelaram que os líderes humanos foram percebidos como significativamente mais carismáticos e confiáveis do que os líderes avatar. A confiança mostrou-se como mediadora parcial da relação entre a natureza do líder e a percepção da liderança carismática, enquanto não foi encontrado nenhum efeito de moderação significativo das características de personalidade dos followers. Os resultados são discutidos, assim como possíveis limitações e sugestões para estudos futuros.

Palavras-chave: Liderança carismática, táticas de liderança carismática, teoria do sinal, avatares, confiança, traços de personalidade.

Códigos de Classificação JEL:
O15 – Recursos Humanos
D23 – Comportamento Organizacional

Abstract

Charismatic leadership is described as the ability to communicate in a visionary, emotional and values-based manner through the use of concrete verbal and nonverbal charismatic leadership tactics. Current research confirms that integrating these in human leader communication augments the perception of a leader as charismatic. With the growing use of artificial intelligence, the question arises whether charismatic leadership tactics can be as well transmitted with a comparable charismatic effect via artificial intelligence-generated avatars. Drawing on signaling theory, this study investigates whether the nature of the leader (human versus avatar) influences the perception of charismatic leadership and whether this relationship is mediated by trust in the leader and moderated by follower personality traits. To answer these questions, an online experimental study was conducted, and a total of 137 participants were randomly assigned to one of four conditions, viewing either a human leader or an avatar leader delivering a charismatic or neutral speech. The results of an ANCOVA and a moderation mediation analysis revealed that human leaders were perceived as significantly more charismatic and trustworthy than avatar leaders. Trust was found to partially mediate the relationship between the nature of the leader and perceived charismatic leadership, while no significant moderation effect was found by follower personality traits. Findings are discussed as well as potential limitations and suggestions for future research.

Keywords: Charismatic leadership, charismatic leadership tactics, signaling theory, avatars, trust, personality traits

JEL Classification Codes:
O15 – Human Resources
D23 – Organisational Behavior

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Glossary of Acronyms

AI – Artificial Intelligence

AvC – Avatar Charismatic

AvN – Avatar Neutral

CFA – Confirmatory Factor Analysis

CH – Charismatic Leadership

CLTs – Charismatic Leadership Tactics

E – Extraversion

HN – Human Neutral

HC – Human Charismatic

IPIP – International Personality Item Pool

KMO – Kaiser-Meyer-Olk

MLQ – Multifactor Leadership Questionnaire

N – Neuroticism

PCA – Principal Component Analysis

TED – Technology, Entertainment, and Design (Talk Platform)

CHAPTER 1

Introduction

We often think of John F. Kennedy, Steve Jobs, Margaret Thatcher, or Barack Obama as charismatic leaders (Silan, 2022). But what actually makes them charismatic? Is it their personality, their appearance, their behavior or is it the power of their message? The answer is far from straightforward. Research explores all these facets of charisma and delivers mixed or even inconclusive results (Antonakis & Eubanks, 2017; Antonakis et al., 2021; Northouse, 2021).

While earlier scholars like Max Weber primarily saw charisma as an innate, extraordinary quality rooted in stable personality traits such as dominance, a desire to influence, and self-confidence (as cited in Antonakis, 2018), more recent research tends to adopt a behavioral perspective on charisma. From literature, it is well-known that charismatic leadership uses different trainable verbal and nonverbal tactics to communicate visions and goals in a passionate and convincing way. The charismatic effect arises from the emotional interaction between leader and follower, evoking feelings like compassion and admiration, and fostering a strong sense of identification with the leader (Antonakis, 2018; Sy et al., 2018). Such behaviors strengthen follower trust, performance, and extra-role activities, and are especially critical in promoting openness to transformation and reducing uncertainty during times of crisis or organizational change (Men et al., 2020).

While these findings have been primarily observed in human-human interaction, the emergence of artificial intelligence (AI) calls for investigations on the human-AI interaction in the leadership context. Nowadays, AI is present in almost every aspect of life, making it often unnoticeable for people. It is embedded in people's daily lives through services like Amazon's Alexa, Apple's Siri, Spotify or Netflix. Next to enhancing private services, AI is widely applied in business sectors such as healthcare, manufacturing, finance, and industrial automation (Rashid & Kausik, 2024).

This growing integration of AI into everyday interactions raises the question of whether machines can not only assist but also inspire, influence, and emotionally activate followers just like a human leader aims to do through charismatic communication. According to Schuller et al. (2023) "charismatic AI" (p. 5) can be designed to exhibit such charismatic behaviors. However, despite this theoretical potential, most research to date has focused on charisma in face-to-face human interactions, leaving a significant gap in understanding how these

leadership behaviors translate in AI-driven contexts involving avatars (Banks et al., 2017; Ernst et al., 2022).

Addressing this gap, it becomes important to explore how charisma is perceived when transmitted through an avatar. Therefore, the first research question of this study asks: *Does the nature of the leader (human vs. avatar) impact the perception of charisma?*

Whether charismatic leadership tactics drive followers' perception of charisma may depend on two potentially intervening factors. The first relates to trust in the leader. Especially charismatic leaders rely on building trust with their followers to inspire, motivate, and emotionally connect with them (Men et al., 2020). However, trust in avatar leaders remains less explored. He et al. (2023) found that people tend to trust human-like figures more than avatars, possibly due to evolutionary tendencies to trust fellow humans. Besides, the authors claim that similarity and familiarity play a key role: the more a representation resembles the observer, the more familiar and trustworthy it tends to feel. Since avatar representations often appear less familiar and similar to the observer, trust levels may differ significantly between avatar and human leaders. Given the importance of trust to charismatic leadership, this study's second research question investigates: *Does trust mediate the relationship between the nature of the leader and the perception of charisma?*

In addition to trust in the leader, follower characteristics play an important role as studies show that charismatic leadership is not universally applicable to all followers but rather depends on personal dispositions. Thoroughgood and Sawyer (2017) support this idea by suggesting that individual preferences and interaction styles decide on how receptive an individual is to charismatic leadership. Therefore, a third research question examines: Do follower characteristics moderate the indirect relationship between the nature of the leader and the perception of charisma?

Bringing these arguments together, the main research question this study seeks to answer is: *How does the nature of the leader (human vs. avatar) influence perceived charismatic leadership, and how do trust in the leader and personality traits of the follower influence this relationship?* From a theoretical perspective, this research aims to link the extensive knowledge of charismatic leadership in traditional, face-to-face organizational environments with the AI-driven technologies, especially avatars. Additionally, it seeks to add insights into how trust and follower characteristics change when interacting with an avatar leader (He et al., 2023).

As AI solutions rapidly grow in organizational settings, the results could also offer practical implications. If avatars can effectively convey charismatic signals, this could trigger discussions about whether leadership roles can be performed or even replaced by avatars

(Raveendhran et al., 2020), enabling more scalable leadership models. Moreover, understanding trust in avatars and how follower characteristics shape perceptions will help organizations design more personalized, employee-centric avatar systems that match follower preferences.

This master thesis is structured as follows: We will begin by providing the conceptual foundations of leadership, presenting a definition of the concept and an overview of the most influential theories that have been developed over the past decades. A special focus lies on introducing charismatic leadership, using signaling theory and the application of Charismatic Leadership Tactics (CLT) as a guiding framework. We will continue by outlining current research on behavioral indicators and outcomes of charismatic leadership across different contexts before introducing the role of artificial intelligence and particularly the use of avatars in organizations. Subsequently, we will link these technological developments to charismatic leadership, aiming to assess the potential of avatars to effectively project charismatic leadership signals. The theoretical framework concludes by deriving six guiding hypotheses. In the empirical section, the study design, measurement instruments, and results will be summarized. Finally, theoretical and practical implications will be discussed, along with limitations and suggestions for future research.

CHAPTER 2

Literature Review

2.1 Theoretical Foundations of Leadership

Leadership is widely acknowledged as an important determinant of organizational success, as it impacts key performance indicators such as employee engagement, innovation, and financial performance (Katsaros et al., 2020; Northouse, 2021). For instance, a leadership assessment by Korn Ferry across thirty-six multinational firms revealed that companies demonstrating higher levels of leadership agility and social flexibility reported profit margins 25% higher than those with lower levels of these characteristics (Lewis, 2020). Such examples highlight that leadership has the potential to drive organizational success, while at the same time underlining the complexity of clarifying what leadership actually entails.

For many decades, definitions and theories of leadership have been developed and critically discussed but there is still no universal agreement. According to Northouse (2021), the concept of leadership can be defined as "a process whereby an individual influences a group of individuals to achieve a common goal" (p. 6). This definition highlights that leadership is an interactive process between a leader and their followers, aiming to impact their behaviors, thoughts, and feelings in the direction of a shared goal.

This perspective contrasts with recurring discussions on theories that focus exclusively on the leader and their stable, innate traits. These theories suggest that certain individuals are naturally equipped with leadership qualities and are thus more suited for leadership roles. During the last century, various researchers analyzed more than 100 trait studies and synthesized lists of essential traits believed to differentiate leaders from non-leaders. However, these lists often differed in their length, showed only minor overlap and were characterized by diverse terminologies (Kirkpatrick & Locke, 1991; Stogdill, 1974). As a consequence, research has not identified a universally agreed-upon profile of an effective leader, leading to subjective interpretations.

Nevertheless, trait theories have regained interest in leadership research, now operating with more complex models of leader traits and outcomes (Antonakis & Day, 2018). While there is no single existing leader profile, recent meta-analyses have discovered certain recurring attributes associated with the emergence and effectiveness of leaders. The most notable ones have been reported in the category of cognitive abilities and skills, followed by Big Five

personality traits related to extraversion and conscientiousness, as well as motives like dominance and achievement orientation (Antonakis & Day, 2018). However, it is important to note that trait theories are still criticized for overlooking situational effects that influence a leader's behavioral expression of certain traits (Antonakis et al., 2016).

In response to the aforementioned limitations of trait-based theories, a new era of leadership theory emerged, emphasizing the complex interactions between the leader, follower, and the specific situational context. Following this evolution, Bass (1985) developed a "full-range" leadership model that ranges from passive, laissez-faire leadership to transactional and transformational leadership. Transactional leadership relies on contingent rewards and authority, using management-by-exception (both active and passive) to motivate followers. In contrast, transformational leadership strives to motivate followers on a higher level, aiming to exceed the expected transactional performance. To achieve this, transformational leaders act as role models (idealized influence), communicate a compelling vision (inspirational motivation), foster creativity and innovation (intellectual stimulation), and consider and appreciate their followers' individual needs and strengths (individualized consideration).

When it comes to describing transformational leadership, the concept of charisma is often equated with it. In particular, the subcomponents idealized influence and inspirational motivation are seen as key expressions of charismatic leadership and, according to Bass (1985), represent the emotional element of transformational leadership. However, although charisma is frequently treated as a subcomponent of transformational leadership, it incorporates distinct characteristics that require further exploration in the subsequent section.

2.2 Charismatic Leadership and Signaling Theory

What is charisma? Despite decades of discussion and research, it remains an intangible concept. In Greek mythology, charisma was understood to be a "gift of grace" that only a few individuals received from God. Similarly, as referenced in Antonakis (2018), Max Weber was the first to conceptualize charisma, describing it as a "supernatural attribute" and an exceptional personal quality that becomes especially critical during times of crisis, when such leaders can foster social change. A more concrete foundation for nowadays view on charisma can be derived from the Aristotelian triad of persuasion. According to this framework, leaders gain trust of their followers by using rhetorical means such as ethos (moral persuasion), pathos (emotional appeal), and logos (logical reasoning) (Antonakis, 2017).

More recent scholars, such as Bass (1985), have defined charisma in terms of antecedent traits, emphasizing characteristics like strong convictions, self-confidence, and emotional expressiveness as key elements. In contrast, House (1977) conceptualized charisma based on its outcomes, suggesting that leaders who produce effects like affection, admiration, and attributions of extraordinary competence in their followers can be considered charismatic. Other authors, such as Conger and Kanungo (1998), view charisma as an attributional or inferential perception that emerges from leader-follower interactions.

While these perspectives have influenced the current state of charismatic leadership, Antonakis et al. (2016) criticize them for being tautological and ill-defined. More specifically, they argue that charisma should not be defined by its antecedents or outcomes but rather through an objective, behavior-based approach to avoid the circular reasoning found in earlier models. To address these conceptual limitations, the authors propose signaling theory as a framework, providing observable and measurable indicators to analyze the mechanisms through which charisma is conveyed.

Signaling theory conceptualizes signals (e.g. words, behaviors and nonverbal cues) as "things one does that are visible and that are in part designed to communicate" (Spence, 2002, p. 434). It is important to note that not every communication cue can be considered as a signal. This is only the case if the cue helps to reveal hidden attributes of the signaler that would otherwise be difficult to identify. When applying this notion to charismatic leadership, Antonakis et al. (2016) define charisma as "… values-based, symbolic, and emotion-laden leader signaling" (p. 304). According to this definition, which will guide the present study, charismatic leaders use cues that signal their passion and convictions in an emotional way, convey their values and what they stand for, and communicate their vision through symbolic communication. This, in turn, allows followers to interpret and assess these signals against an implicit image of a prototypical leader (Akstinaite et al., 2024). If the leader resembles this image, followers are more inclined to align with the leader's goals and vision (Bergh et al., 2018). However, for the signal to be considered valuable, it must be costly in the sense that it is difficult to fake and capable of disclosing the true underlying intention of the leader (Bastardoz & Van Vugt, 2019).

In order to effectively communicate these values, symbols and emotions, charismatic leaders commonly rely on twelve CLTs, a set of both verbal and nonverbal methods that can be grouped in three main categories (Antonakis, 2017; Jacquart & Antonakis, 2015). Firstly, *framing* refers to how the signal is structured. It includes the use of metaphors, stories and anecdotes that help to animate the message and enhance its recall. Additionally, rhetorical

questions, contrasts and three-part lists help to organize the content and actively involve followers in creating the vision. The second category, *substance*, relates to the content of charismatic signaling. It incorporates expressing moral conviction to justify the mission, articulating feelings of the collective, setting ambitious goals, and demonstrating confidence in achieving them. Finally, the third category, *delivery*, includes nonverbal tactics used to present the content. It entails body gestures, facial expressions, and animated vocal tones. According to Antonakis et al. (2011), these tactics can be learned, implying that charisma is not merely an innate trait but can be developed and improved through training.

Given that charismatic signals can be taught and objectively measured, current technological developments raise the question of whether charismatic behaviors can also be embedded in non-human agents such as AI-driven agents like avatars. The next section will address this question by introducing avatars, their design characteristics, and their leadership potential.

2.3 Avatars as AI-Driven Leadership Interfaces

Generally, AI can be understood as machine-based intelligence that simulates human cognitive abilities, such as decision-making and problem-solving. One type of AI is generative AI, which learns from extensive datasets to make intelligent and autonomous decisions (Rashid & Kausik, 2024). Since the first scientific work on AI in the 1950s, it has undergone significant technical advancements and is expected to expand even faster in the near future. In 2024, up to 72% of organizations worldwide had incorporated AI in at least one business area, reflecting an increase of 17% compared to the previous year. Notably, generative AI tools have seen an even greater rise of more than 30%, reaching a usage rate of 65% (Thormundsson, 2024).

Building on these advancements in AI capabilities, one emerging application is the use of avatars, defined as "digital entities with anthropomorphic appearance, controlled by a human or software, that have an ability to interact" (Miao et al., 2022, p. 45). Although there is no universal agreement on how to characterize avatars, the aforementioned definition emphasizes key elements for avatar design and will be adopted for the purpose of this study.

The first essential feature is that avatars should have an anthropomorphic appearance, meaning they resemble humans to some extent. Research by Miao et al. (2022) indicates that the more human-like an avatar appears, the more credible and competent it seems, increasing the likelihood of user interaction. Moreover, the authors claim that realizing a high level of

human likeness in avatars requires designing them with a strong sense of form realism, such as facial expressions, moving bodies and human characteristics like gender, race, and age. Besides, they must display behavioral realism, including interactive features like verbal and nonverbal communication, scripted or natural response patterns, and a clearly defined controlling entity (human or software).

Currently, avatars are predominantly used in customer-centric businesses like travel and hospitality, banking or customer goods, and training as well as education. Overall, the implementation of avatars is on the rise, with a projected increase of 35% annually (Miao et al., 2022). Research has reported mostly positive effects of anthropomorphised avatars. In the context of marketing and e-commerce, the presence of interacting avatars simulating the roles of virtual assistants has been found to enhance perceptions of credibility, social presence, and trust in websites (Alves & Soares, 2013). Similar effects have also been observed for non-interactive talking avatars (Liew et al., 2017). The authors interpret their results as indicative of the fact that human-like cues such as facial animation and voice can successfully induce the perception of social presence in avatars.

While avatars have already shown value in customer-facing roles, research has just begun to investigate their potential in internal organizational functions such as leadership and management. A study by Hemmer et al. (2023) demonstrated that when an AI model delegated managerial tasks based on the team members' individual skills, both task performance and task satisfaction improved via increased self-efficacy. This result provides early evidence that certain managerial tasks, like delegation, can be performed just as effectively by an AI system as a human leader, and in some instances, it may even outperform human capabilities. Raveendhran et al. (2020) even revealed that leaders may deliberately decide to interact through an avatar rather than face-to-face in situations that involve frequent performance monitoring. This preference was attributed to a reduced concern about receiving negative social feedback. The authors argue that avatar-mediated communication compared to human interaction comes along with lower social presence in the sense of less perceived tangibility and proximity, which may make such mediated environments more comfortable for leaders in appraisal situations.

In conclusion, avatars represent a promising application of AI, both in customer-oriented contexts and in the implementation of specific managerial tasks. As avatars increasingly adopt communicative and leadership functions, it becomes important to analyze how charismatic leadership signals are perceived across different interaction types. Consequently, the following two sections assess the current state of research on the perception of charismatic leadership in face-to-face, virtual, and avatar-mediated interactions.

2.4 Charismatic Leadership Perception

The concrete use of CLTs as objective behavioral indicators of charismatic leadership has been investigated in a variety of settings, study designs and samples. To reduce tautological reasoning, Antonakis et al. (2016) differentiate between the charismatic leadership signals themselves and the effect they have on followers' perceptions of charisma. It is important to note that CLTs can only be truly effective if they are recognized and appreciated by followers, as the validation of charisma is entirely dependent on their perception (Antonakis et al., 2011).

To explore the influence of different CLTs, an early laboratory study by Awamleh and Gardner (1999) investigated how vision content and delivery style influence perceptions of leader charisma. Using a sample of 304 undergraduate students, the study revealed that delivery style (e.g. vocal fluency, nonverbal behaviors) had a greater impact on perceived charisma and leader effectiveness than the content of the speech itself.

These findings were later supported by Caspi et al. (2019). Based on dual-process theory, they hypothesized that delivery style forms a first impression of charisma perception which is due to rapid and intuitive processing. In contrast, the processing of the content of the speech requires more time and deliberate analysis. Across two laboratory experiments, the researchers manipulated content and delivery and tracked perceptions of charisma over time. Their results confirmed that delivery style was dominant in explaining perceptions of charisma, while content lagged behind. However, in cases where delivery style and content were misaligned (e.g. strong vision and weak delivery style), participants' initial charismatic evaluation was revised.

Another study by Meslec et al. (2020) tested the effect of charisma on individual performance and found, through mediation analysis, that the effect of charisma was channeled by the leader's communication of content like vision and values. Nonetheless, both elements remain highly correlated, as verbal tactics require equivalent nonverbal means (Antonakis et al., 2011).

The proposition that charismatic leadership can be developed through training is supported by a field study of Antonakis et al. (2011). The authors found that both MBA students and managers who received training in verbal and nonverbal CLTs experienced significant improvements in their charisma ratings and emergence. Furthermore, it enhanced followers' perceptions of leader prototypicality. Specifically, this means that leaders who were perceived as more charismatic were viewed as more prototypical, as they closely resembled the followers'

image of a typical leader. Such improvements contributed as well to positive outcomes like trust and the emotional relationship with the leader.

To further explore the impact of CLTs, Antonakis et al. (2021) tested their application in economically relevant settings through a series of field and laboratory experiments. Their findings indicated that charismatic leadership boosted performance in a way comparable to financial incentives. More specifically, performance increased by 17% when participants listened to a charismatic speech, compared to 20% when they were incentivized financially. In addition to individual-level effects, the study explored the effects of group dynamics on charismatic leadership and found even stronger performance outcomes. In their public goods game experiment, voluntary contributions increased by 19% when participants viewed charismatic speeches within a group, suggesting that social context reinforces charisma's effect.

Another study highlighting the importance of context was conducted by Davis and Gardner (2012), who suggest that the effects of charisma are especially important during times of crisis or in situations where change is required. In their study, they performed a content analysis of President Bush's rhetoric before and after the September 11 attacks as well as during Hurricane Katrina, showing that a greater use of charismatic rhetoric was associated with more positive evaluations of his crisis management. Concrete behavioral effects of charismatic signaling during times of crisis are demonstrated in a study by Jensen et al. (2023), who analyzed speeches delivered by U.S. governors during the COVID-19 pandemic. Their findings showed that the use of charismatic signals in these speeches significantly increased followers' stay-at-home behavior and also enhanced their belief that others would do the same.

Although the abovementioned studies offer valuable insights into the perception of charismatic signaling, it is important to note that they have predominantly been conducted in face-to-face settings or based on the analysis of historical materials. However, as communication becomes increasingly mediated by technology, research has begun to explore whether the impact of CLTs can be generalized to virtual contexts. Ernst et al. (2022) compared the effects of face-to-face versus virtual use of CLTs on task performance and extra role performance and found, in contrast to face-to-face settings, no significant effects in virtual contexts. The authors interpret these results by relying on media-richness theory, which suggests that symbolic elements like metaphors, gestures, and nonverbal cues are more difficult to process in virtual environments. Additionally, because charismatic signals are costly and rely on leaders being perceived as authentic, sincere, and natural, it may be more difficult for followers to interpret a leader's true intentions in virtual settings where personal connection is limited.

While these findings underline the limitations of CLTs in virtual settings, other studies report that charismatic signaling can still be perceived and generate social influence in informal digital settings (Tur et al., 2021). The authors analyzed the use of CLTs in TED Talks and tweets related to political and economic topics and found that verbal charismatic signaling significantly increased TED Talk views and leader ratings of being visionary and persuasive. Similarly, it resulted in a higher number of retweets and reposts on Twitter. According to the authors, the results can be explained by the constant use of CLTs across multiple Tweets or TED Talks, suggesting that the influence of charisma is cumulative and not driven by individual messages alone.

Taken together, studies reveal that charisma can be learned via training and that leader speeches with higher charisma signaling are evaluated to be more charismatic when delivered in a face-to-face context. For virtual settings results remain mixed and require further exploration. Whether charismatic leadership signaling can as well be conveyed via avatars will be discussed in the following.

2.4.1 Human Versus Avatar Transmission of Charismatic Leadership

According to Wang et al. (2020), designing a charismatic avatar heavily depends on the effective alignment of verbal and nonverbal CLTs. If this alignment cannot be successfully realized or when a mismatch between the two communication channels occurs, several negative consequences may arise. In their experimental study, conducted with a virtual human in a simulated classroom environment, the authors illustrated that verbal CLTs (content) alone can significantly enhance the perception of charisma. In contrast, the use of nonverbal means (voice) without accompanying verbal ones had only minor influence. Notably, when charismatic verbal content was delivered without a charismatic voice, the perceived charisma of the virtual human diminished significantly. Overall, Wang et al. (2020) showed that the highest charisma rating was achieved when verbal and nonverbal CLTs were synchronized, emphasizing the importance of behavioral alignment when it comes to designing a charismatic avatar.

This need for alignment becomes as well critical when considering the anthropomorphic design of avatars, which can blur the distinction between actual humans and computer-generated “humans”, potentially leading to a so-called uncanny valley effect (Mori et al., 2012). This phenomenon occurs when an avatar appears almost human but not convincingly enough, causing reactions like discomfort, irritation or even the complete rejection of the avatar (Crolic

et al., 2022). Studies suggest that these reactions are often intensified when avatars exhibit human-like physical appearance but fail to portray corresponding nonverbal behaviors, such as eye gaze (Garau et al., 2003) and facial expressions (Tinwell et al., 2011).

Bombari et al. (2015) further argue that as avatars continue to increase in their technological realism, the uncanny valley effect becomes more nuanced, where even slight deviations from a perfectly realistic avatar may elicit strong adverse reactions from users. Consequently, these mismatches between appearance and behavior can cause avatars to be perceived as unnatural or odd, undermining the avatar's ability to project charismatic leadership behavior. Since charisma is strongly associated with qualities such as personal connection, authenticity, and the ability to create social presence, avatars perceived as inauthentic or mismatched may struggle to effectively express these essential characteristics as deeply as human leaders can (Schuller et al., 2023; Appel et al., 2012; Ernst et al., 2022). Building on these theoretical and empirical insights, we hypothesize that:

H1: Human leaders will be perceived as more charismatic than avatar leaders.

2.4.2 Trust in Leader

Trust is a crucial factor in the follower-leader relationship, often determining how willing followers are to embrace vulnerability and take risks. There are different conceptualizations of trust, particularly multidimensional ones. The most prominent model, which also builds the foundation for this study, stems from Mayer et al. (1995), who identify three leader characteristics that foster trust: ability, integrity, and benevolence. Ability reflects the leader's competence in influencing specific areas, integrity relates to the leader's adherence to ethical principles, and benevolence refers to the leader's concern for their followers' well-being.

Another widely used framework that aligns with the trust dimensions established by Mayer et al. (1995), refers to McAllister's (1995) dual-process model, which differentiates between cognitive and affective trust. Cognitive trust is characterized by perceptions of ability, reliability and professional qualifications of a leader and can be linked to Mayer et al.`s (1995) dimensions of ability and integrity. In contrast, affective trust captures the emotional and relational qualities of the leader-follower relationship, such as perceived support, empathy, and concern – elements that can be compared to Mayer et al.'s (1995) dimension of benevolence (van der Werff & Buckley, 2014).

When looking at how trust develops over time, studies often rely on social exchange theory as a theoretical framework. According to this theory, trust is explained by a process of

reciprocal positive interactions that reduce uncertainty and increase the follower's belief that the leader acts in their best interest, is competent, and adheres to moral principles (Chen & Sriphon, 2022; Blau, 1964). The majority of studies claim that the formation of trust is a gradual, progressive process that requires time, with different dimensions of trust emerging at distinct stages (Norman et al., 2019). Specifically, Mayer et al. (1995) explain that cognitive elements like ability and integrity emerge early in a leader-follower relationship, while affective dimensions such as benevolence need more time and deeper interactions to consolidate. In contrast, other researchers have shown that trust can also develop rapidly through first impressions of nonverbal cues such as facial expressions, vocal tone or an open posture (Yu et al., 2014). Charismatic leaders often engage in social exchanges rich in such expressive and persuasive nonverbal cues, which may foster feelings of trust and admiration already in early interactions (Conger & Kanungo, 1998; Goodwin et al., 2011; Kelloway et al, 2012).

Although prior research often considers charisma as an antecedent of trust development (Kelloway et al., 2012), to our knowledge, a direct causal link between charisma and trust formation has not been clearly established. In a meta-analysis conducted by Dirks & Ferrin (2002), strong positive correlations between trust and variables like job satisfaction, organizational citizenship behavior or job performance were found. However, the strongest correlation ($r = .72$) was observed between trust and transformational leadership. Building on these findings, our study focuses exclusively on charismatic leadership and its relationship with trust. We argue that when followers trust a leader, seeing them as competent, principled, and caring, they are more likely to perceive that leader as charismatic. Thus we hypothesize:

H2: Trust in leaders will be positively associated with followers' perception of charisma.

While direct, in-person interactions typically help build and sustain trust, establishing trust in technology-mediated settings, such as through avatar representations of leaders, poses challenges (Norman et al., 2019). Research by He et al. (2023) found that human representations elicit more trust than avatars, as avatars are often perceived as less familiar and emotionally resonant. Especially when it comes to affective trust (McAllister, 1995) and perceptions of benevolence (Mayer et al., 1995), avatars may be restricted in conveying such authentic emotional expressions. Based on this we propose that:

H3: Human leaders will be perceived as more trustworthy than avatar leaders.

Finally, if human leaders are more capable of fostering trust and trust is associated with the perception of charisma, one can assume that trust functions as a mediator. Specifically, that means the effect of the leader's nature (avatar vs. human) on perceptions of charismatic leadership may be explained by variances in trust. Indeed, many studies have found that trust

mediates the relationship between different leadership styles and outcome measures like performance or organizational citizenship behavior (Goodwin et al., 2011; Legood et al., 2020; Men et al., 2020). Therefore, we expect that:

H4: Trust will mediate the relationship between leader type (human vs. avatar) and perceived charisma.

2.4.3 Follower Personality Traits

Research on charismatic leadership often emphasizes leader traits and behaviors but pays less attention to follower characteristics (Felfe & Schyns, 2006). However, since leadership is interpreted through the perspective of followers, their personality traits significantly influence how charismatic leadership is perceived (Awamleh & Gardner, 1999). For instance, Thoroughgood and Sawyer (2017) found that individuals high in extraversion and low in neuroticism tend to prefer charismatic leaders, a finding echoed by earlier studies (Felfe & Schyns, 2006; Schyns & Sanders, 2007).

While research on the moderating effects of follower traits is limited, existing studies suggest that individual differences such as values (Ehrhart & Klein, 2001) or needs (Wofford et al., 2013) can influence the impact of leadership behaviors on outcomes like leader effectiveness and follower satisfaction. The similarity-attraction theory has gained the most empirical support as a theoretical explanation for this moderating effect suggesting that followers are more likely to respond positively to leaders who share similar traits (Schyns & Sanders, 2007). For example, extraverted followers tend to perceive extraverted leaders as more charismatic than less extraverted individuals.

Personality traits do not only influence preferences for charismatic leadership but play also an important role in trust formation. Concretely, research shows that extraverted individuals, who generally are more sociable and open in social relationships, tend to show higher levels of trust in their leaders. In contrast, individuals with higher levels of neuroticism who are prone to being more suspicious and emotionally unstable, are less inclined to trust their leaders (Asif et al., 2025).

Whether the influence of personality traits also holds true for AI-generated avatar leaders compared to human leaders is uncertain. Avatars, often perceived as less familiar and similar, may make it more difficult for followers to identify with them (He et al., 2023).

Building on this, we propose that followers' levels of extraversion and neuroticism play a moderating role in the relationship between leader type, trust, and perceived charisma. More specifically, we expect that:

H5: Extraversion moderates the relationship between trust and the perception of charismatic leadership, such that the indirect effect of the nature of the leader on perceived charisma through trust is stronger when followers have high levels of extraversion.

H6: Neuroticism moderates the relationship between trust and the perception of charismatic leadership, such that the indirect effect of the nature of the leader on perceived charisma through trust is stronger when followers have low levels of neuroticism.

The following conceptual model summarizes the relationships between the key variables investigated in this research (Figure 2.1)

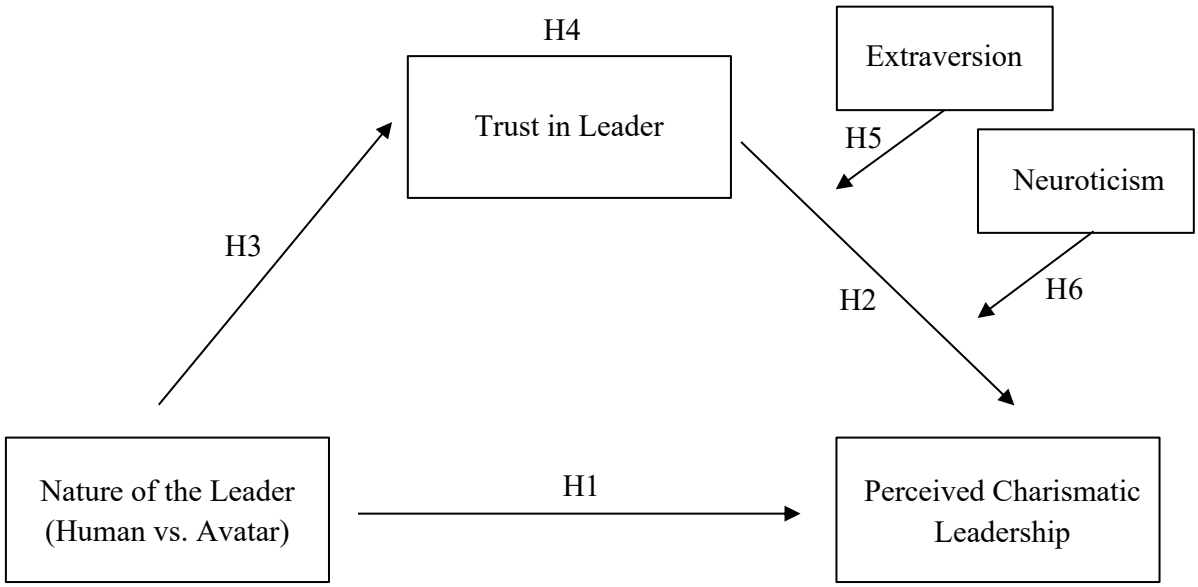

Figure 2.1

Conceptual Model

CHAPTER 3

Method

3.1 Study Design

For this research, we conducted an online between-subjects experiment with four conditions, to which participants were randomly assigned. More specifically, four different videos were used (Appendix A): a human delivering a charismatic speech, a human delivering a neutral speech, an avatar delivering a charismatic speech, and an avatar delivering a neutral speech. Each video focused on a fundraising campaign for Birmingham's hospital, aimed at supporting sick children and their families during the Christmas season.

For the human videos, speeches developed by Antonakis et al. (2021) and executed by trained professional actors were chosen. Originally, they were created for a series of field and laboratory experiments investigating how charismatic tactics in a motivational speech influence individuals' performance in a social good campaign (Antonakis et al., 2021). The primary goal of these speeches was to motivate and inspire contributors to ensure the fundraising campaign's success. The charismatic human speech lasted 4 minutes and 50 seconds, while the neutral human speech was 4 minutes and 11 seconds long. Both speeches were identical in word count, content, and moral conviction. However, the amount of charismatic leadership tactics (CLTs) used varied significantly. According to assessments by external evaluators trained in identifying verbal and nonverbal CLTs, each speech was systematically coded based on the frequency of every tactic. This coding was conducted at the sentence level, meaning each sentence was assessed for the presence of CLTs. By using this approach, the following percentages were identified: 91.7% of sentences in the charismatic speech contained CLTs (44 tactics across 48 sentences), whereas in the neutral speech, only 39.0% of sentences included CLTs (16 tactics across 41 sentences).

For the AI videos, both a charismatic and a neutral non-responsive avatar were created by transcribing Antonakis' human speeches and integrating them into the avatar's delivery, ensuring that content and CLTs were comparable. Initially, we chose "Synthesia." (Synthesia, n.d.) as our AI avatar creation platform. However, after developing the first avatar, we noticed that the platform lacked a function for incorporating hand gestures. Since this was a critical nonverbal feature for conveying charismatic leadership, we decided to reevaluate our options and switch platforms. After thorough consideration, we finally selected "DeepBrain AI Studios"

(DeepBrain AI, n.d.), which allowed us to integrate both verbal and nonverbal CLTs into the avatar's performance.

Additionally, the platform allowed us to replicate the speaker's appearance, as well as his verbal, paraverbal and nonverbal behaviors. To achieve this, the avatar was designed with the same gender (male), a comparable age group and stature, and a styling oriented to the human leader. Nonverbal cues were incorporated by adding pauses and variations in voice pitch. To ensure that paraverbal elements closely matched the human speech, different voices were tested, and one was selected that best mimicked the tone of voice, pitch, and volume. Finally, nonverbal tactics were implemented by mimicking body gestures, such as nodding or raising hands. The charismatic avatar video lasted 4 minutes and 8 seconds, and the neutral version 3 minutes and 11 seconds.

3.2 Procedure

Data collection took place over a time course of 11 weeks, starting with a two-week pilot phase from January 1st, 2025, to January 15th, 2025. The pilot study aimed to evaluate the clarity of the survey and collect input for potential improvements. Based on participant feedback, minor adjustments in the introductory text and on one item were made.

Subsequent to the pilot phase, the main data collection was conducted over a 9-week period, from January 16th, 2025, to March 21st, 2025. Participants were recruited through convenience sampling methods, including social media and personal networks. Subsequently, a snowball sampling approach was used, where initial participants were encouraged to share the survey with others, allowing the sample to grow in a "snowball-like" manner. Participation in the study was open to individuals above the age of 18 – no other specific restrictions were applied.

Individuals received a link to an experimental online study, designed with Qualtrics, together with a recruitment text (Appendix B). First, respondents read an information letter and were then asked to consent in order to take part in the study. Participants could complete the survey from any location, given that they had an internet-enabled device. As mentioned beforehand, once they opened the link, they were randomly assigned to one of the four video conditions. Each video began with a brief introduction providing context, instructing viewers to imagine themselves as part of a nonprofit organization. Additionally, they were encouraged to perceive the individual in the video as their personal leader. After watching the clips, participants completed a questionnaire evaluating their perceptions of the leader's charisma, followed by items assessing their trust in the leader and their own personality traits. Next, they

rated the leader's human-likeness. Subsequently, participants provided their demographics, and in case of an avatar condition, they were also informed that the leader was AI-generated. The completion of the survey took no longer than 15 minutes.

3.3 Participants

Out of 238 individuals initially recruited for the study, 101 were excluded due to incomplete survey responses or missing information on covariates. Consequently, this resulted in a total sample of 137 participants, with 40 randomly assigned to the avatar charismatic condition, 33 to the avatar neutral condition, 32 to the human charismatic condition, and 32 to the human neutral condition. The sample was aged between 21 and 81 (M = 44.69, SD = 17.87) and consisted of 64.2% female (N = 88) and 35% male (N = 48). One individual chose not to reveal their gender. Regarding educational background, 94.8% possessed a university degree up to the PhD level (N = 130), 4.4% completed high school or an equivalent qualification (N = 6), while 0.7% did not complete this level of education (N = 1). The average work experience among participants was 19.62 years (SD = 15.13). Specifically, 28.4% had 0-5 years of experience (N = 39), 18.9% (N = 26) had worked for 6-15 years, 26.1% (N = 36) reported 16-30 years of experience, and 26.1% (N = 36) had been working for over 31 years. 1.3% of the participants preferred not to answer this question (N = 2). Results of participants' familiarity with AI revealed that most respondents were somewhat familiar (43.8%, N = 60) or slightly familiar with AI (30.7%, N = 42). Fewer participants indicated that they were very familiar (13.1%, N = 18), not at all familiar (11.7%, N = 16), or extremely familiar (0.7%, N = 1).

3.4 Data Analysis Strategy

Before starting the data analysis, reversed items were identified and recoded to match the direction of their respective scales. One item was associated with the Trust scale developed by Mayer et al. (1995) and four items with the 20-Item Mini-IPIP (Donnellan et al., 2006). Then, we checked for the psychometric quality of the measures. An exploratory Principal Component Analysis (PCA) was conducted, aiming for a Kaiser–Meyer–Olkin (KMO) value greater than 0.6 and a significant result on Bartlett's Test ($p < .05$; Nkansah, 2018). In addition, items were assessed based on their communalities and factor loadings. Items with loadings below .50 or problematic cross-loadings were removed. Based on that, new variables were computed and

used for further analysis. The internal consistency of the scales was evaluated using Cronbach's alpha (Cronbach, 1951), with values of at least $\alpha \geq 0.70$ considered acceptable.

Following the exploratory analyses, an Analysis of Covariance (ANCOVA) was conducted to compare trust and charisma levels between groups while controlling for the influence of covariates. Finally, to test whether trust mediated the relationship between the nature of the leader and perceived charismatic leadership and whether this indirect effect was moderated by follower personality traits, a moderated mediation analysis was performed using a PROCESS macro analysis for SPSS (Model 16) by Hayes (2022). The model was tested using 5,000 bootstrap samples and 95% confidence intervals.

3.5 Measures

The following subsections introduce the measures used in this study. The detailed results of the PCA and reliability tests for each scale are outlined in Appendix D.

Nature of Leader. "Nature of Leader (Human/Avatar)" was manipulated as it is described under the study design section. In order to control for anthropomorphism, which describes the degree to which users perceive a robot or an avatar as "human-like" in its behavior or appearance, the respective scale of the Godspeed Questionnaire was applied (Bartneck, 2023), one of the most widely used questionnaires in the field of human-robot-interaction (Weiss & Bartneck, 2015). The anthropomorphism scale consists of five items rated on a semantic differential scale, which typically displays pairs of bipolar adjectives at opposite ends of the scale, requiring respondents to select a point between the two adjectives (Appendix C). An example of an item was: "Fake – Neutral," with 1 representing "Fake" and 5 indicating "Neutral."

The data were suitable for factor analysis, as indicated by an excellent KMO value of 0.85 and a significant Bartlett's test of sphericity ($\chi^2(10) = 512.85$, $p < .001$; Table D.1). The results of the PCA supported a single-factor solution, with an Eigenvalue greater than 1, explaining 72.9% of the total variance (Table D.2). On top, all items displayed strong communalities (Table D.3) and high factor loadings. Moreover, the scale demonstrated an excellent internal consistency ($\alpha = 0.91$; Table D.4), verifying that the five items measure one single construct.

Leaders presented in the avatar condition were perceived as less human-like ($M = 2.06$, $SD = 0.84$) than those shown in the human condition ($M = 3.32$, $SD = 0.99$), as evidenced by an independent samples t-test ($t(134.76) = -8.30$, $p < .001$, 95% CI [–1.55, –0.96]).

Perceived Charismatic Leadership. In order to measure "Perceived Charismatic Leadership", the Multifactor Leadership Questionnaire (MLQ) developed by Bass and Avolio (1990) was used (Appendix C). The questionnaire assessed various leadership styles, including transformational, transactional, and passive-avoidant leadership, along with their effectiveness. Bass (1985) originally proposed a six-factor structure for the MLQ survey, which was tested against other factor models across 14 independent samples. After revising and eliminating items with high cross-loadings, the six-factor model showed the best fit indices and was therefore confirmed.

Within this study, we focused exclusively on one dimension of transformational leadership, namely charisma/inspirational leadership that encompassed 12 items and had been validated as a single factor in the study conducted by Avolio et al. (1999). These items were constructed to evaluate a leader's capacity to inspire and motivate their followers by creating a shared vision, conveying a sense of purpose and fostering potential identification with the leader (Avolio et al., 1999). The authors reported an excellent reliability for the charisma/inspirational subscale, with a Cronbach's alpha of 0.92. An example item was: "The leader displays power and influence".

An initial PCA identified a two-factor solution, which was supported by an excellent KMO value of 0.92 for the original 12-item scale (Table D.5). Together, these two extracted components accounted for 67.8% of the total variance (Table D.6). However, due to high cross-loadings of item 1 ("proud of him/her"; Table D.7), we removed this item from further analysis, and reconducted the PCA with the remaining 11 items. The new results confirmed sampling adequacy by an excellent KMO of 0.91 and a significant value on Bartlett's test ($\chi^2(55) = 1067.26$, $p < .001$; Table D.8), indicating that the data were suitable for running the PCA.

While the statistics indicated that the two-factor solution was satisfactory, it was difficult to find theoretical reasoning that would justify the division of items within the two-factor solution. Therefore, we decided to test a solution that was valid with previous research. In accordance with Avolio et al. (1999), who suggested a single-factor structure for the charisma/inspirational subscale, a one-factor solution was forced. This solution accounted for 60.5% of the total variance in the charisma/inspirational leadership items (Table D.9) and revealed excellent internal consistency (Cronbach's $\alpha = 0.94$; Table D.10).

Trust in Leader. "Trust in Leader" was evaluated using a questionnaire designed by Mayer et al. (1995), which conceptualizes trust as a second-order factor comprising three first-order latent constructs: ability, benevolence, and integrity (Appendix C). The 17 items of the scale were designed to evaluate the extent to which followers trust their leader. Specifically, the

Ability subscale included six items, the Benevolence subscale comprised five items, and the Integrity subscale consisted of six items. For all scales, Mayer et al. (1995) reported good reliabilities with Cronbach's alpha ranging from 0.82 to 0.89. As participants in this study were evaluating a hypothetical leader instead of their own personal leader, the wording of the items was slightly adjusted to reflect a more hypothetical context. For instance, "The leader is very capable of performing his/her job" has been modified into "The leader appears very capable of performing his/her job".

The data from the trust scale were adequate for running the PCA as indicated by a KMO value of 0.94 and a significant Bartlett's test of sphericity ($\chi^2(136) = 2130.99$, $p < .001$; Table D.11). Although a three-dimensional structure was theoretically expected based on the conceptual model of Mayer et al. (1995), the results of the initial PCA did not support this assumption. The analysis revealed ambiguous component loadings and one communality value lower than .50 (0.12; Table D.12) for item 15. Therefore, that item was removed and we continued the analysis with the remaining 16 items. After removing the item, we reconducted the PCA, finding an excellent KMO of 0.94 (Table D.13) and two components with Eigenvalues greater than 1, accounting for 70.5% of the total variance (Table D.14). Based on this pattern of results, one may suggest that participants did not differentiate between all three dimensions but rather interpreted two of them (benevolence and integrity) as a single underlying construct and ability as a second one. This structure aligns with findings from Mayer et al. (1995), whose confirmatory factor analysis (CFA) demonstrated a significant high correlation ($r = .78$) between benevolence and integrity, indicating possible overlap in how respondents interpreted the two constructs. To explore this finding further, we ran additional analyses.

When looking at the rotated component matrix (Table D.15), one can see that the items loaded strongly on the first dimension and less so on the second, which we took as an indication to test whether trust can be as well seen as a unidimensional construct. The results of the PCA revealed a KMO value of 0.94 and supported the single-factor solution as component one accounted for 61.1% of the total variance (Table D.16). Moreover, the internal consistency across the 16 remaining items was excellent, with a Cronbach's alpha of 0.96 (Table D.17).

Follower Personality Traits. "Follower Personality Traits" was assessed using the 20-Item Mini-IPIP (Donnellan et al., 2006), which captures the Big Five personality traits: Extraversion, Agreeableness, Conscientiousness, Neuroticism and Intellect/Imagination (Appendix C). Based on prior research (e.g., Felfe and Schyns, 2006) indicating that individuals high in extraversion and low in neuroticism are more likely to prefer a charismatic leadership style, this study focused specifically on these two traits. A total of eight items were used: four items to measure

Extraversion and four items to measure Neuroticism. The authors reported reliability values for both scales, ranging from 0.70 to 0.82, indicating acceptable to good reliability.

An initial PCA revealed sampling adequacy by an acceptable KMO value of 0.69 and a significant Bartlett's test of sphericity ($\chi^2(28) = 350.95$, $p < .001$; Table D.18). While a two-factor solution was anticipated for the personality scale, the PCA results revealed that item 8, even though demonstrating a satisfactory communality value (0.94; Table D.19), loaded strongly on a separate third component. As this contradicted the suggested structure, we decided to remove item 8 and repeated the PCA. The updated analysis revealed an acceptable KMO value of 0.70 (Table D.20) and resulted in the expected two components – Extraversion and Neuroticism, which together accounted for 66.2% of the total variance (Table D.21). In terms of internal consistency, the Extraversion scale, incorporating four items, revealed good reliability ($\alpha = 0.81$; Table D.22). Likewise, the Neuroticism scale, including three items, demonstrated acceptable reliability ($\alpha = 0.76$; Table D.23). All of the abovementioned measures were rated on a 5-point Likert scale ranging from 1 = "strongly disagree" to 5 = "strongly agree".

Finally, the questionnaire ended with demographic questions, used to characterize the sample and also as control variables, covering age (in years), gender (*male/female/non-binary/third gender/prefer not to say*), educational level (*less than highschool/highschool or equivalent/bachelor's degree/post-graduation/master's degree/doctorate's degree (PhD)/prefer not to say*), participants work experience (in years) and their familiarity with AI systems (*not at all familiar/slightly familiar/somewhat familiar/very familiar/extremely familiar*). For participants in the avatar condition, it was disclosed at the end of the study that the leader they had seen was an AI system. The following statement was presented: "Before ending the questionnaire, I would like to inform you that the leader you saw in the video was represented by an avatar. To what extent did you perceive that the leader was an avatar rather than a real human?" *(not at all/slightly/moderately/quite strongly/totally)*.

CHAPTER 4
Results

The results section begins with a presentation of descriptive statistics and bivariate correlations among perceptions of charismatic leadership, trust, follower personality traits, and sociodemographic variables. This is followed by the reporting of hypotheses testing results.

4.1 Descriptives and Bivariate Statistics

Across the total sample, perceived charismatic leadership showed a strong significant correlation with trust in the leader (r = .86, p < .001). In contrast, personality traits were not significantly correlated with perceptions of charisma or trust. Specifically, extraversion was not significantly correlated with either perceived charismatic leadership (r = .10, p = .261) or trust (r = .16, p = .070). Likewise, neuroticism did not reveal any significant correlations with perceived charismatic leadership (r = -.04, p = .686) or trust (r = -.02, p = .829).

Further, correlations between sociodemographics and the aforementioned study variables were investigated. Age demonstrated a weak but significant negative correlation with perceived charismatic leadership (r = -.23, p = .006), indicating that younger respondents tended to perceive the leader as more charismatic. In contrast, both gender and education did not demonstrate a significant correlation with the assessed study variables of perceived charismatic leadership, trust, and personality factors. A significant negative correlation was identified between AI familiarity and both age (r = -.25, p = .003) and work experience (r = -.24, p = .004). This finding suggests that younger respondents and those with less work experience tended to be more familiar with AI. Moreover, no significant correlations between AI familiarity and charisma, trust or extraversion were found. However, a small but significant positive correlation with neuroticism was observed (r = .19, p = .027). For a detailed overview of the overall sample correlations, see Table 4.1.

For condition-specific insights, we explored the bivariate correlations per group. Throughout all experimental conditions, a strong correlation between perceived charismatic leadership and trust was observed, with correlations ranging from r = .77 to r = .88 (Table 4.2 to Table 4.5). Sociodemographic variables demonstrated a few meaningful correlations. In the avatar charismatic condition, age was significantly negatively correlated with perceived charismatic leadership (r = -.43, p = .006) and trust (r = -.34, p = .031), indicating that younger respondents tended to perceive higher levels of charisma and trust in the leader. Gender was

mostly unrelated to the study variables however, in the human charismatic condition, female participants reported higher perceptions of charismatic leadership (r = .54, p = .002) and trust (r = .36, p = .045). No significant correlations were found between perceived charismatic leadership and personality traits as well as between trust and personality traits across all conditions.

Table 4.1

Descriptives and Bivariate Statistics (Full Sample)

		Scale	*M*/%	*SD*	1	2	3	4	5	6	7	8	9
1.	Age		44.69	17.87	1								
2.	Gender		64.2%	0.52	-.27**	1							
3.	Education		4.53	1.09	.40**	-.21*	1						
4.	WorkEx		19.62	15.13	.96**	-.28**	.35**	1					
5.	AIFamiliar	1-5	2.61	0.89	-.25**	-.07	.00	-.24**	1				
6.	CH	1-5	3.50	0.92	-.23**	.04	-.12	-.22*	-.02	1			
7.	Trust	1-5	3.29	0.89	-.18*	.02	-.11	-.15	-.03	.86**	1		
8.	Pers_E	1-5	3.43	0.82	-.12	.00	-.11	-.13	-.04	.10	.16	1	
9.	Pers_N	1-5	2.54	0.92	-.15	.03	-.06	-.14	.19*	-.04	-.02	-.04	1

Note. Listwise N = 137; WorkEx = Work Experience; AIFamiliar = AI Familiarity; CH = Perceived Charismatic Leadership; Pers_E = Follower Personality Extraversion; Pers_N = Follower Personality Neuroticism; Gender % = Female

**p < .01; *p < .05

Table 4.2

Descriptives and Bivariate Statistics (AvC)

		Scale	*M*/%	*SD*	1	2	3	4	5	6	7	8	9	10
1.	Age		41.50	17.71	1									
2.	Gender		77.5%	0.42	-.31	1								
3.	Education		4.40	1.22	.52**	-.22	1							
4.	WorkEx		16.86	14.47	.94**	-.35*	.48**	1						
5.	AIFamiliar	1-5	2.40	0.90	-.31	.45**	-.01	-.36*	1					
6.	AIReveal	1-5	4.13	1.18	-.22	.16	-.21	-.21	.29	1				
7.	CH	1-5	3.28	0.98	-.43**	.13	-.36*	-.45**	.19	-.02	1			
8.	Trust	1-5	3.02	0.93	-.34*	.02	-.40*	-.37*	.08	-.23	.87**	1		
9.	Pers_E	1-5	3.68	0.68	-.11	-.06	-.12	-.13	.02	-.10	-.14	.02	1	
10.	Pers_N	1-5	2.59	0.97	-.29	.08	-.29	-.26	.24	-.02	.10	.10	-.02	1

Note. Listwise *n* = 40; AvC = Avatar Charismatic; WorkEx = Work Experience; AIFamiliar = AI Familiarity; AIReveal: AI Nature Reveal; CH = Perceived Charismatic Leadership; Pers_E = Follower Personality Extraversion; Pers_N = Follower Personality Neuroticism; Gender % = Female
**$p < .01$; *$p < .05$

Table 4.3

Descriptives and Bivariate Statistics (AvN)

		Scale	*M*/%	*SD*	1	2	3	4	5	6	7	8	9	10
1.	Age		42.91	18.07	1									
2.	Gender		54.5%	0.65	-.04	1								
3.	Education		4.27	1.21	.29	-.31	1							
4.	WorkEx		18.24	14.33	.97**	.00	.25	1						
5.	AIFamiliar	1-5	3.00	0.87	-.28	-.28	.03	-.26	1					
6.	AIReveal	1-5	4.15	1.15	-.26	.08	.15	-.30	.09	1				
7.	CH	1-5	3.16	0.78	-.29	-.19	-.13	-.27	.20	.07	1			
8.	Trust	1-5	2.97	0.70	-.33	-.08	-.07	-.29	.29	-.06	.77**	1		
9.	Pers_E	1-5	3.42	0.82	-.06	-.22	-.16	-.10	.41*	.33	.28	.32	1	
10.	Pers_N	1-5	2.37	0.97	-.43*	.06	.02	-.45**	.35*	.09	.09	.111	-.21	1

Note. Listwise *n* = 33; AvN = Avatar Neutral; WorkEx = Work Experience; AIFamiliar = AI Familiarity; AIReveal: AI Nature Reveal; CH = Perceived Charismatic Leadership; Pers_E = Follower Personality Extraversion; Pers_N = Follower Personality Neuroticism; Gender % = Female
**$p < .01$; *$p < .05$

Table 4.3

Descriptives and Bivariate Statistics (HC)

		Scale	*M*/%	*SD*	1	2	3	4	5	6	7	8	9
1.	Age		44.50	18.75	1								
2.	Gender		65.6%	0.48	-.51**	1							
3.	Education		4.75	0.98	.37*	.02	1						
4.	WorkEx		19.63	16.11	.97**	-.55**	.25	1					
5.	AIFamiliar	1-5	2.47	0.92	-.36*	.01	-.08	-.30	1				
6.	CH	1-5	4.23	0.77	-.19	.54**	.10	-.21	-.19	1			
7.	Trust	1-5	3.88	0.86	-.24	.36*	-.06	-.23	-.17	.88**	1		
8.	Pers_E	1-5	3.49	0.83	-.18	.07	-.17	-.19	-.39*	.25	.33	1	
9.	Pers_N	1-5	2.46	0.89	-.01	-.20	-.04	.02	.07	-.21	-.24	.05	1

Note. Listwise *n* = 32; HC = Human Charismatic; WorkEx = Work Experience; AIFamiliar = AI Familiarity; CH = Perceived Charismatic Leadership; Pers_E = Follower Personality Extraversion; Pers_N = Follower Personality Neuroticism; Gender % = Female

**$p < .01$; *$p < .05$

Table 4.4

Descriptives and Bivariate Statistics (HN)

		Scale	*M*/%	*SD*	1	2	3	4	5	6	7	8	9
1.	Age		50.72	16.23	1								
2.	Gender		56.3%	0.50	-.26	1							
3.	Education		4.72	0.81	.36*	-.23	1						
4.	WorkEx		24.50	15.25	.97**	-.25	.31	1					
5.	AIFamiliar	1-5	2.59	0.76	-.07	-.40*	.28	-.07	1				
6.	CH	1-5	3.40	0.74	-.10	-.16	-.33	-.04	-.20	1			
7.	Trust	1-5	3.36	0.77	.07	-.09	-.14	.17	-.17	.80*	1		
8.	Pers_E	1-5	3.09	0.89	.06	.10	.12	.06	-.10	.12	.19	1	
9.	Pers_N	1-5	2.74	0.82	.15	.16	.18	.08	.21	-.23	-.12	.12	1

Note. Listwise *n* = 32; HN = Human Neutral; WorkEx = Work Experience; AIFamiliar = AI Familiarity; CH = Perceived Charismatic Leadership; Pers_E = Follower Personality Extraversion; Pers_N = Follower Personality Neuroticism; Gender % = Female

**$p < .01$; *$p < .05$

4.2 Hypotheses Testing

To test H1, a univariate analysis of covariance (ANCOVA) assessed the effect of the nature of the leader on perceived charisma while controlling for the following covariates: age, gender, education, work experience, and AI familiarity. Levene's test indicated that the assumption of homogeneity of variances was met ($F(3, 133) = 1.17$, $p = .322$). The overall ANCOVA model (Table 4.6) was significant. The corrected model ($F(8, 128) = 5.96$, $p < .001$, with $R^2 = .27$) accounted for 27% of the variance in perceived charisma. The adjusted $R^2 = .23$ indicated a good model fit.

With regard to the covariates, none of them significantly influenced the perception of charisma, as can be retrieved from the respective p-values > .05. However, results showed that perceived charisma varied significantly between conditions ($F(3, 128) = 12.20$, $p < .001$, Partial Eta Squared = .22).

Table 4.5

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	*F*	Sig.
Corrected Model	31.19[a]	8	3.90	5.96	.001***
Intercept	5.91	1	5.91	9.02	.003**
Age	.41	1	.41	.63	.428
Gender	.07	1	.07	.10	.750
Education	.89	1	.89	1.37	.245
Work Experience	.00	1	.00	.00	.980
AI Familiarity	.08	1	.08	.13	.721
Condition	23.96	3	7.99	12.20	.001***
Error	83.79	128	.66		
Total	1794.18	137			
Corrected Total	114.98	136			

Note. $N = 137$; a. $R^2 = .27$ (Adjusted $R^2 = .23$)
***$p < .001$; **$p < .01$; *$p < .05$

Table 4.7 presents the estimated marginal means, which indicate that the human charismatic condition demonstrated the highest mean ($M = 4.24$, SE = .15, 95% CI [3.95, 4.53]), followed by the human neutral one ($M = 3.49$, SE = .15, 95% CI [3.20, 3.77]). Considering the avatar conditions, one could see higher levels of charisma perception in the avatar charismatic condition ($M = 3.23$, SE = .13, 95% CI [2.97, 3.49]) compared to the avatar neutral condition

(M = 3.13, SE = .15, 95% CI [2.84, 3.42]). This suggests that charisma manipulations did influence perceptions, even when applied to avatars. However, the effect appeared to be more pronounced when displayed by humans.

Table 4.6

Estimates

			95% Confidence Interval	
Condition	Mean	Std. Error	Lower Bound	Upper Bound
avatar charismatic	3.23[a]	.13	2.97	3.49
avatar neutral	3.13[a]	.15	2.84	3.42
human charismatic	4.24[a]	.15	3.95	4.53
human neutral	3.49[a]	.15	3.20	3.77

Note. N = 137; Estimated marginal means are adjusted for covariates. 95% confidence intervals are reported.

To explore where significant differences occurred, pairwise comparisons were conducted using the Bonferroni test (Table 4.8). When analyzing the different conditions, it became evident that the avatar charismatic condition did not differ significantly from the avatar neutral condition (MD = 0.10, SE = 0.20, p = 1.000, 95% CI = [-0.44, 0.63]), indicating that respondents evaluated the avatar in a similar manner, regardless of whether the speech was delivered in a neutral or charismatic style.

However, a significant difference was found between the avatar charismatic condition and the human charismatic condition (MD = -1.01, SE = 0.19, p < .001, 95% CI = [-1.53, -0.49]), suggesting that respondents perceived significantly more charisma in the human leader compared to the avatar leader. Moreover, no significant difference was observed between the avatar charismatic and human neutral condition (MD = -0.26, SE = 0.20, p = 1.000, 95% CI = [-0.79, 0.27]), indicating that the benefit of delivering a charismatic speech was not strong enough to promote levels of charisma above those of a human leader holding a neutral speech. Similarly, when comparing the neutral conditions (avatar vs. human) no significant difference was found (MD = -0.36, SE = 0.21, p = .524, 95% CI = [-0.91, 0.20]). Taken all together, H1, which posited that human leaders are perceived as more charismatic than avatar leaders, was supported.

Table 4.7

Pairwise Comparisons

(I) Cond	(J) Cond	MD	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
avatar charismatic	avatar neutral	.10	.20	-.44	.63
	human charismatic	-1.01*	.19	-1.53	-.49
	human neutral	-.26	.20	-.79	.27
avatar neutral	avatar charismatic	-.10	.20	-.63	.44
	human charismatic	-1.11*	.21	-1.67	-.55
	human neutral	-.36	.21	-.91	.20
human charismatic	avatar charismatic	1.01*	.19	.49	1.53
	avatar neutral	1.11*	.21	.55	1.67
	human neutral	.75*	.21	.20	1.30
human neutral	avatar charismatic	.26	.20	-.27	.79
	avatar neutral	.36	.21	-.20	.91
	human charismatic	-.75*	.21	-1.30	-.20

Note. N = 137; Based on estimated marginal means with Bonferroni-adjusted comparisons. 95% confidence intervals are reported.

*. The mean difference is significant at the .05 level.

To test hypotheses H2 through H6, a moderated mediation analysis was conducted using model 16 of the PROCESS macro (Hayes, 2022), with the results presented in Table 4.9. To capture comparisons between all relevant conditions, dummy coding was used and the reference category was systematically changed. On top, we assessed mediation via trust (H4) and moderation of the indirect effect by personality traits (H5 and H6).

H2 postulated that trust in leaders would be positively associated with the perception of charisma. This hypothesis was also supported. Results showed that trust appeared to be a strong and significant predictor of perceived charismatic leadership (B = .85, SE = .05, t = 16.27, p = <.001), indicating that higher ratings of trust were associated with increased perceptions of charisma.

H3 hypothesized that trust levels would differ depending on the nature of the leader, specifically predicting that human leaders would be perceived as more thrustworthy than avatar leaders. This hypothesis was as well supported. Both human conditions (charismatic and neutral) resulted in significantly higher trust ratings compared to both avatar conditions. Specifically, the human charismatic condition predicted higher trust levels than the avatar charismatic (B = 0.95, SE = 0.21, t = 4.53, p < .001) and avatar neutral condition (B = 0.91, SE

= 0.19, t = 4.71, p < .001). In addition, the human neutral condition revealed higher trust scores than the avatar charismatic (B = 0.49, SE = 0.21, t = 2.37, p = .020) and the avatar neutral condition (B = 0.45, SE = 0.20, t = 2.29, p = .023).

Continuing with H4, it was anticipated that trust would mediate the relationship between the nature of the leader and perceived charismatic leadership. This hypothesis was partially supported as some of the contrasts revealed significant indirect effects via trust, while others did not (Table 4.10). Specifically, full mediation was observed in three contrasts. First, for the comparison between the avatar charismatic and human neutral condition, a significant indirect effect via trust was found (b = 0.42, 95% CI [0.10, 0.74]), and a non-significant direct effect (b = -0.06, p = .602). Similarly, the contrast between the avatar neutral and human charismatic condition yielded a significant indirect effect (b = 0.78, 95% CI [0.43, 1.12]) and a non-significant direct effect (b = 0.22, p = .068). Lastly, full mediation was observed between the avatar neutral and human neutral condition, where the indirect effect via trust was significant (b = 0.39, 95% CI [0.06, 0.73]), whereas the direct effct was non-significant (b = -0.17, p = .160).

In contrast, no mediation was found between the avatar charismatic and avatar neutral condition as both the indirect effect (b = 0.03, 95% [-0.30, 0.34]), and the direct effect (b = 0.11, p = .364) revealed a non-significant result. Finally, partial mediation was identified in two contrasts. In the comparison between the avatar charismatic and human charismatic condition, both the indirect effect (b = 0.81, 95% CI [0.45, 1.16]), and the direct effect (b = 0.33, p = .011) were significant. Moreover, in the contrast between the human charismatic and human neutral condition, significant effects were observed between both the indirect path (b = -0.39, 95% [-0.74, -0.04]) and the direct one (b = -0.39, p = .001).

Table 4.8

Unstandardized Regression Coefficients for Charisma (CH) and Trust

Predictor	**Model 1: CH**				**Model 2: Trust**			
	B	**SE**	***t***	***p***	**B**	**SE**	***t***	***p***
Intercept	3.71	.94	3.94	<.001	1.22	1.67	.73	.467

Predictor	Model 1: CH				Model 2: Trust			
Con_new								
(reference = AvC)								
• AvN vs. AvC	.11	.12	.91	.364	.03	.20	.17	.867
• HC vs. AvC	.33*	.12	2.59	.011	.95***	.21	4.53	<.001
• HN vs. AvC	-.06	.12	–.52	.602	.49*	.21	2.37	.020
Intercept	3.82***	.95	4.03	<.001	1.25	1.67	.75	.456
Con_ref2								
(reference = AvN)								
• AvC vs. AvN	-.11	.12	-.91	.364	-.03	.20	-.17	.867
• HC vs. AvN	.22	.12	1.84	.068	.91***	.19	4.71	<.001
• HN vs. AvN	–.17	.12	-1.42	.160	.45*	.20	2.29	.023
Intercept	4.04	.95	4.27	<.001	2.16	1.67	1.30	.197
Con_ref3								
(reference = HC)								
• AvC vs. HC	-.33*	.13	-2.59	.011	-.95***	.21	-4.53	<.001
• AvN vs. HC	-.22	.12	-1.84	.068	-.91***	.19	-4.71	<.001
• HN vs. HC	-.39**	.12	–3.29	.001	-.46*	.21	-2.23	.027
Intercept	3.65	.94	3.88	<.001	1.70	1.66	1.02	.308
Con_ref4								
(reference = HN)								

Predictor	Model 1: CH				Model 2: Trust			
• AvC vs. HN	.06	.12	.52	.602	-.49*	.21	-2.37	.020
• AvN vs. HN	.17	.12	1.42	.160	-.45*	.20	-2.29	.023
• HC vs. HN	.39**	.12	3.29	.001	.46*	.21	2.23	.027
Mediator (Trust)	.85***	.05	16.27	<.001				
Moderators								
• Pers_E (Extraversion)	–.08	.05	–1.61	.110				
• Trust × Pers_E	.02	.07	.28	.777				
• Pers_N (Neuroticism)	-.02	.05	-.53	.594				
• Trust x Pers_N	.04	.05	.84	.403				
Covariates								
• Age	.01	.01	.65	.514	–.02	.01	–1.29	.200
• Gender	–.02	.08	–.29	.771	–.04	.14	–.30	.767
• Education	–.02	.04	–.41	.681	–.09	.07	–1.23	.220
• Work experience	–.01	.01	–1.25	.214	.01	.02	.69	.492
• AI familiarity	.00	.05	.08	.933	–.04	.09	–.44	.660
Model fit	**R^2 = .78**				**R^2 = .22**			
	$F(13, 123) = 33.26$, p = <.001				$F(8, 128) = 4.60$, p = <.001			

Note. $N = 137$. Coded: 1 = avatar charismatic (AvC), 2 = avatar neutral (AvN), 3 = human charismatic (HC), 4 = human neutral (HN). Variables mean-centered. *$p < .05$; **$p < .01$; ***$p < .001$.

H5 and H6 proposed that the indirect effect of the nature of the leader on perceived charismatic leadership through trust would be moderated by personality traits, specifically, extraversion (H5) and neuroticism (H6). Extraversion did not significantly moderate the indirect effect of the nature of the leader on perceived charismatic leadership through trust (B = .02, SE = .07, t = .28, p = .7770). Similarly, neuroticism did not significantly moderate the indirect effect (B = .04, SE = .05, t = .84, p = .4032) – both results can be found in Table 4.9. Thus, H5 and H6 were rejected.

Table 4.9

Direct and Indirect Effects of Condition on Charisma (CH) via Trust

Contrast	**Indirect effect b (95% CI)**	**Direct effect b**	***p***
AvC vs. AvN	0.03 [-0.30, 0.34]	0.11	.364
AvC vs. HC	0.81 [0.45, 1.16]∗	0.33**	.011
AvC vs. HN	0.42 [0.10, 0.74]∗	–0.06	.602
AvN vs. HC	0.78 [0.43, 1.12]∗	0.22	.068
AvN vs. HN	0.39 [0.06, 0.73]∗	–0.17	.160
HC vs. HN	-0.39 [-0.74, -0.04]∗	-0.39***	.001

Note. N = 137. Bootstrap samples = 5,000. CI = bias-corrected 95% confidence interval; indirect effect = effect of Condition on CH through Trust; direct effect = residual effect of Condition on CH controlling for Trust.
∗95% CI does not include zero, $p < .05$.

Taken all together, the results provided clear support for H2 and H3, partial support for H4, and no support for H5 and H6. Based on that, one could conclude that trust played a significant role in predicting the perception of charisma, especially when comparing human and avatar leaders. However, the impact of personality traits on these effects revealed no significant results.

CHAPTER 5
Discussion

The purpose of the present study was to investigate whether the nature of the leader (human vs. avatar) influences the perception of charismatic leadership, whether this relationship is mediated by trust in the leader, and if this indirect effect is moderated by follower personality traits. A total of six hypotheses were tested. Three of these were supported, one partially and the remaining two were rejected.

The significant result of the first hypothesis aligns with existing literature, suggesting that human leaders are perceived as more charismatic than avatar leaders. As earlier discussed, based on signaling theory, leaders are perceived as more charismatic when signaling their convictions in a symbolic and emotional way. However, this signaling process functions only when the content of the speech and nonverbal signals like facial expressions, eye gaze, and hand gestures are well aligned in an authentic manner (Antonakis et al., 2011; Ernst et al., 2022). The results of the present study confirm the success of the human leader's speech in displaying charisma via a natural alignment of verbal and nonverbal signals, thereby influencing followers' image of a prototypical charismatic leader (Bergh et al., 2018).

In line with our expectations, the avatar leader fails to convey equal perceptions of charisma, which is consistent with previous research, suggesting that avatars still lack the emotional and behavioral expressiveness to effectively convey charisma (Ernst et al., 2022; Schuller et al., 2023). This finding can be attributed to two potential explanations: Firstly, although the study standardized verbal and nonverbal CLTs across all video conditions and designed the avatar to appear highly anthropomorphic, the avatar still fails to evoke the intended charismatic effect. Notably, even within the avatar conditions, the pairwise comparisons of the ANCOVA reveal no statistically significant differences between the charismatic and neutral avatar conditions. These results indicate that either the avatar technically fails to effectively display the CLTs or respondents do not interpret the CLTs as authentic signals of charisma.

A second argument explaining the lower charisma ratings in the avatar conditions refers to respondent's perceptions of human-likeness. When looking at descriptive results of our study, one can observe that the avatar conditions are perceived as significantly less human-like (anthropomorphic) than the human conditions. Even though the AI nature of the leader was only explicitly revealed at the end of the survey, it seems that participants might have already perceived the artificial image of the leader during the video. In both conditions, 71% and 76% of the respondents, respectively, report having realized the artificial nature "quite strongly" or

"totally". However, results do not specify when exactly this recognition occurred during the survey. Such awareness might disturb the perceived authenticity of the avatar, which could trigger the uncanny valley effect (Bombari et al., 2015; Mori et al., 2012). From literature, it is well known that when an avatar is designed to appear human-like, as targeted in this study, but misses the behavioral alignment (hand gestures, eye gaze, nodding), negative reactions towards the avatar or even its full rejection can be activated (Bombari et al., 2015; Wang et al., 2020). One speculative indication that might be related to the uncanny valley effect refers to the time individuals spent watching the videos. In both avatar conditions, almost 90% of the respondents did not finish viewing the entire video.

The second hypothesis, suggesting that trust in leaders is positively associated with followers' perception of charisma, is also supported and consistent with previous research findings that transformational and charismatic leadership predict both cognitive (ability and integrity) and affective (benevolence) trust (Kelloway et al., 2012; Mayer et al., 1995; McAllister, 1995). In fact, our results support these theoretical foundations: The observed correlation between charismatic leadership and trust found in this study (r = .86) exceeds the reported result (r = .72) in the meta-analysis by Dirks and Ferrin (2002), further underpinning the strong link between the two constructs. Concretely, the high correlation reflects that the charismatic leader speeches, with their persuasive communal mission, ethical principles, and concerns for others, seem to reach the participants and contribute to their perceptions of the leader as both trustworthy and charismatic.

Continuing with hypothesis three, the findings support the idea that human leaders are perceived as more trustworthy than avatar leaders. This can be supported by existing research like, for instance, He et al. (2023). They found that human leaders are perceived as more trustworthy than avatars, likely because they appear more familiar and similar to respondents, thereby reducing uncertainty. Additionally, our results are in line with previous findings suggesting that avatars struggle to convey the same level of emotional resonance as humans, which may hinder the development of affective trust (Norman et al., 2019).

The regression analysis supports this assumption: Irrespective of the delivery style or content of the speech, human leaders are consistently rated as more trustworthy than avatar leaders. Notably, even the neutral human condition results in higher trust ratings when compared to the avatar charismatic condition. This finding clearly highlights that the nature of the leader, being human, is the driving factor of trust perceptions, likely due to the human leader's ability to convey emotional authenticity and elicit feelings of familiarity and similarity, aspects that avatars currently struggle to replicate.

This finding was further reflected by anecdotal insights from some participants' open-ended feedback. While not representative of the entire sample, they shed some light on how avatars are perceived. Comments such as "Somehow I felt angry and wasn't really willing to listen to that guy because I thought „pff you are just an avatar - a fake person with no feelings at all. Can not really take you seriously", "I felt some kind of not being touched" or "The main feeling was distrust" underscore the emotional distance and skepticism respondents experience when observing the avatar. On top, these comments may again reflect the influence of the uncanny valley effect that might have occurred for respondents. This phenomenon led to negative feelings or even the full rejection of the avatar, thereby undermining the development of trust (Mori et al., 2012).

The fourth hypothesis, proposing that trust mediates the relationship between the nature of the leader (avatar vs. human) and the perception of charismatic leadership, receives partial support. A full mediation effect is observed between the avatar charismatic and human neutral condition, between the avatar neutral and human neutral condition and between the avatar neutral and human charismatic condition.

The first two findings highlight that in situations where the leader's charismatic signaling was low or artificial, like in the human neutral or both avatar conditions, participants base their charisma evaluation entirely on how much they trust the leader. In this case, the nature of the leader has no significant direct impact on perceived charisma. What matters is that the human leader is seen as more trustworthy, and that trust leads to higher charisma ratings. This result is consistent with the observation made by He et al. (2023) that human leaders are generally perceived as more trustworthy than avatar leaders due to their authentic and familiar appearance and behavior. When looking at the result of the avatar neutral and human charismatic condition, both trust and charismatic signaling independently result in higher ratings of perceived charismatic leadership for the human leader (Goodwin et al., 2011).

Conversely, the lack of a mediation comparing avatar charismatic and avatar neutral conditions highlights that charismatic signaling via avatars fails to influence both trust and charisma perception. Even though the avatar is programmed with strong charismatic content, it is likely that a misalignment occurs between the content – its story and vision – and the delivery style. This result aligns with findings by Caspi et al. (2019), outlining that delivery is dominant in shaping first impressions of trust and charisma. Content can stabilize that first impression later, but only when it fits well with the delivery style.

Secondly, partial mediation is observed in two contrasts: between the avatar charismatic and human charismatic condition, and between the human charismatic and human neutral

condition. These findings indicate that other variables beyond trust may contribute to the perception of charisma. To explain the remaining direct effect, one could assume that the successful implementation of the verbal and nonverbal CLTs, as conceptualized by Antonakis et al. (2011), combined with compelling visionary content, makes participants perceive the human leader as a prototypical example of a charismatic leader, regardless of how much they trust them.

Contrary to the expectations of this study, H5 and H6, postulating that the indirect effect of the nature of the leader on perceived charismatic leadership through trust is moderated by personality traits, specifically, extraversion (H5) and neuroticism (H6), are rejected. This finding is in contrast to earlier studies, which suggest that extraverted individuals, who are typically more sociable and energetic, and individuals who are low in neuroticism tend to prefer charismatic leaders (Thoroughgood & Sawyer, 2017).

One potential explanation that might account for this result is that the assumed similarity between follower and leader traits, as proposed by the similarity-attraction hypothesis (Felfe & Schyns, 2006), is not activated in this particular context. As previously discussed, respondents may have perceived a lack of human-likeness in the avatar and an absence of personal relevance in the human leader condition, possibly due to the hypothetical nature of the speech.

This argument can be further reinforced by trait activation theory (Tett & Burnett, 2003). According to this theory, traits only become salient when corresponding situational cues trigger activation. Considering this study's experimental design, which uses pre-recorded videos as a medium and no direct interaction between follower and leader, signals of extraversion or neuroticsm are not salient enough to be perceived and follower's personality traits remain inert (Ernst et al., 2022).

5.1 Theoretical and Practical Implications

Our study contributes to the theoretical discussion on charismatic leadership by translating traditional human-centered leadership models into the context of AI, especially focusing on avatar-mediated communication. The central theoretical contribution lies in pointing out the boundaries of signaling theory. As outlined by Schuller et al. (2023) it is technically feasible to program a charismatic AI by integrating respective verbal and nonverbal CLTs. However, this research demonstrates that even if avatars mimic charismatic behaviors, followers' interpretation of these behaviors may be limited because of a perceived lack of authenticity in how the avatar conveys them. These findings call for a theoretical rethinking of the assumption

that the mere technological perfection and anthropomorphism of an avatar will evoke charismatic effects. Instead, greater emphasis should be placed on factors enhancing the perceived realism and prototypicality of a charismatic leader. Furthermore, this study sheds light on the causal explanations behind these observed limitations. When looking at the mediating role of trust, it becomes clear that regardless of whether the avatar displays neutral or charismatic behavior, the machine itself is not trusted.

From a practical perspective, our findings offer valuable insights into the implementation of AI, particularly avatars, within organizational settings. Based on the preliminary results of this study, one has to acknowledge that avatars, as currently implemented, are limited in portraying charismatic leadership, namely in being perceived as emotional, empathetic, and persuasive leaders with moral and ethical standards. If organizations strive to incorporate avatars in managerial practice, they should primarily use them for operational tasks like performance feedback, delegation of responsibilities or onboarding purposes rather than in emotionally sensitive and value-driven domains (Raveendhran et al., 2020; Waytz & Norton, 2014). For such purposes, avatars could serve as a complementary tool, for example by introducing the story and strategy behind an organizational decision, while human leaders rely more on in-depth discussions with employees to deal with concerns and resistance.

To further assess the effectiveness of avatars in conveying charisma, field studies should replicate this experiment in real-life workplace settings. Moreover, considering that avatars can still trigger feelings of uneasiness and rejection, it is ethically important to provide high transparency and disclosure regarding the use of AI (Schuller et al., 2023). Although the rise of AI and avatars offers benefits like enhanced efficiency, greater objectivity in analysing data, standardization, and cost reduction, the implementation represents a complex change process. As the introduction of such systems can create potential insecurities and perceptions of incompetence in staff, organizations should develop a clear AI strategy to ensure AI-employee trust and build up organizational readiness for this technological change (Enholm et al., 2022; Jöhnk et al., 2021).

5.2 Limitations and Future Research

Reflecting on this study, it is essential to address a few limitations, from which suggestions for future research can be derived. Even though this study was conducted with a randomized experimental design, controlling for potential confounding variables, one has to critically mention the sampling procedure. Specifically, data were collected through convenience

sampling followed by snowballing. Moreover, a high dropout rate was observed, particularly early during the video that was provided in the beginning of the survey. One can assume that the duration and complexity of the video content might account for this dropout, especially among non-native English speakers. Furthermore, the size of the sample is relatively small, with only 32 to 40 participants per condition. Therefore, future research should aim to recruit a more balanced and larger sample to increase statistical power and ensure generalizability to broader populations. Moreover, when using videos, which are cognitively demanding and time-consuming, as was the case in this study, future studies could incorporate incentives after completing the survey as well as force video watching, which can be technically adjusted.

Further, the technological development and implementation of the avatar pose another limitation. While verbal CLTs, such as storytelling, metaphors, and rhetorical questions, are successfully standardized across the human and avatar conditions, the realization of the three nonverbal CLTs, animated voice, facial expressions, and gestures, is limited by platform restrictions and appears sometimes delayed or static. These platform-specific restrictions might create perceptions of misalignment between the avatar's verbal and nonverbal CLTs. Given these limitations, it remains an open question whether more sophisticated avatars could provide more charismatic impressions. Based on this, we believe that future research should replicate this study testing other avatars. Additionally, studies could test different levels of anthropomorphism to better identify boundaries of the uncanny valley effect and determine thresholds at which perceptions of charisma might start to emerge.

Furthermore, the artificial nature of our avatar is revealed by the end of the study. However, research claims that it might be promising to reveal the artificial character of the leader already at the beginning of the survey to avoid expectancy violations (Crolic et al., 2022). Therefore, future research should manipulate this variable directly and investigate how this influences perceptions of charisma and trust.

Another limitation refers to the hypothesized moderation effect of follower extraversion and neuroticism. Based on study results, we assumed that charismatic leaders are perceived as more extraverted and emotionally stable; however, we do not explicitly test whether followers perceive similarity in traits with leaders. Future research may address this limitation by including perceived similarity as a moderator (Schyns & Felfe, 2006). Overall, it would also be interesting to replicate this study in the near future as the knowledge, experience, and familiarity with avatars might rapidly increase, making it difficult to forecast how avatar leaders will be perceived over time.

CHAPTER 6
Conclusion

To conclude, despite its limitations, this study provides preliminary evidence that the implementation of CLTs, which have been shown to increase the perception of charisma in human leaders (Antonakis et al., 2011), does not enable avatars to portray charismatic leadership. One explanation for this finding is that avatars do not elicit the same levels of trustworthiness as human leaders which is critical for conveying charisma. Referring to Marshall McLuhan's (1964) proposition that "the medium is the message", this study illustrates that it is not merely the content of a message that drives the charismatic effect, but rather the "medium", – in this case, the nature of the leader – through which it is delivered. Currently, AI agents like avatars lack the ability to convey such messages effectively.

Nevertheless, as AI continues to grow and shape the future of work, it is essential to familiarize ourselves with these developments and leverage current benefits of AI while also clearly defining boundaries for its usage and identifying areas where human interaction remains irreplaceable. However, one needs to acknowledge that the domains of human irreplaceability are not static but change as AI capabilities and human acceptance evolve.

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Annexes

Annex A

Video Material

Videos by Antonakis et al. (2021)

Human Charismatic Speech:
http://av.unil.ch/hva/3813/charisma.mp4

Human Neutral Speech:
http://av.unil.ch/hva/3811/noncharisma.mp4

Avatar Videos Generated with DeepBrain AI (n.d.)

Avatar Charismatic Speech:
https://youtu.be/fodtxme0p0k

Avatar Neutral Speech:
https://youtu.be/q98RECXuOW8

Annex B

Recruitment text

Curious about how different leaders inspire and influence? I am conducting a study on the perceptions of leadership, trust, and personal characteristics in unique settings – and would love your input!

The survey will take no more than **15 minutes**, and your perspective will really help contribute to valuable insights into leadership dynamics.

Thanks a lot for your openness and support!
Lea vom Kolke (e-mail: lmvke@iscte-iul.pt)

Annex C

Full Questionnaire

1. Briefing

Hello and welcome to my research study!

I am developing this research as part of my master thesis at ISCTE IUL Lisbon. I kindly invite you to participate in an online survey about perceptions of leadership. Participation in this survey is completely voluntary, and your responses will remain strictly confidential. They will be used solely for research purposes. By clicking on the arrow and proceeding to answer the questions, you are providing your consent to take part in this research study. If you have decided to participate, you may stop your participation and withdraw your consent at any time, without having to provide any justification. Your participation in this study is highly valued, as it will contribute to advancing knowledge in this scientific field. The study involves watching a video and subsequently answering questions. The survey will take no longer than 10-15 minutes to complete. In case you have any doubts, want to share comments or receive any feedback on the research results, I am happy to receive an e-mail from you (lmvke@iscte-iul.pt).

Thank you for your time and contribution to this study. I appreciate that a lot.

Kind regards,
Lea vom Kolke

2. Introduction to the video

I will start by asking you to watch a video. While watching this video, please consider yourself as part of a non-profit organization that launches a "Super Santa" fundraising campaign. This campaign aims to raise funds to support children staying in the hospital during Christmas by financing gifts, refurbishing rooms, and convincing parents' travel expenses, allowing families to spend the holidays together. Please consider the person you are seeing in the video as your leader and yourself as part of his team (see Appendix A)

Considering the video you just watched, please rate your agreement level on the following statements.
The leader ...

	strongly disagree (1)	somewhat disagree (2)	neither agree nor disagree (3)	somewhat agree (4)	strongly agree (5)
would make me proud to work with (1)	1	2	3	4	5
goes beyond self-interest (2)	1	2	3	4	5
has my respect (3)	1	2	3	4	5
displays power and confidence (4)	1	2	3	4	5
talks of values (5)	1	2	3	4	5
models ethical standards (6)	1	2	3	4	5
considers the moral/ethical (7)	1	2	3	4	5
emphasises the collective mission (8)	1	2	3	4	5
talks optimistically (9)	1	2	3	4	5
expresses confidence (10)	1	2	3	4	5
talks enthusiastically (11)	1	2	3	4	5
arouses awareness about important issues (12)	1	2	3	4	5

Please rate the leader you have just observed based on the following statements.

	strongly disagree (1)	somewhat disagree (2)	neither agree nor disagree (3)	somewhat agree (4)	strongly agree (5)
The leader appears very capable of performing his job. (1)	1	2	3	4	5
The leader seems to be successful at the things he tries to do. (2)	1	2	3	4	5
The leader appears to have a lot of knowledge about the work that needs to be done. (3)	1	2	3	4	5
I feel very confident about the leader's skills. (4)	1	2	3	4	5
The leader seems to have specialized capabilities that could increase performance. (5)	1	2	3	4	5
The leader appears well-qualified. (6)	1	2	3	4	5
The leader seems very concerned about others' welfare. (7)	1	2	3	4	5
The leader seems to care about others' needs and desires. (8)	1	2	3	4	5
The leader appears unlikely to knowingly do anything hurtful to others. (9)	1	2	3	4	5
The leader seems to look out for what is important to others. (10)	1	2	3	4	5
The leader appears willing to go out of his way to help others. (11)	1	2	3	4	5
The leader seems to have a strong sense of justice. (12)	1	2	3	4	5
I believe that the leader would stick to his word. (13)	1	2	3	4	5
The leader appears fair in dealing with others. (14)	1	2	3	4	5
The leader's actions and behaviors seem not very consistent. (15)	1	2	3	4	5
I believe that the leader has strong values. (16)	1	2	3	4	5
Sound principles seem to guide the leader's behavior. (17)	1	2	3	4	5
In general, I would trust this leader. (18)	1	2	3	4	5

Now, think of yourself and consider the following statements.

	strongly disagree (1)	somewhat disagree (2)	neither agree nor disagree (3)	somewhat agree (4)	strongly agree (5)
I am the life of a party. (1)	1	2	3	4	5
I don't talk a lot. (2)	1	2	3	4	5
I talk to a lot of different people at parties. (3)	1	2	3	4	5
I keep in the background. (4)	1	2	3	4	5
I have frequent mood swings. (5)	1	2	3	4	5
I am relaxed most of the times. (6)	1	2	3	4	5
I get upset easily. (7)	1	2	3	4	5
I seldom feel blue/sad. (8)	1	2	3	4	5

Considering the previous video, please assess the leader that you have seen based on the following characteristics. The leader seems ...

	1	2	3	4	5	
Fake	1	2	3	4	5	Natural
Machinelike	1	2	3	4	5	Humanlike
Unconscious	1	2	3	4	5	Conscious
Artificial	1	2	3	4	5	Lifelike
Moving rigidly	1	2	3	4	5	Moving elegantly

How old are you?

What is your gender?

o Male (10)
o Female (11)
o Non-binary / third gender (12)
o Prefer not to say (13)

What is your educational level?

o Less than Highschool (1)
o Highschool or equivalent (2)
o Bachelor's Degree (3)
o Post-Graduation (4)
o Master's Degree (5)
o Doctorate's Degree (PhD) (6)
o Prefer not to say (7)

Please indicate your work experience (in years).

How familiar are you with AI systems?

o Not at all familiar (1)
o Slightly familiar (2)
o Somewhat familiar (3)
o Very familiar (4)
o Extremely familiar (5)

Before ending the questionnaire, I would like to inform you that the leader you saw in the video was represented by an avatar. To what extent did you perceive that the leader was an avatar rather than a real human?

o Not at all (1)
o Slightly (2)
o Moderately (3)
o Quite strongly (4)
o Totally (5)

If you have any additional comments, feedback, or suggestions regarding your experience or perceptions during the survey, please feel free to share them below.

Annex D

PCA Results

Table D.1

KMO and Bartlett's Test – Godspeed Questionnaire

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.853
Bartlett's Test of Sphericity	Approx. Chi-Square	512.845
	df	10
	Sig.	<.001

Table D.2

Total Variance Explained – Godspeed Questionnaire

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.647	72.949	72.949	3.647	72.949	72.949
2	.487	9.746	82.695			
3	.469	9.388	92.083			
4	.253	5.055	97.138			
5	.143	2.862	100.000			

Extraction Method: Principal Component Analysis.

Table D.3

Communalities – Godspeed Questionnaire

Communalities

	Initial	Extraction
HL_1	1.000	.827
HL_2	1.000	.833
HL_3	1.000	.620
HL_4	1.000	.758
HL_5	1.000	.610

Extraction Method: Principal Component Analysis.

Table D.4

Reliability Statistics – Godspeed Questionnaire

Reliability Statistics

Cronbach's Alpha	N of Items
.907	5

Table D.5

KMO and Bartlett's Test - MLQ

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.918
Bartlett's Test of Sphericity	Approx. Chi-Square	1247.212
	df	66
	Sig.	<.001

Table D.6

Total Variance Explained - MLQ

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.060	58.834	58.834	7.060	58.834	58.834	6.459
2	1.078	8.984	67.818	1.078	8.984	67.818	5.547
3	.844	7.032	74.850				
4	.579	4.829	79.679				
5	.465	3.876	83.555				
6	.431	3.595	87.150				
7	.359	2.990	90.139				
8	.305	2.540	92.679				
9	.272	2.267	94.946				
10	.252	2.103	97.049				
11	.189	1.574	98.623				
12	.165	1.377	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table D.7

Structure Matrix - MLQ

Structure Matrix

	Component	
	1	2
MLQ_7	.853	.566
MLQ_6	.847	.564
MLQ_5	.842	.490
MLQ_1	.807	.711
MLQ_3	.766	.555
MLQ_8	.763	.552
MLQ_12	.751	.657
MLQ_2	.723	.434
MLQ_10	.545	.909
MLQ_11	.612	.847
MLQ_4	.653	.842
MLQ_9	.549	.823

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

Table D.8

KMO and Bartlett's Test - MLQ

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.912
Bartlett's Test of Sphericity	Approx. Chi-Square	1067.257
	df	55
	Sig.	<.001

Table D.9

Total Variance Explained - MLQ

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.653	60.483	60.483	6.653	60.483	60.483
2	1.048	9.525	70.008			
3	.665	6.041	76.049			
4	.534	4.855	80.905			
5	.435	3.956	84.861			
6	.423	3.847	88.708			
7	.318	2.887	91.595			
8	.290	2.637	94.232			
9	.271	2.467	96.699			
10	.190	1.728	98.427			
11	.173	1.573	100.000			

Extraction Method: Principal Component Analysis.

Table D.10

Reliability Statistics - MLQ

Reliability Statistics

Cronbach's Alpha	N of Items
.935	12

Table D.11

KMO and Bartlett's Test – Trust Scale

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.935
Bartlett's Test of Sphericity	Approx. Chi-Square	2130.986
	df	136
	Sig.	<.001

Table D.12

Communalities – Trust Scale

Communalities

	Initial	Extraction
Trust_1_A	1.000	.720
Trust_2_A	1.000	.657
Trust_3_A	1.000	.608
Trust_4_A	1.000	.834
Trust_5_A	1.000	.764
Trust_6_A	1.000	.804
Trust_7_B	1.000	.731
Trust_8_B	1.000	.818
Trust_9_B	1.000	.522
Trust_10_B	1.000	.792
Trust_11_B	1.000	.701
Trust_12_I	1.000	.714
Trust_13_I	1.000	.639
Trust_14_I	1.000	.638
Trust_16_I	1.000	.704
Trust_17_I	1.000	.629
Trust_15R_I	1.000	.117

Extraction Method: Principal Component Analysis.

Table D.13

KMO and Bartlett's Test – Trust Scale

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.937
Bartlett's Test of Sphericity	Approx. Chi-Square	2103.071
	df	120
	Sig.	<.001

Table D.14

Total Variance Explained – Trust Scale

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.770	61.066	61.066	9.770	61.066	61.066	6.486	40.535	40.535
2	1.517	9.480	70.546	1.517	9.480	70.546	4.802	30.011	70.546
3	.711	4.445	74.991						
4	.640	3.998	78.989						
5	.521	3.256	82.244						
6	.440	2.751	84.996						
7	.415	2.596	87.591						
8	.350	2.190	89.781						
9	.317	1.979	91.761						
10	.291	1.817	93.578						
11	.231	1.443	95.021						
12	.210	1.310	96.331						
13	.195	1.220	97.550						
14	.172	1.076	98.626						
15	.120	.752	99.378						
16	.100	.622	100.000						

Extraction Method: Principal Component Analysis.

Table D.15

Rotated Component Matrix – Trust Scale

Rotated Component Matrix[a]

	Component	
	1	2
Trust_8_B	.860	
Trust_10_B	.844	
Trust_7_B	.791	.327
Trust_16_I	.772	.328
Trust_11_B	.770	.325
Trust_12_I	.756	.378
Trust_17_I	.755	
Trust_13_I	.718	.360
Trust_14_I	.705	.376
Trust_9_B	.609	.389
Trust_5_A		.847
Trust_6_A	.314	.839
Trust_4_A	.410	.814
Trust_1_A	.360	.767
Trust_2_A	.368	.724
Trust_3_A	.340	.706

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]

a. Rotation converged in 3 iterations.

Table D.16

Total Variance Explained – Trust Scale

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.770	61.066	61.066	9.770	61.066	61.066
2	1.517	9.480	70.546			
3	.711	4.445	74.991			
4	.640	3.998	78.989			
5	.521	3.256	82.244			
6	.440	2.751	84.996			
7	.415	2.596	87.591			
8	.350	2.190	89.781			
9	.317	1.979	91.761			
10	.291	1.817	93.578			
11	.231	1.443	95.021			
12	.210	1.310	96.331			
13	.195	1.220	97.550			
14	.172	1.076	98.626			
15	.120	.752	99.378			
16	.100	.622	100.000			

Extraction Method: Principal Component Analysis.

Table D.17

Reliability Statistics – Trust Scale

Reliability Statistics

Cronbach's Alpha	N of Items
.957	16

Table D.18

KMO and Bartlett's Test – 20-Item Mini-IPIP

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.686
Bartlett's Test of Sphericity	Approx. Chi-Square	350.945
	df	28
	Sig.	<.001

Table D.19

Rotated Component Matrix - 20-Item Mini-IPIP

Rotated Component Matrix[a]

	Component		
	1	2	3
FP_4R_E	.841		
FP_3_E	.824		
FP_1_E	.774		
FP_2R_E	.747		
FP_7_N		.843	
FP_5_N		.835	
FP_6R_N		.788	
FP_8R_N			.963

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]

a. Rotation converged in 4 iterations.

Table D.20

KMO and Bartlett's Test - 20-Item Mini-IPIP

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.701
Bartlett's Test of Sphericity	Approx. Chi-Square	335.137
	df	21
	Sig.	<.001

Table D.21

Total Variance Explained - 20-Item Mini-IPIP

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.581	36.867	36.867	2.581	36.867	36.867	2.564	36.625	36.625
2	2.056	29.370	66.237	2.056	29.370	66.237	2.073	29.612	66.237
3	.665	9.504	75.741						
4	.549	7.843	83.584						
5	.457	6.534	90.118						
6	.425	6.074	96.192						
7	.267	3.808	100.000						

Extraction Method: Principal Component Analysis.

Table D.22

Reliability Statistics - 20-Item Mini-IPIP

Reliability Statistics

Cronbach's Alpha	N of Items
.809	4

Table D.23

Reliability Statistics - 20-Item Mini-IPIP

Reliability Statistics

Cronbach's Alpha	N of Items
.764	3