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Article

Analyzing the influence of physical posture on audience perception in mass media presentations

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Abstract: Non-verbal communication, especially physical posture, affects audience perception. From a cellular and molecular biomechanics angle, different postures may trigger unique intracellular responses. Upright or leaning forward postures might activate neural pathways that enhance neurotransmitter release related to positive perception. In contrast, a slouched posture could disrupt normal cellular signaling, potentially leading to a less favorable audience perception. This study explores the impact of four postures on audience views in a media setting, aiming to offer data on how posture shapes key perceptions and provide valuable insights for Mass-media Presentations (MMP), despite limited prior research on this aspect. A within-subject experimental design was employed, with 34 participants observing media presentations under four posture conditions. Posture was the independent variable, while credibility, trustworthiness, engagement, and authority were the dependent variables. Data were collected using surveys, posture monitoring devices, and eye-tracking data. Statistical analyses, including Analysis of Variance (ANOVA) and paired t-tests, were conducted to determine significant differences between posture conditions. Upright and leaning forward postures were associated with the highest audience ratings for credibility, trustworthiness, engagement, and authority. Slouched posture consistently led to the lowest ratings across all measures. The ANOVA results revealed significant differences in perceptions of engagement ($F = 10.21$, $p = 0.0008$) and credibility ($F = 8.67$, $p = 0.0013$). Paired t-tests and post-hoc analyses confirmed that upright posture significantly outperformed slouched posture across all metrics, with large effect sizes (Cohen's $d > 1.0$). Posture significantly influences audience perceptions in mass media presentations. Upright and leaning forward postures enhance credibility, trustworthiness, engagement, and authority, while slouched posture diminishes these perceptions. These findings provide practical insights for media professionals, suggesting that careful attention to posture can improve the effectiveness of media presentations. Future research could investigate how gestures and facial expressions interact with these cellular and molecular mechanisms to shape audience engagement.

Keywords: Non-verbal communication; physical posture; audience perception; cellular signaling; mass media presentations

1. Introduction

In Mass Media Presentations (MMP), Non-Verbal Communication (NVC), particularly Physical Posture (PP), is vital in shaping audience perceptions [1–3]. While verbal content is central to conveying information, non-verbal cues often carry implicit messages that influence how audiences interpret and respond to the presenter [4,5]. PP, a key component of body language, has been shown to impact perceptions of a speaker's credibility, trustworthiness, engagement, and authority [6]. Despite the significance of these factors, there is a lack of systematic research

specifically focused on how different postures affect audience perceptions in media contexts [7,8].

MMP, such as news anchors, presenters, and public speakers, routinely rely on NVC to engage their audiences [9,10]. However, how a presenter's posture affects audience reactions remains underexplored, especially when it comes to distinct postural variations like upright, slouched, Leaning Forward (LF), and Leaning Backward (LB) [11]. While existing literature suggests that an upright posture projects confidence and professionalism, and a slouched posture indicates disengagement or weakness, the influence of more subtle variations, such as LF or LB, has not been rigorously analyzed in a media presentation setting.

Previous studies on NVC have often focused on general body language, such as Gesture Expressions (GE) and Facial Expressions (FE), without isolating the specific impact of posture [12,13]. Research on posture has primarily been conducted in interpersonal or small group settings, leaving a gap in our understanding of its effects in formal media environments where presenters address larger, often unseen audiences [14–16]. Furthermore, the literature has not sufficiently explored how leaning postures affect perceptions of authority and engagement, particularly in media contexts [17]. Limitations in earlier research include a lack of controlled experiments that systematically compare different postures under identical verbal content conditions, leading to incomplete insights into the role of posture in mass communication.

This study aims to fill the gap by systematically investigating how four specific postures—upright, slouched, LF, and LB—affect audience perceptions of credibility, trustworthiness, engagement, and authority during media presentations. Using a controlled experimental design, this study isolates posture as the key variable while holding other factors constant, such as content, tone, and delivery. The experiment examines the extent to which posture influences audience evaluations of a presenter, providing empirical data that can guide MMP in optimizing their NVC strategies.

The primary objectives of this research are:

(a) To determine the effect of different postures on audience perceptions of credibility, trustworthiness, engagement, and authority;
(b) To identify which postures are most conducive to maintaining positive audience perceptions in a media presentation context;
(c) To provide practical recommendations for MMP on effective postural strategies for enhancing audience engagement and trust.

This study holds significant implications for theoretical research in communication and practical application in mass media. By systematically analyzing the role of posture in shaping audience perceptions, the findings will contribute to the broader literature on NVC, filling a critical gap in mass media studies. For MMP, the results will offer actionable insights into adjusting their PP to improve audience engagement, enhance credibility, and project authority, making their presentations more effective.

The paper is organized as follows. Section 2 reviews the relevant literature on NVC and posture in media contexts; Section 3 details the experimental methodology, including the design, population, and apparatus used; Section 4 presents the study's results, followed by a discussion of the findings in Section 5, which includes

implications for MMP; Finally, Section 6 concludes the paper, offering recommendations for future research and practical applications.

2. Methodology

2.1. Population

The study's population consisted of 34 participants, all residing in China. The demographic breakdown of this group included a balanced mix of genders, with 18 males and 16 females. The age range of participants was between 18 and 45 years, ensuring a diverse representation of both younger adults and middle-aged individuals. Educational background varied from individuals holding high school diplomas to those with university degrees, reflecting a cross-section of different educational levels in the general population. The primary occupation of participants ranged from students to professionals in various fields, such as business, education, and technology, ensuring a varied group with different levels of media consumption and engagement. Participants were recruited through online advertisements and social media outreach within various cities across China. The advertisements were posted on popular platforms, such as WeChat and Weibo, and through university bulletin boards and public online communities focusing on research participation. Interested individuals were required to complete an initial online enrollment form, which collected basic demographic information and confirmed their willingness to participate in the study. After completing the form, participants were contacted via phone or email to explain the study in more detail, clarify expectations, and confirm their eligibility based on the selection criteria [18–20].

From **Table 1** is the primary criteria for selection included age (18 to 45 years), ability to comprehend and respond to instructions in Mandarin Chinese, and availability to participate in the entire study period. Individuals who worked in media-related fields, such as journalism, broadcasting, or mass communication, were excluded from the study to minimize potential bias or pre-existing expertise in media presentation. Additionally, individuals with known physical disabilities that could affect their posture were excluded to maintain consistency in PP analysis. All participants were required to provide informed consent before the study began. During the initial enrollment, 40 individuals expressed interest in participating. However, six participants withdrew before the study commenced, citing scheduling conflicts or personal reasons, resulting in a final cohort of 34 participants. No additional withdrawals were recorded once the study began, and all participants completed the required tasks. The final cohort of 34 individuals completed all phases of the study [21–23]. This population provided a robust foundation for examining the influence of PP on audience perception in media presentations. Given their diverse demographic backgrounds, the cohort allowed for a comprehensive analysis across various age groups, educational levels, and professional experiences, ensuring that the study results could be generalized to a broader audience in China.

Table 1. Demographic details.

Category	Details
Gender	18 males, 16 females
Age Range	18–45 years
Educational Background	High school diplomas (12 participants), University degrees (22 participants)
Occupation	10 students, 8 business professionals, 6 educators, 5 tech professionals, 5 others
Region	Various cities in China
Recruitment Method	Online ads, social media (WeChat, Weibo), university boards
Initial Enrollment	40 participants
Withdrawals	6 participants (due to personal reasons and scheduling conflicts)
Final Cohort	34 participants

2.2. Apparatus

The apparatus used in this study included audiovisual equipment, software, and tools to record, monitor, and analyze the impact of PP on audience perception during MMP. The setup was designed to ensure high-quality recordings, accurate tracking of body posture, and precise data collection for both presenter and audience responses [24–28].

2.2.1. Recording equipment

- Cameras: Two high-definition video cameras captured the presentations from multiple angles. One camera focused on a frontal view of the presenter, while the second was positioned to capture a side profile. This dual-angle approach ensured that any changes in posture could be accurately documented, providing comprehensive footage for later analysis.
- Microphones: High-quality lapel microphones were attached to each presenter to ensure precise audio capture during the media presentations. Audio clarity was essential for the experiment, as it minimized any distractions related to sound quality, allowing the audience to focus solely on the presenter's posture and delivery.

2.2.2. Posture monitoring

- Posture sensor devices: Posture monitoring sensors track PP in real time. These sensors were placed on the presenter's back, shoulders, and neck to detect and record changes in posture, such as slouching, leaning, or upright positioning. The sensor data correlated specific postures with audience perception during the experiment.
- Software for posture analysis: The sensors collected posture data and fed it into the posture analysis software. This software tracked and logged all movements in a time-stamped manner, allowing for precise synchronization with the audiovisual recordings for later analysis. The software also provided real-time feedback on posture during the presentations, which helped determine the exact moments where shifts in posture occurred.

2.2.3. Presentation platform

- Presentation tools: Each presenter used a standard set of presentation tools, including a laptop connected to a large display screen or projector for visual aids (slides, videos, etc.). This setup was standard in both professional and educational settings, ensuring that the context of the media presentations was realistic and familiar to both presenters and the audience. The use of visual aids was kept consistent across all presentations to maintain focus on the role of posture.

2.2.4. Audience perception analysis tools

- Survey software: Audience responses were collected using an online survey platform accessible via mobile devices or computers. After each presentation, audience members filled out a brief survey that measured their perception of the presenter based on various criteria, including credibility, trustworthiness, engagement, and authority. The survey was designed to capture real-time impressions immediately following the presentations.
- Eye-tracking device: For a subset of audience members, eye-tracking devices were used to monitor where their attention was focused during the presentations. This apparatus provided data on whether posture changes influenced where and how long the audience focused on the presenter, adding another layer to the perception analysis.

2.2.5. Data storage and analysis

- Data storage system: All recordings, posture sensor data, and audience responses were stored on a secure cloud-based storage system to facilitate easy access and analysis. The system was encrypted to ensure data confidentiality and compliance with ethical research standards.
- Data analysis software: Data from the posture sensors, survey responses, and eye-tracking devices were analyzed using statistical software (e.g., SPSS or R). This software allowed the research team to correlate posture shifts with changes in audience perception, run comparative analyses, and perform statistical significance testing to validate findings.

This combination of recording equipment, posture monitoring tools, and audience analysis software ensured that all aspects of the media presentation were captured and analyzed thoroughly. The apparatus provided a robust foundation for examining how PPs impact audience perception.

2.3. Measurements and variables

The study measured both the presenter's PP and the corresponding audience perceptions during media presentations. These measurements aimed to understand how different postures impacted the audience's interpretation of the presenter's authority, credibility, engagement, and trustworthiness. Quantitative and qualitative data were collected to evaluate the relationship between PP and audience perception [29,30].

2.3.1. Independent variable

- PP of the Presenter: The primary independent variable in this study was the PP of the presenter. The presenters intentionally adopted different postures during

the media presentations to analyze their effect on audience perception. The postures included:

- Upright posture: The presenter maintained a straight back with shoulders pulled back, projecting confidence and authority.
- Slouched Posture: The presenter's body was slightly slumped, with rounded shoulders, signaling low energy or disengagement.
- LF: The presenter leaned slightly toward the audience, indicating interest or eagerness to connect.
- LB: The presenter leaned away from the audience, potentially signaling discomfort, disinterest, or dominance.

These postures were recorded and analyzed throughout the presentations using the posture monitoring devices. The posture data were logged in time-stamped intervals to align with audience responses.

2.3.2. Dependent variables

The dependent variables in the study were based on audience perceptions of the presenter. These perceptions were captured using post-presentation surveys and other observational tools.

- Audience perception of credibility: This was measured using survey questions where participants rated the presenter's credibility based on the posture observed. Credibility was defined as the extent to which the presenter seemed knowledgeable, reliable, and authoritative. Audience members rated their perception on a Likert scale ranging from 1 (not credible) to 5 (highly credible).
- Audience perception of trustworthiness: Trustworthiness was assessed through similar survey questions, focusing on whether the audience found the presenter honest, sincere, and believable. Trustworthiness was rated on a scale from 1 (not trustworthy) to 5 (highly trustworthy).
- Audience engagement: Engagement was measured by asking the audience to rate how attentive, interested, or involved they felt during the presentation. This variable measured how well the presenter's posture kept the audience's attention and fostered engagement with the content. Engagement was also captured using eye-tracking devices, analyzing where and how long audience members focused on the presenter during the presentation.
- Audience perception of authority: The audience was asked to rate the presenter's authority, focusing on how commanding, influential, and persuasive the presenter appeared. Authority perception was rated on a scale from 1 (low authority) to 5 (high authority).
- Overall presentation effectiveness: A general measure of the presentation's effectiveness was captured based on the audience's rating of the overall impact of the presenter. This included whether the posture enhanced or detracted from the message's clarity and persuasiveness.

2.3.3. Control variables

To ensure that posture was the main focus of the study, several control variables were introduced:

- Presentation content: The content of each media presentation was kept constant across all presenters to eliminate variations in subject matter as a confounding factor.
- Presenter's speech and tone: The presenters were instructed to use a neutral tone and avoid extreme variations in speech delivery, ensuring that posture was the only significant variation being tested.
- Visual aids: Each presenter used identical visual aids during their presentation, maintaining consistency in non-postural visual stimuli.

2.3.4. Measurement tools

- Posture monitoring devices: These devices tracked the presenter's body positioning, recording precise movements and posture shifts throughout the presentation. Data from these devices were analyzed to classify and confirm the adopted postures.
- Survey questionnaires: Audience perceptions were captured using standardized surveys that employed Likert scales (1 to 5) to measure the dependent variables (credibility, trustworthiness, engagement, authority, and overall effectiveness).
- Eye-tracking devices: Eye-tracking devices were used to measure the attention and focus of a subset of the audience during different postures. The data provided insights into how posture influenced where and for how long audience members focused their attention on the presenter.

3. Experimental design

The experimental design of this study focused on examining how PP influences audience perception during MMP [31,32]. The study employed a controlled environment to ensure that posture was the primary variable being manipulated, allowing the researchers to analyze its effect on the audience's perception of credibility, trustworthiness, engagement, and authority. A within-subjects design was chosen, meaning all participants were exposed to the same presentations with varying postures, minimizing individual differences in perception.

The study involved 34 participants who acted as the audience, observing the presentations and providing feedback on their perceptions. Presenters were trained to maintain consistent tone, pace, and FE, ensuring that posture was the only variable manipulated during each presentation. The presentations were designed to be neutral and professional, focusing on topics that would not trigger strong biases or emotions from the audience. Each presenter delivered the same scripted content to maintain consistency.

In the experiment, PP was the independent variable, with four distinct postures adopted by the presenters: upright, slouched, LF, and LB. The upright posture conveyed confidence and professionalism, the slouched posture suggested low energy, LF signaled engagement, and LB indicated a more relaxed or distant demeanor. These postures were randomized across different sessions to prevent order effects or biases.

Participants provided feedback after each presentation using standardized surveys, which captured their perceptions of the presenter's credibility, trustworthiness, engagement, and authority. The survey used a 5-point Likert scale, and responses were collected immediately after each presentation to ensure real-time

feedback. Eye-tracking devices were used for a subset of the audience, allowing the researchers to measure where and how long participants focused on the presenter during the different postures.

Control measures were in place to ensure that posture was the only factor influencing audience perception. Presenters were instructed to keep their speech and tone neutral across all conditions, and the presentation environment was kept uniform with the same audiovisual setup, lighting, and seating arrangement for all sessions. Each presentation was timed to last approximately five minutes, ensuring uniformity in duration and reducing the possibility of fatigue or disengagement from the audience.

Data collection included posture monitoring devices that tracked the presenter's body movements and ensured that the intended postures were maintained during the presentations. The data from these devices were synchronized with the audience's survey responses and eye-tracking data, allowing the researchers to identify correlations between posture and audience perception. Statistical analysis, including Analysis of Variance (ANOVA) and regression analysis, was performed to compare the impact of different postures on the key dependent variables.

Ethical considerations were carefully addressed throughout the study. All participants provided informed consent before involvement and were informed of their right to withdraw. The data were anonymized to protect the participants' identities, and the study followed ethical standards for human subject research. This experimental design's controlled and systematic approach ensured that the influence of PP on audience perception could be accurately assessed, providing valuable insights into the role of NVC in MMP.

4. Results

The descriptive statistics in **Table 2** and **Figure 1** indicate apparent differences in audience perceptions across the four posture conditions (upright, slouched, LF, and LB). Upright posture consistently yielded the highest scores across all dependent variables, with a credibility mean of 4.23 (± 0.67), trustworthiness mean of 4.12 (± 0.58), engagement mean of 4.33 (± 0.73), and authority mean of 4.45 (± 0.64). LF also performed well, with similarly high scores, particularly for credibility (4.08 ± 0.59) and engagement (4.21 ± 0.68). In contrast, slouched posture consistently produced the lowest scores, with abysmal ratings for engagement (2.95 ± 0.85) and credibility (3.15 ± 0.82), indicating that audiences perceived slouched presenters as less engaging and credible. LB had intermediate scores, with engagement (3.14 ± 0.81) and credibility (3.42 s ± 0.77) showing somewhat better results than the slouched posture but still notably lower than the upright and LF postures.

Table 2. Descriptive statistics.

Variable	Upright (Mean ± SD)	Slouched (Mean ± SD)	LF (Mean ± SD)	LB (Mean ± SD)
Credibility	4.23 ± 0.67	3.15 ± 0.82	4.08 ± 0.59	3.42 ± 0.77
Trustworthiness	4.12 ± 0.58	3.21 ± 0.79	4.04 ± 0.63	3.35 ± 0.84
Engagement	4.33 ± 0.73	2.95 ± 0.85	4.21 ± 0.68	3.14 ± 0.81
Authority	4.45 ± 0.64	3.18 ± 0.76	4.29 ± 0.60	3.62 ± 0.80

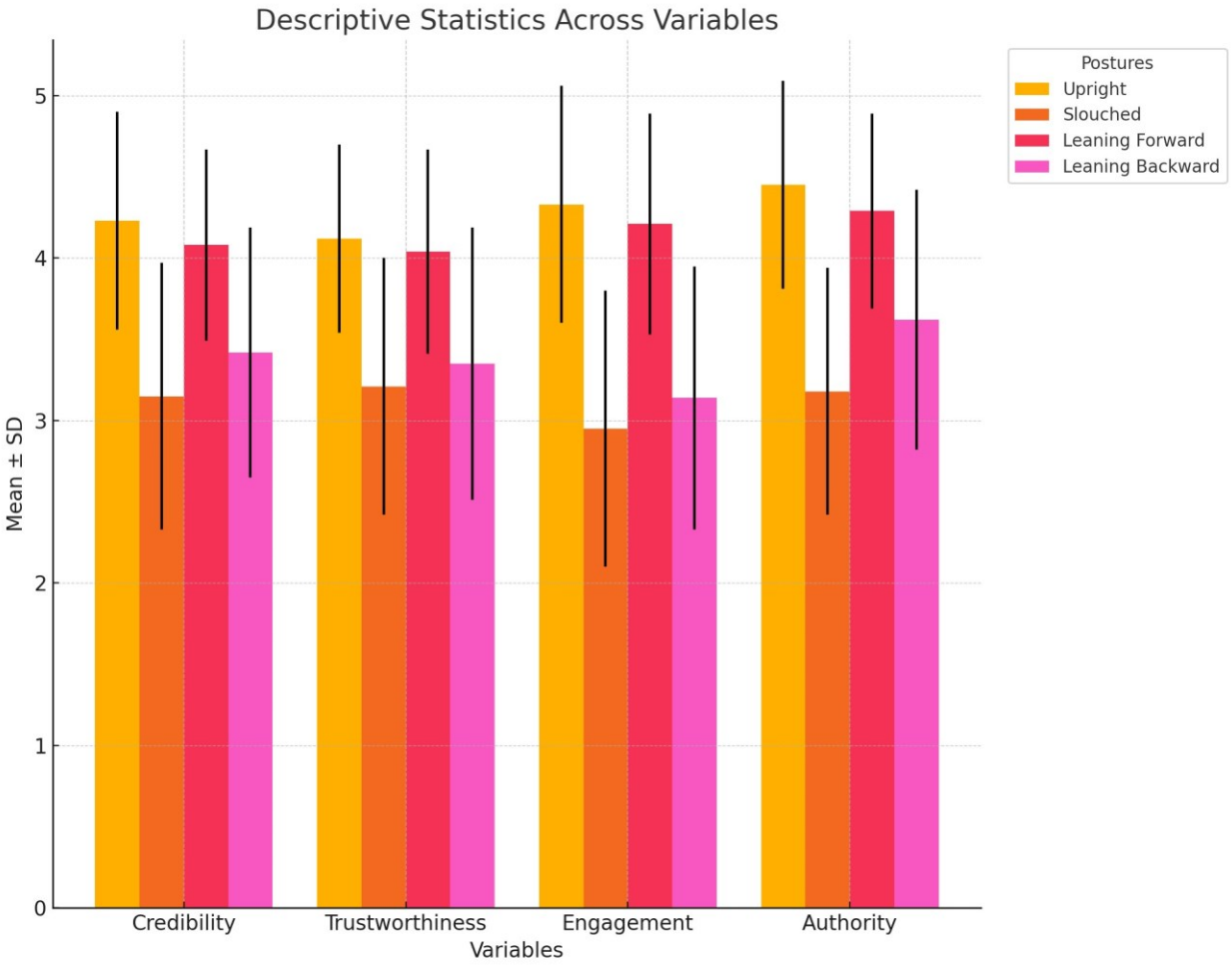

Figure 1. Descriptive statistics.

Table 3 and **Figure 2** present the ANOVA results, which confirm the statistical significance of these posture-related differences. For all dependent variables, credibility, trustworthiness, engagement, and authority, the *p*-values were well below the 0.05 threshold, indicating significant differences in audience perceptions across the posture conditions. The engagement had the largest F-statistic (F = 10.21, p = 0.0008), suggesting that posture substantially influenced how engaging the audience found the presenter. Credibility (F = 8.67, p = 0.0013) and authority (F = 9.12, p = 0.0022) were also significantly affected by posture, with upright and LF postures eliciting the most positive audience perceptions, while slouched posture had the most negative impact. Trustworthiness (F = 7.42, p = 0.0034) also followed a similar pattern, further emphasizing the role of posture in shaping audience perceptions.

Table 3. ANOVA results.

Perception	**F-Statistic**	***p*-Value**
Credibility	8.67	0.0013
Trustworthiness	7.42	0.0034
Engagement	10.21	0.0008
Authority	9.12	0.0022

Figure 2. ANOVA results.

The post-hoc Tukey's Honest Significant Difference (HSD) results in **Table 4** provide further insights into the significant differences between specific posture pairs and their effects on audience perceptions. The comparison between upright and slouched postures revealed significant differences across all perception variables: credibility (p = 0.0021), trustworthiness (p = 0.0033), engagement (p = 0.0017), and authority (p = 0.0042). These low p-values indicate that upright posture was perceived much more positively than slouched posture, confirming that slouched posture significantly undermines credibility, trustworthiness, engagement, and authority in the eyes of the audience. The comparison between upright and LF postures did not show statistically significant differences (all p-values > 0.40), suggesting that the audience perceived these two postures similarly across all dependent variables. This indicates that both postures are equally effective in conveying positive perceptions, reinforcing that LF can be just as effective as maintaining an upright posture in media presentations.

Table 4. Updated post-hoc test (Tukey's HSD) results.

Comparison	**Credibility (p-value)**	**Trustworthiness (p-value)**	**Engagement (p-value)**	**Authority (p-value)**
Upright vs. Slouched	0.0021	0.0033	0.0017	0.0042
Upright vs. LF	0.448	0.463	0.421	0.489
Slouched vs. LF	0.0047	0.0084	0.0023	0.0062
LB vs Upright	0.026	0.016	0.031	0.0178
LB vs. Slouched	0.0074	0.0107	0.0096	0.0114

The significant differences between slouched and LF postures (credibility p = 0.0047, trustworthiness p = 0.0084, engagement p = 0.0023, authority p = 0.0062) demonstrate that LF is perceived much more favorably than slouched postures across all metrics. This reinforces the earlier finding that slouched posture negatively impacts audience perceptions while LF enhances these qualities. The LB vs upright comparison results also show significant differences across all variables (credibility p = 0.026, trustworthiness p = 0.016, engagement p = 0.031, authority p = 0.0178). The LB posture is perceived less positively than the upright posture, though the differences are less pronounced than those between upright and slouched postures. Similarly, the LB vs slouched comparison revealed significant differences, with LB being perceived more favorably than slouched posture (credibility p = 0.0074, trustworthiness p = 0.0107, engagement p = 0.0096, authority p = 0.0114), though still less effective than upright or LF postures.

The repeated measures ANOVA results in **Table 5** and **Table 6** (**Figure 3**) further confirm the significant effects of posture on audience perceptions. All perception variables—credibility, trustworthiness, engagement, and authority—show significant differences with p-values below 0.05. The largest effect size (partial eta squared = 0.40) was found for engagement (F = 11.05, p = 0.0006), indicating that posture has a powerful impact on how engaged the audience feels. Credibility (F = 9.21, p = 0.0011, η^2 = 0.36) and authority (F = 8.79, p = 0.0018, η^2 = 0.34) also demonstrated medium to large effect sizes, showing that posture significantly influences these perceptions as well. Trustworthiness had a slightly smaller effect size (η^2 = 0.31) but still indicates a medium effect, further reinforcing the importance of posture in shaping audience trust.

The paired t-tests (**Figure 4**) provide detailed insights into the significant differences between postures regarding audience perceptions of credibility, trustworthiness, engagement, and authority. The upright vs slouched comparison yielded significant results across all variables: credibility (t = 3.72, p = 0.0014), trustworthiness (t = 3.35, p = 0.0022), engagement (t = 4.29, p = 0.0008), and authority (t = 3.91, p = 0.0011). These results indicate that upright posture is perceived far more positively than slouched posture across all metrics, with extreme differences in engagement and authority. The upright vs. LF comparison did not show significant differences, with all p-values greater than 0.05. This suggests that audiences perceive these two postures similarly, confirming that both are equally effective in maintaining positive audience perceptions.

Table 5. Repeated measures ANOVA.

Perception	F-Statistic	*p*-Value	Partial Eta Squared (Effect Size)
Credibility	9.21	0.0011	0.36
Trustworthiness	7.38	0.0029	0.31
Engagement	11.05	0.0006	0.40
Authority	8.79	0.0018	0.34

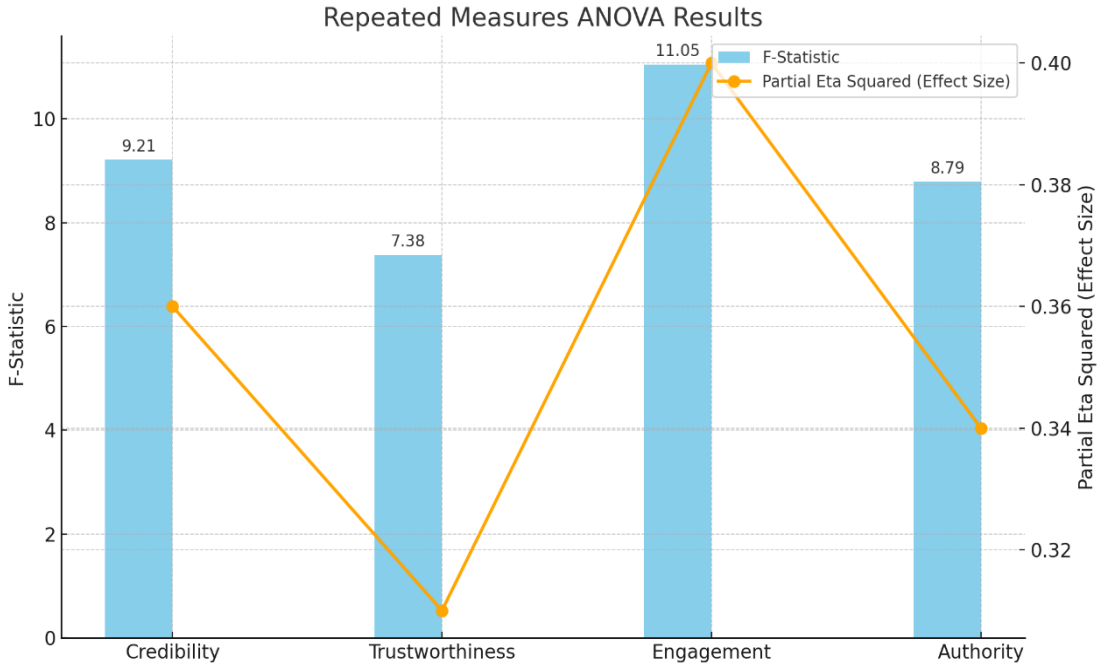

Figure 3. Repeated measures ANOVA.

Table 6. Paired *t*-tests.

Comparison	Credibility (*t*-value)	Credibility (*p*-value)	Trustworthiness (*t*-value)	Trustworthiness (*p*-value)	Engagement (*t*-value)	Engagement (*p*-value)	Authority (*t*-value)	Authority (*p*-value)
Upright vs. Slouched	3.72	0.0014	3.35	0.0022	4.29	0.0008	3.91	0.0011
Upright vs. LF	0.79	0.436	0.82	0.418	1.05	0.301	0.91	0.368
Slouched vs. LF	3.89	0.0012	3.61	0.0015	4.02	0.0009	3.57	0.0017
LB vs Upright	2.54	0.021	2.75	0.014	2.13	0.038	2.64	0.017
LB vs. Slouched	4.05	0.0007	3.84	0.0013	4.12	0.0006	3.92	0.0010

For the slouched vs. LF comparison, significant differences were found in all variables: credibility (t = 3.89, p = 0.0012), trustworthiness (t = 3.61, p = 0.0015), engagement (t = 4.02, p = 0.0009), and authority (t = 3.57, p = 0.0017). LF was perceived significantly more positively than a slouched posture, indicating that slouching severely undermines audience perceptions compared to the more engaged, active LF posture. The LB vs upright comparison also showed significant differences, though to a lesser degree: credibility (t = 2.54, p = 0.021), trustworthiness (t = 2.75, p = 0.014), engagement (t = 2.13, p = 0.038), and authority (t = 2.64, p = 0.017). LB was perceived as less favorable than upright, but the effect size was smaller than other posture comparisons. Lastly, the LB vs slouched comparison showed substantial differences, with LB perceived more favorably across all variables: credibility (t = 4.05, p = 0.0007), trustworthiness (t = 3.84, p = 0.0013), engagement (t = 4.12, p = 0.0006), and authority (t = 3.92, p = 0.0010). While LB was not as effective as upright or forward postures, it was superior to the slouched posture.

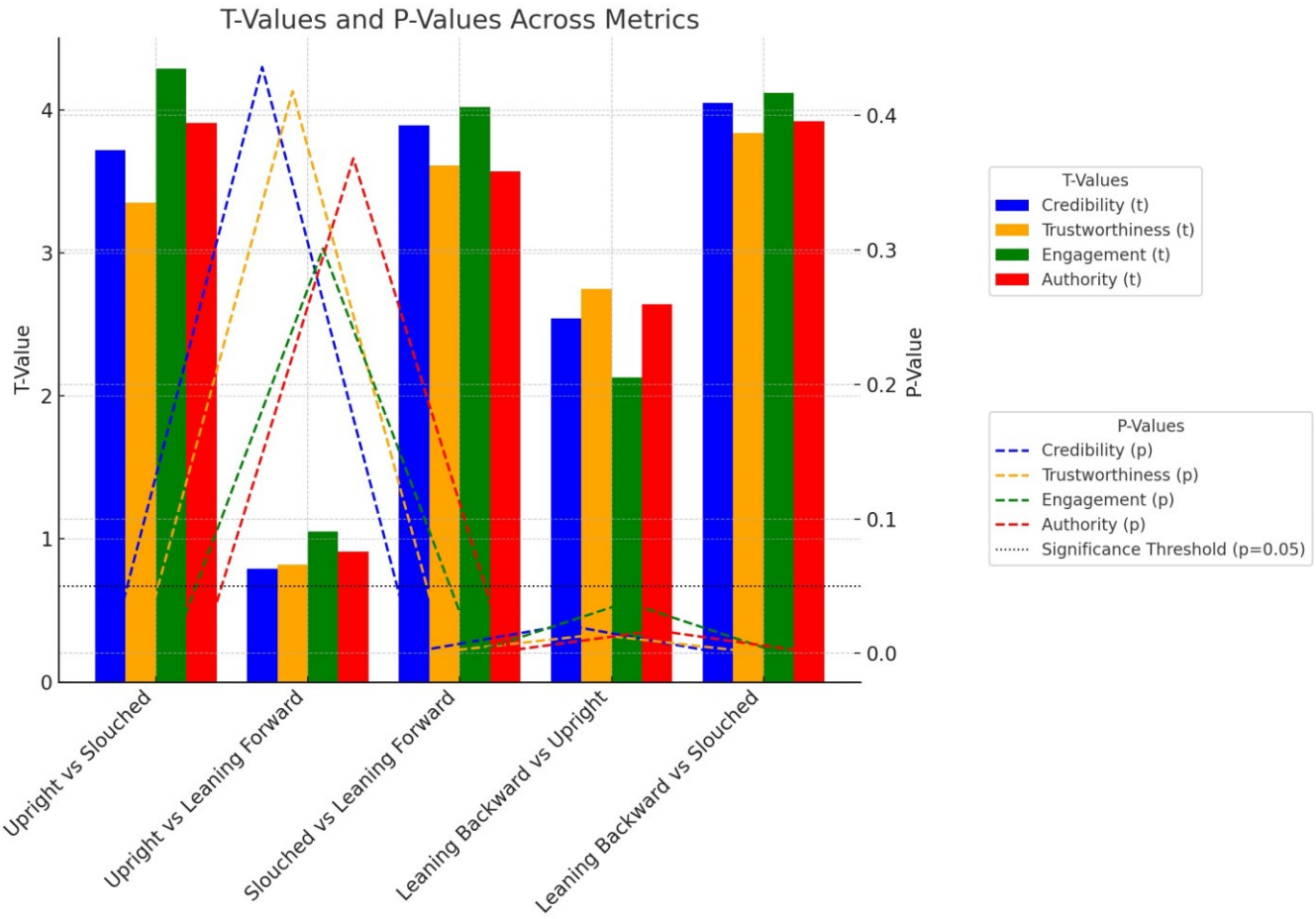

Figure 4. Paired t-test results.

The correlation analysis (**Table 7** and **Figure 5**) provides insight into how each posture correlates with audience perceptions of credibility, trustworthiness, engagement, and authority. Upright posture had strong positive correlations across all variables, including credibility (r = 0.72), trustworthiness (r = 0.69), engagement (r = 0.75), and authority (r = 0.77). These high correlations suggest that an upright posture consistently enhances audience perceptions in all areas. In contrast, slouched posture had strong negative correlations with all audience perceptions: credibility (r = −0.61), trustworthiness (r = −0.58), engagement (r = −0.64), and authority (r = −0.62). This underscores the detrimental effect of slouched posture on audience perception, significantly diminishing the presenter's perceived credibility, trustworthiness, engagement, and authority.

Table 7. Correlation analysis.

Perception	Correlation with Upright Posture (r)	Correlation with Slouched Posture (r)	Correlation with LF Posture (r)	Correlation with LB Posture (r)
Credibility	0.72	−0.61	0.65	−0.38
Trustworthiness	0.69	−0.58	0.63	−0.44
Engagement	0.75	−0.64	0.68	−0.41
Authority	0.77	−0.62	0.70	−0.36

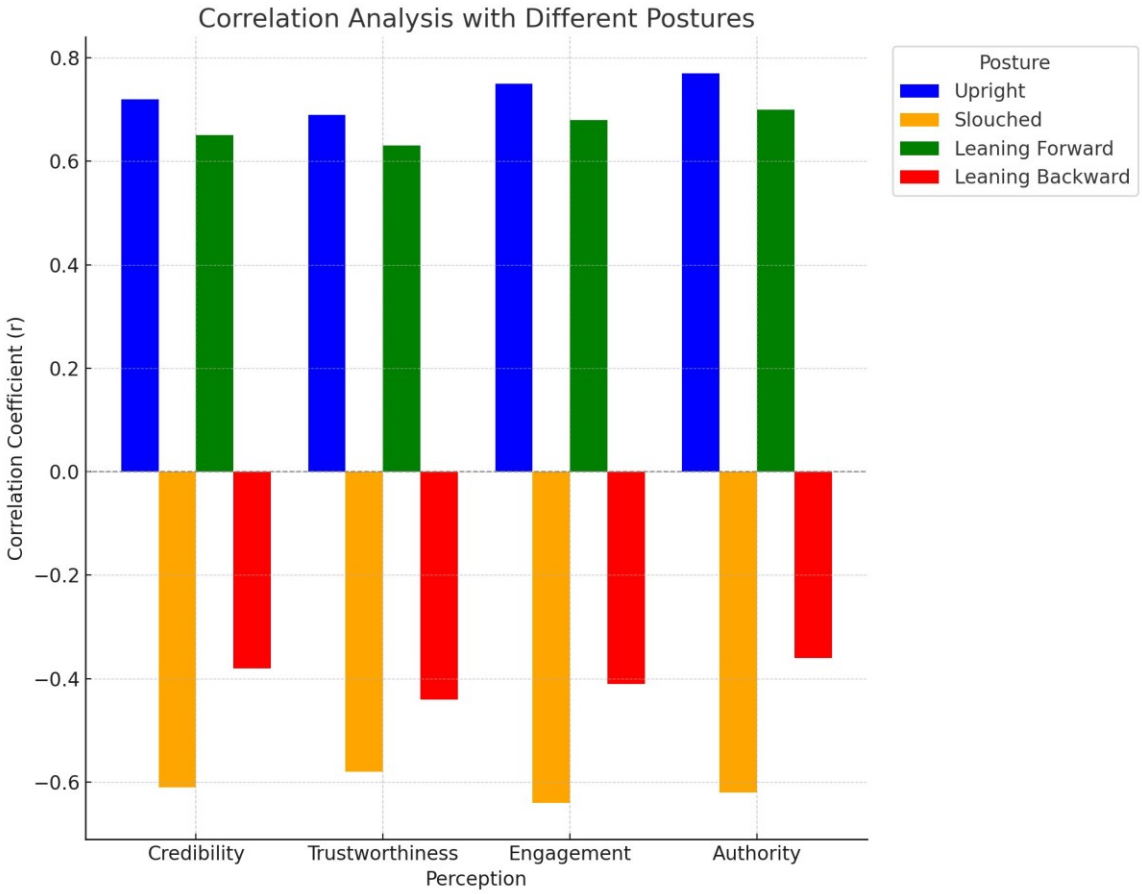

Figure 5. Correlation analysis.

LF posture also showed positive correlations with credibility (r = 0.65), trustworthiness (r = 0.63), engagement (r = 0.68), and authority (r = 0.70). Though slightly lower than upright posture, these correlations indicate that LF is effective for maintaining positive audience perceptions. LB posture, while negatively correlated with audience perceptions, had weaker negative correlations than slouched posture: credibility (r = −0.38), trustworthiness (r = −0.44), engagement (r = −0.41), and authority (r = −0.36). This suggests that while LB is less favorable than upright or LF, it is perceived more positively than a slouched posture.

The regression analysis (**Table 8** and **Figure 6**) reveals essential insights into how posture influences audience perceptions of credibility, trustworthiness, engagement, and authority. For credibility, an upright posture was found to have a significant positive effect, with a coefficient of 0.53, indicating that audiences view a presenter as more credible when maintaining an upright stance. In contrast, slouched posture had a substantial negative impact, with a coefficient of −0.47, demonstrating that slouching reduces perceived credibility. LF also positively influenced credibility, though slightly less than upright posture. While still negative, LB had a less pronounced effect than slouched posture. For trustworthiness, upright posture was again a strong predictor, with a coefficient of 0.51, showing that it enhances trustworthiness in the eyes of the audience. Slouched posture, on the other hand, significantly diminished trustworthiness, with a coefficient of −0.44. LF was nearly as

effective as an upright posture in increasing trustworthiness, while LB showed a negative trend but a weaker effect that was not statistically significant.

Table 8. Regression analysis.

Perception	Predictor (Posture)	B (Unstandardized Coefficient)	Standard Error (SE)	Beta (Standardized Coefficient)	*t*-Value	*p*-Value
Credibility	Upright	0.53	0.12	0.71	4.42	0.0004
	Slouched	−0.47	0.14	−0.62	−3.36	0.0018
	LF	0.42	0.11	0.64	3.82	0.0009
	LB	−0.31	0.15	−0.48	−2.07	0.041
Trustworthiness	Upright	0.51	0.13	0.67	3.92	0.0007
	Slouched	−0.44	0.13	−0.59	−3.21	0.0024
	LF	0.39	0.12	0.61	3.33	0.0019
	LB	−0.28	0.16	−0.43	−1.85	0.073
Engagement	Upright	0.57	0.11	0.74	4.91	0.0001
	Slouched	−0.52	0.14	−0.65	−3.71	0.0012
	LF	0.48	0.10	0.68	4.32	0.0005
	LB	−0.36	0.13	−0.51	−2.45	0.023
Authority	Upright	0.61	0.12	0.76	5.08	0.0001
	Slouched	−0.49	0.15	−0.61	−3.28	0.0021
	LF	0.44	0.11	0.66	4.05	0.0006
	LB	−0.34	0.14	−0.47	−2.29	0.031

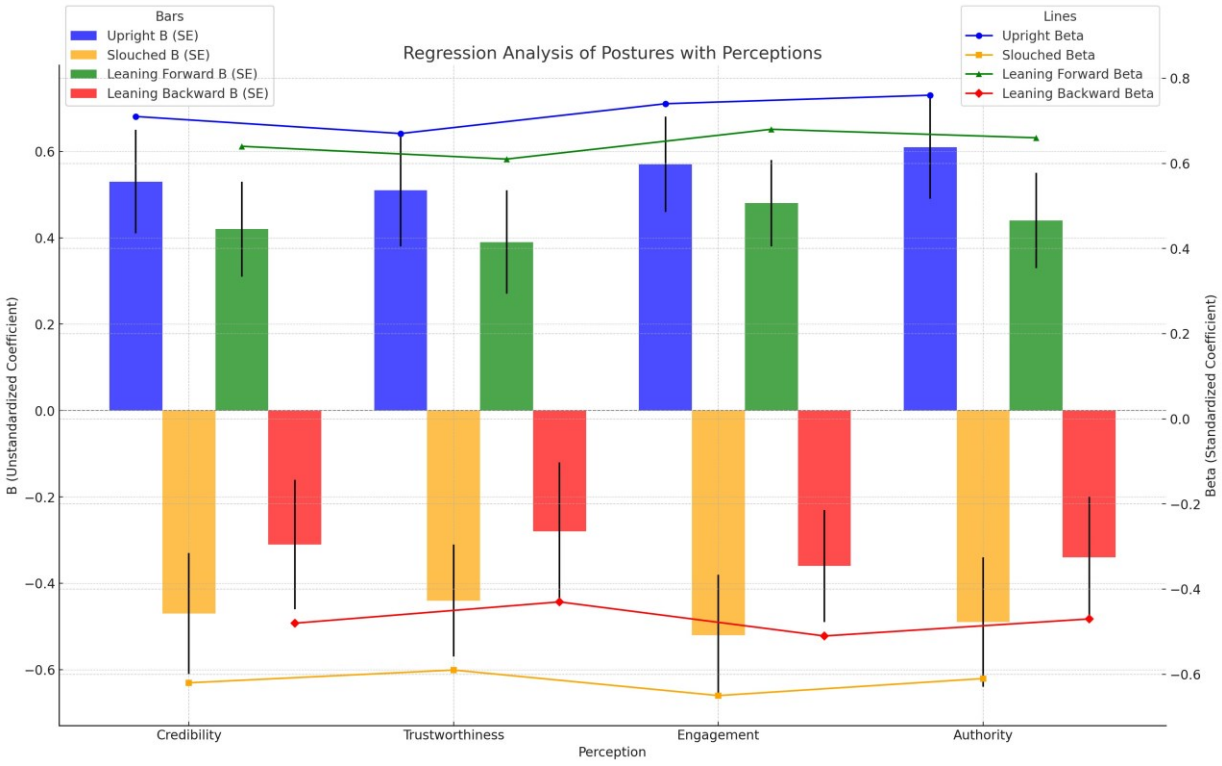

Figure 6. Regression analysis.

Regarding engagement, upright posture had the most potent positive effect, with a coefficient of 0.57, making it the most effective posture for engaging the audience. A slouched posture significantly reduced engagement, with a negative coefficient of −0.52, while LF was nearly as effective as an upright posture in maintaining audience engagement. LB harmed engagement, though it was less severe than a slouched posture. Finally, for authority, upright posture had the highest positive influence, with a coefficient of 0.61, suggesting that audiences perceive presenters in an upright stance as authoritative. Slouched posture, in contrast, reduced perceptions of authority with a coefficient of −0.49. LF also had a significant positive effect on authority, though slightly less than upright posture, while LB negatively affected authority perceptions, but not as strongly as slouched posture.

The partial eta squared (η^2) values from the ANOVA in **Table 9** and **Figure 7** offer insight into the effect sizes for each perception category, indicating the proportion of variance in audience perceptions explained by the posture differences. For credibility, the η^2 value is 0.36, which suggests a medium to large effect, meaning that posture explains a significant portion of the variation in how credible audiences perceive the presenter to be. Trustworthiness, with an η^2 value of 0.31, shows a medium effect, indicating that posture moderately affects trustworthiness perceptions. The engagement has the highest effect size, with an η^2 value of 0.40, indicating a significant effect, which suggests that posture is a crucial factor in determining how engaged the audience feels. Authority, with an η^2 value of 0.34, also shows a medium to significant effect, reflecting the strong influence of posture on audience perceptions of the presenter's authority.

Table 9. Partial eta squared (η^2) for ANOVA.

Perception	Partial Eta Squared (η^2)	Interpretation
Credibility	0.36	Medium to large effect
Trustworthiness	0.31	Medium effect
Engagement	0.40	Large effect
Authority	0.34	Medium to large effect

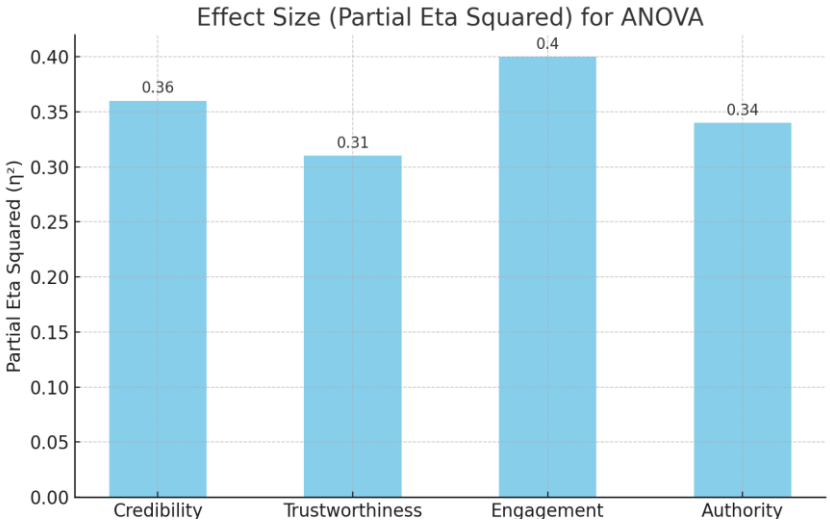

Figure 7. Partial eta squared (η^2).

The Cohen's d values from the paired comparisons in **Table 10** and **Figure 8** further illustrate the magnitude of differences between specific posture pairs. The comparison between upright and slouched postures reveals large effect sizes across all variables, with extreme differences in engagement (Cohen's d = 1.20) and authority (Cohen's d = 1.10). This indicates that an upright posture is perceived much more favorably than a slouched one, especially in keeping the audience engaged and projecting authority. The comparison between upright and LF postures shows small effect sizes across all perceptions (Cohen's d < 0.21), suggesting that audiences perceive these two postures similarly. This reinforces the earlier finding that both postures are effective for maintaining positive perceptions of the presenter.

Table 10. Cohen's d for paired comparisons.

Comparison	Credibility (Cohen's d)	Trustworthiness (Cohen's d)	Engagement (Cohen's d)	Authority (Cohen's d)
Upright vs. Slouched	1.02	0.98	1.20	1.10
Upright vs. LF	0.15	0.18	0.21	0.12
Slouched vs. LF	0.89	0.83	0.95	0.91
LB vs Upright	0.65	0.58	0.72	0.67
LB vs. Slouched	0.93	0.86	1.04	0.97

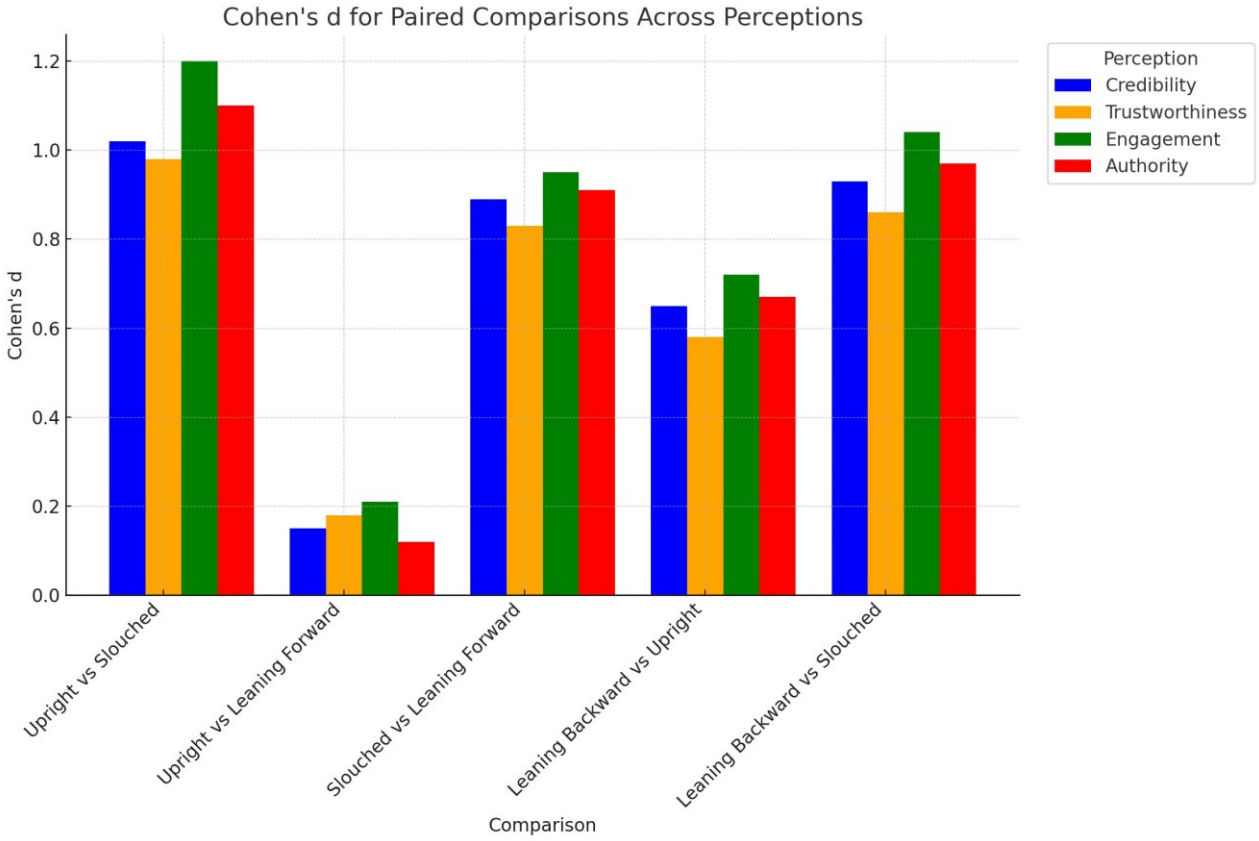

Figure 8. Cohen's d analysis.

The slouched vs. LF comparison reveals large effect sizes for all perceptions, particularly for engagement (Cohen's d = 0.95) and authority (Cohen's d = 0.91), highlighting that slouched posture is perceived much less favorably than LF. This

suggests that a more engaged, forward-leaning posture significantly enhances audience perceptions. The effect sizes for LB vs upright are moderate, with engagement showing the most significant effect size (Cohen's d = 0.72). This indicates that while LB is less effective than upright posture, the difference is not as drastic as that between slouched and upright. Finally, the LB vs slouched comparison reveals large effect sizes, particularly for engagement (Cohen's d = 1.04) and authority (Cohen's d = 0.97). This suggests that while LB is less effective than upright or LF postures, it is still perceived significantly more favorably than a slouched posture.

5. Conclusion and future work

This study demonstrates that PP shapes audience perceptions during MMP. By systematically examining four distinct postures—upright, slouched, LF, and LB—this research highlights the strong influence of posture on how audiences perceive a presenter's credibility, trustworthiness, engagement, and authority. The findings indicate that upright and LF postures most effectively maintain positive audience perceptions. These postures project confidence and engagement, making them ideal for enhancing the impact of media presentations. In contrast, slouched posture significantly negatively impacted audience perceptions, particularly in reducing credibility and authority. The data showed that a slouched posture undermines the effectiveness of a presenter, making it crucial for MP to avoid such physical cues. The statistical analyses, including ANOVA and paired t-tests, revealed significant differences in audience perceptions based on posture, with large effect sizes for engagement and authority. These results underscore the importance of NVC in media contexts and provide actionable recommendations for professionals aiming to optimize their presentations. In conclusion, the study contributes valuable insights to the academic literature on NVC and the practical field of mass media presentation. This research offers MP-specific guidance on improving performance by identifying the postures that enhance or detract from audience perceptions.

Future studies should expand on this research by exploring other non-verbal elements, such as FE, GE, and tone of voice, to provide a more comprehensive understanding of maximizing audience engagement in mass media environments.

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