Closing the Gender Gap in Financial Literacy?
The Effects of a Role Model-Based Financial Education Intervention[1]

ABSTRACT

Despite the growing visibility of "female finance" in public discourse and initiatives explicitly targeting women, the gender gap in financial literacy remains a persistent concern, given that financial literacy is closely linked to long-term financial well-being. Importantly, confidence differences partly explain this gap. Drawing on the Motivational Theory of Role Modeling, which posits that role models raise expectancy and value beliefs, we examine whether the presence of a role model improves the effectiveness of a brief, social media-based financial education intervention and whether gender congruence moderates this effect. In a randomized controlled trial (N = 986), participants viewed an Instagram-style post on risk diversification featuring a female role model ("Anna"), a male role model ("Thomas"), or no role model, after which we measured objective financial knowledge (primary), subjective financial knowledge, marginal propensity to invest, and retirement saving intentions. Our results show persistent gender gaps, with little evidence that merely adding a gendered role model shifts outcomes on average. Any suggestive differences, when presented by a role model, were limited to a small increase in men's subjective financial knowledge, mediated by financial self-efficacy. These findings provide a cautious reality check for "female finance" initiatives. While adding a gender-congruent role model can signal inclusion, it does not reliably translate into higher financial literacy outcomes or reduce the gender gap. We highlight theoretical boundary conditions, suggesting that role model effectiveness depends on factors beyond gender matching and may trigger countervailing processes.

Keywords: financial education, gender gap, role models, financial literacy, social media

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INTRODUCTION

"Female finance" has become increasingly visible in public discourse and on social media, where financial education content is explicitly targeted at women. Governments, banks, NGOs, and financial influencers, also known as "finfluencers", increasingly utilize these formats to disseminate personal finance information and promote financial literacy (Monticone, 2023). Financial literacy, mainly defined as the knowledge and ability to apply fundamental financial concepts to economic decision-making, is widely considered a prerequisite for sound financial behavior and long-term financial well-being (Angrisani et al., 2023; Bucher-Koenen et al., 2017; Lusardi & Mitchell, 2023). Higher levels of financial knowledge are associated with greater financial satisfaction, better preparedness for emergencies and retirement, and more active participation in financial markets (Angrisani et al., 2023; Kaiser & Lusardi, 2024; Lusardi & Mitchell, 2023). This has become even more important as many countries have shifted from defined-benefit to defined-contribution pension systems, placing greater responsibility for savings and investment decisions on individuals (Lusardi & Mitchell, 2023).

Yet, despite ongoing research and education efforts, a persistent gender gap in financial literacy remains a central concern, given the documented links between financial literacy and financial well-being. Across countries, men consistently outperform women on financial literacy measures (Bucher-Koenen et al., 2017; Haag & Brahm, 2025; Hasler & Lusardi, 2017). Notably, the gap is not purely a knowledge deficit but differences in confidence appear to play an important role. Experimental evidence suggests that confidence accounts for approximately 30 % of the gender gap in objective financial knowledge, a measure of financial literacy (Bucher-Koenen et al., 2024). Apart from confidence, other relevant explanatory factors for the persistent gender gap in financial literacy include financial self-efficacy and socialization (Haag & Brahm, 2025).

This raises a broader theoretical and practical question: how to design effective and scalable interventions to address the gender gap and increase women's financial literacy. A growing body of work suggests that closing the gender gap in financial literacy may require more than just information transfer, particularly tailoring educational interventions to the specific needs and barriers faced by women (Aristei & Gallo, 2022; Bucher-Koenen et al., 2017; Niessen-Ruenzi et al., 2025).

Role models are a potential lever for intervention. Early-life exposure to role models significantly influences long-term financial outcomes for women. However, women generally encounter fewer financial role models than men, both in private contexts (such as family networks) and in public contexts (such as financial advertising and media) (Langer & Niessen-Ruenzi, 2024; Niessen-Ruenzi et al., 2025). The Motivational Theory of Role Modeling provides a mechanism for why role models may matter in this context. It argues that role models influence role aspirants' motivation and outcomes by serving three functions: acting as behavioral models, representing what is possible, and being inspirational. In this framework, effects depend on how the role model is perceived, whether the role model is seen as embodying the relevant behavior and as attainable and desirable. These perceptions can shift individuals' beliefs about domain-related behaviors by altering expectancy (i.e., perceived likelihood of success, including self-efficacy/confidence) and value (i.e., subjective desirability of a goal and related behaviors), which, in turn, can affect engagement with the material and subsequent outcomes (Morgenroth et al., 2015). This logic is especially relevant in domains where a group is underrepresented or negatively stereotyped, because role models may change self-stereotyping and perceived external barriers, thereby increasing expectancy (Morgenroth et al., 2015). Evidence from other traditionally male-dominated fields, such as mathematics and entrepreneurship, suggests that incorporating gender-

congruent role models into educational settings can help mitigate existing gender gaps (Liu et al., 2021; Marx & Roman, 2002; Passavanti et al., 2024). To the best of our knowledge, this study provides the first experimental evidence, on whether adding a visible role model to an otherwise identical, brief, social-media-style financial education intervention affects financial literacy outcomes.

We test this question in a randomized controlled trial (N = 986) in which participants viewed an Instagram-style carousel post on risk diversification featuring either a female role model ("Anna"), a male role model ("Thomas"), or no role model at all. Building on the Motivational Theory of Role Modeling, we expect that exposure to a role model can shift motivational beliefs about succeeding in the financial domain (expectancy, including self-efficacy/confidence), which can affect both performance in financial knowledge tasks and individuals' self-assessments, and may also translate into differences in intended financial actions. Accordingly, we test whether the presence of a role model improves financial literacy (H1), whether gender gaps replicate in this context (H2), and whether role model gender congruence moderates the effectiveness of the educational intervention (H3) and therefore narrows the gender gap in financial literacy (H4). Our primary dependent variable was objective financial knowledge. Our secondary outcomes were subjective financial knowledge, marginal propensity to invest (MPI), and intention to save for retirement.

Overall, we found persistent gender gaps in objective and subjective financial knowledge and MPI, and little evidence that adding a gendered role model to a brief social media financial education intervention shifts outcomes on average. Any suggestive differences, when presented by a role model, were limited to a small increase in men's subjective financial knowledge and did not extend to objective knowledge or behavior-related outcomes. In exploratory mediation

analyses, financial self-efficacy emerged as a potential mediator of the effects on subjective knowledge, particularly among men. Exploratory analyses showed that stronger identification with the presented role model is associated with better outcomes, and that identification is related to prior exposure to finfluencer-related content.

This study aims to make the following contributions. First, we contribute to research on the gender gap in financial literacy. We not only confirm that men significantly outperform women in both subjective and objective financial knowledge (Bucher-Koenen et al., 2024; Haag & Brahm, 2025; van Rooij et al., 2011), but also show that these gender gaps remain robust across role model conditions. The presence of a role model did not, on average, yield consistent improvements in financial literacy. Second, we extend the literature on role modelling by applying the Motivational Theory of Role Modeling (Morgenroth et al., 2015) in the financial context and by highlighting theoretical boundaries in this setting. Our findings indicate that the presence of a role model does not, on average, translate into financial literacy gains, even when the role model is gender-congruent. This pattern points to two boundary-related interpretations. On the one hand, role model identification may depend on factors beyond demographic gender matching. On the other hand, for women in particular, gender congruence increases role model perception without producing measurable gains, consistent with the possibility of countervailing processes that offset potential motivational benefits. For policymakers and financial educators, our findings provide a cautious reality check for "female finance" initiatives. While adding a gender-congruent role model to brief social media educational content can signal inclusion, it does not reliably translate into higher financial literacy scores or reduce the gender gap. This suggests the need to pay attention to audience segmentation and receptivity.

THEORETICAL BACKGROUND

Financial Literacy and the Gender Gap

Financial literacy, defined as people's knowledge and ability to apply fundamental financial concepts to economic decision-making, is widely considered a prerequisite for sound financial behavior and long-term financial well-being (Lusardi & Mitchell, 2023). Financial literacy is frequently operationalized using objective knowledge questions on compound interest, inflation (real rates of return), and risk diversification ("Big Three"), which are sometimes extended by items on mortgages and bond pricing ("Big Five") (Hastings et al., 2013; Lusardi & Mitchell, 2011). The subjective assessment of one's own financial knowledge is also relevant because it captures perceived competence (Lusardi & Mitchell, 2014). At the same time, broader perspectives emphasize that financial literacy also relates to behaviors and to the extent to which individuals translate knowledge into financial decisions (García & Pérez-Oleaga, 2025).

A key issue addressed in this body of literature is the persistent gender gap in financial literacy. Across countries and datasets, men consistently outperform women on financial literacy measures (Bucher-Koenen et al., 2024; Haag & Brahm, 2025; van Rooij et al., 2011). This gap persists even among young, highly educated women, even when controlling for sociodemographic characteristics (Bucher-Koenen et al., 2017). Women also tend to rate their own financial knowledge lower than men and are less inclined to seek professional financial advice, instead relying more on family and friends (Bucher-Koenen et al., 2017). Financial self-confidence, in turn, is linked to stock market participation and prudent financial behavior (Cziriak et al., 2024; Farrell et al., 2016). Women tend to participate less in stock markets, a pattern often discussed in the context of gender differences in risk-taking (Charness & Gneezy, 2012).

The reasons for the gender gap in financial literacy are complex and multifaceted, and a substantial part of the gap remains unexplained. In a recent systematic review, the authors identified ten explanatory factors, with confidence, socialization, and education emerging as the

most prominent (Haag & Brahm, 2025). This work highlights that, beyond actual knowledge, psychological and social factors play a crucial role. Experimental evidence shows that response patterns differ even when knowledge is held constant. When the "do not know" option is available, women choose it more frequently than men, whereas removing this option substantially reduces the observed gender difference. It has been estimated that approximately 30 % of the gender gap in financial literacy responses can be attributed to differences in confidence rather than knowledge itself (Bucher-Koenen et al., 2024). Other studies reach similar conclusions, attributing a sizable share of the gap to lower confidence in financial decision-making among women (Cupák et al., 2021; Cziriak et al., 2024; Hung et al., 2012; Saluja et al., 2023).

Social norms, gender role expectations, and gendered socialization similarly contribute to gender differences in financial literacy and financial behavior (Ke, 2020; Niessen-Ruenzi et al., 2025; Saluja et al., 2023; Sholevar & Harris, 2020). Cross-country evidence suggests that women's lower stock market participation is related to broader normative environments and gender equality (Barasinska & Schäfer, 2018). Consistent with this, experiments show that making gender norms salient can shift risk-taking in stereotype-consistent ways, and that stereotype-relevant framing can induce more loss- and risk-averse financial decisions among women (Carr & Steele, 2010; Sekścińska et al., 2023). Related evidence links gender-stereotypical beliefs and stereotype threat to gaps in financial knowledge and performance (Driva et al., 2016; Tinghög et al., 2021).

Financial Education

Several studies have demonstrated that financial education initiatives can improve participants' financial knowledge and their financial self-confidence (Clark et al., 2025; García & Pérez-Oleaga, 2025; Kaiser et al., 2022; Lusardi et al., 2020). These interventions are delivered in a variety of ways, including classroom-based programs, standardized interventions, and scalable online approaches such as short videos or narrative formats (Billari et al., 2017; Lusardi et al., 2017;

Oberrauch & Kaiser, 2024). Evidence from experimental work suggests that even short, low-cost online stories can generate measurable gains in financial knowledge (Clark et al., 2025). Consistent with this trend, social media has become an important channel for financial education, and descriptive evidence indicates that finfluencer-style content can lower access barriers and increase the salience of financial topics for users (Ben-Shmuel et al., 2024).

However, prior work highlights heterogeneity in how individuals respond to financial education (Buvinić & O'Donnell, 2019), implying that standardized interventions may have limited effects on gender gaps. Consistent with this, the existing literature emphasizes that financial education should be tailored more specifically to target groups if it is to effectively address the persistent gender gap in financial literacy (Boggio et al., 2020; Bucher-Koenen et al., 2017; Choudhary & Jain, 2023; Cwynar, Filipek, et al., 2025; Haag & Brahm, 2025; Hasler & Lusardi, 2017; Pinto, 2012). Moreover, prior research suggests that interventions should not only convey knowledge but also address self-confidence in financial decision-making (Cziriak et al., 2024; Farrell et al., 2016). Taken together, these findings highlight the importance of designing effective financial education, particularly in online and social media formats, to address the specific needs and barriers faced by women.

Role Modelling

Role models can be an effective way of supporting members of negatively stereotyped or underrepresented groups. As belief-based interventions, positive in-group role models can mitigate stereotype-related concerns and improve outcomes in achievement settings (Liu et al., 2021).

The Motivational Theory of Role Modeling (Morgenroth et al., 2015) offers a framework for understanding how such effects arise. It integrates the role model literature with expectancy–value theories of motivation to explain when and how role models affect role aspirants' motivation, goals, and achievement. The theory conceptualizes role models as serving three functions: acting

as behavioral models, representing what is possible, and being inspirational. Whether or not a person functions as an effective role model depends on how they are perceived, especially in terms of goal embodiment, attainability, and desirability. Perceived attainability can be shaped by attributes of both the role model and the role aspirant, including perceived similarity and shared group membership (e.g., gender). These perceptions trigger role-modeling processes such as vicarious learning and identification, which shape how role aspirants evaluate goal-related behaviors. In turn, role models can shift expectancy (perceived likelihood of success, including self-efficacy, i.e., confidence in one's ability to succeed) and value (i.e., subjective desirability of a goal and related behaviors), which jointly determine motivation and related outcomes (Morgenroth et al., 2015).

Empirical research in traditionally male-dominated domains provides converging evidence that role model exposure can affect a range of outcomes relevant to gender gaps. In educational settings, exposure to female role models has been shown to buffer women's performance under stereotype-relevant conditions and to increase self-assessed ability and confidence, consistent with an interpretation that role models can reduce situational threat and shift expectancies of success (Dobrescu et al., 2024; Marx & Roman, 2002; McIntyre et al., 2003, 2005). Related work in STEM suggests that contact with same-sex experts can strengthen women's self-concept, attitudes, and motivation, making domain pathways appear more attainable (Stout et al., 2011). In entrepreneurship, role model interventions have been found to increase women's entrepreneurial intentions and self-efficacy (BarNir et al., 2011; Passavanti et al., 2024). These findings align with the Motivational Theory of Role Modeling, which posits that role models demonstrate what to do (behavioral models), who can do it (representing the possible), and why it is worth pursuing (being inspirational).

Evidence on the role of role models in personal finance and financial education is more limited, but it points in a similar direction. For decades, financial advertisements have predominantly featured men in central, authoritative roles, while women, if depicted at all, are more often shown as less knowledgeable and in subordinate positions (Langer & Niessen-Ruenzi, 2024). Such portrayals may reinforce the perception that finance is a male domain. Recent work suggests that financial role models and peer effects are more significant for women's financial literacy and confidence than for men's. However, these role models are less prevalent and weaker among girls during childhood and adolescence than among boys (Niessen-Ruenzi et al., 2025). The authors argue that this underexposure to financial role models is a previously underexplored mechanism contributing to the gender investment gap and conclude that closing this gap requires targeted interventions in financial education. Complementing this, the gender gap in financial literacy narrows when financial literacy questions are written using feminine-gendered wording rather than masculine or gender-neutral formulations (Cwynar, Bialowolski, et al., 2025). These findings suggest that even subtle cues about who "belongs" in the financial sector can shape observed knowledge gaps.

In the context of financial education, this raises the question of whether the presence of a role model improves the effectiveness of a brief, social media-based financial education intervention and whether gender congruence moderates these effects.

HYPOTHESIS DEVELOPMENT

The Motivational Theory of Role Modeling proposes that role models can influence how people relate to a domain by providing behavioral examples, representing what is possible, and serving as a source of inspiration (Morgenroth et al., 2015). In a financial education context, presenting content through a social media-style post, featuring an introduction and a photo of a person rather than an anonymous post, may shift expectancies of success and perceived value.

Based on this reasoning, we expect our financial education intervention featuring a role model to translate into higher financial literacy outcomes. We therefore hypothesize:

Hypothesis H1. *Financial literacy is higher when the financial education post is presented by a role model compared to no role model.*

As outlined above, prior research consistently finds that men score higher than women on financial literacy measures in different countries, age groups, and settings (Bucher-Koenen et al., 2017; Hasler & Lusardi, 2017). By including the gender gap as an explicit hypothesis in our study, we test whether this well-documented pattern also emerges in a brief, social-media-based financial education intervention. Establishing this baseline is crucial for both interpreting the role model effects and assessing whether such formats are sufficient to close the gender gap. We therefore hypothesize:

Hypothesis H2. *Financial literacy is higher for male participants compared to female participants across all financial education posts.*

The Motivational Theory of Role Modeling posits that perceived similarity between role models and role aspirants is a central mechanism shaping whether someone is perceived as a role model. A key component of this similarity is shared group membership along salient dimensions such as gender. This, in turn, increases the perceived attainability of the role model's outcomes (Morgenroth et al., 2015). Hence, we assume that the gender congruence between the role model shown and the study participant shapes the effectiveness of the financial education (with the no role-model condition serving as a baseline):

Hypothesis H3. *Role model gender congruence moderates the effectiveness of the financial education post such that financial literacy is higher when the financial education post is presented by an ingroup role model (same gender) compared to an outgroup or no role model.*

Morgenroth et al. (2015) further argue that the impact of role models and shared group membership is particularly pronounced in settings where the target group is a minority or negatively stereotyped. In such contexts, in-group role models can help change self-stereotyping

and reduce the salience of perceived external barriers, thereby broadening what individuals see as possible for themselves. This aligns with findings from STEM, where female role model interventions have been shown to benefit women, who are underrepresented in this field (Marx & Roman, 2002; Stout et al., 2011). These mechanisms are also relevant in the financial domain, as women's lower confidence accounts for about one-third of the gender gap in financial literacy scores (Bucher-Koenen et al., 2024). By analogy, we expect that women, as the underrepresented and negatively stereotyped group in the financial domain, will benefit disproportionately from exposure to a female financial role model. Therefore, we hypothesize:

Hypothesis H4. *The gender gap in financial literacy is lower in the female role model condition compared to the male role model or no role model condition.*

For exploratory purposes, we also examine potential mediators of the role model manipulation. Building on existing findings that identify confidence (including financial self-efficacy), socialization, and interest as relevant factors contributing to the gender gap in financial literacy (Haag & Brahm, 2025), we investigate whether these factors mediate the effect of exposure to a role model on financial literacy outcomes.

METHOD

Sample and Recruitment

We recruited participants via the online panel Prolific and collected data between November 26, 2025 and January 11, 2026. Eligibility criteria included being at least 18 years old, residing in Germany, and reporting German as the primary language. Participants were compensated at an hourly rate of £9 for a median completion time of 10 minutes. An a priori power analysis (Cohen's $f = 0.10$, $\alpha = 0.05$, power = 0.80) for a three-group design indicated a required total sample size of 969. We recruited 986 participants and excluded participants who 1) failed manipulation checks (i.e., incorrect recall of the post's topic or the role model's gender), 2) failed an instructed-response attention check, 3) reported using AI-based tools to answer survey

questions, 4) completed the survey in less than 50% of the sample median completion time, 5) showed implausible response patterns such as pervasive straightlining across multi-item scales, or 6) failed to finish the survey. Only the first submission was kept for participants who had submitted more than once. Due to the gender-specific study design, we also excluded participants who did not identify themselves as either male or female. After exclusions, the final analytic sample consisted of 935 participants, of whom 48.7 % identified as female. The average completion time was 10.73 minutes (*SD* = 4.45). We preregistered the study on the Open Science Framework (OSF; link blinded for review) and obtained approval from the ethics committee of the German Association for Experimental Economic Research.

Procedure

After accessing the online survey, participants read introductory information and provided informed consent. They were then randomly assigned by the survey software to one of the study conditions and viewed an educational social media post. Participants then completed the outcome measures, followed by manipulation-check items[2]. Next, participants completed the remaining questionnaire, which included exploratory mediators, control variables, and demographic questions. To measure voluntary engagement, we provided participants the opportunity to read up to ten financial rules of thumb. Participants could either skip this section or terminate it after any given rule, allowing us to record the exact number of rules consumed. At the end of the survey, participants received a short debrief on the study's aim. To minimize potential order and position effects across the study instruments, the individual questions within each measurement block (e.g., knowledge questions, manipulation checks, mediators) were presented to participants in a

[2] The initial 48 participants received the manipulation check (MC) immediately following the stimulus. The protocol was then adjusted, moving the MC to after the dependent variable (DV) to ensure manipulation salience throughout DV measurement. An independent samples t-test confirmed no significant difference in MC scores between the two protocol groups ($t(54,23) = 0.37$, $p = 0.71$).

randomized order. Furthermore, where applicable (e.g., for multiple-choice questions), the order of the response options was also randomized for each participant. All study instruments and materials were provided in German.

Experimental Manipulation

The experimental manipulation consisted of a financial education stimulus that resembled a social media post (Instagram style) in all three conditions. Participants viewed a four-slide carousel post explaining risk diversification. We adapted the intervention content from Clark et al. (2025), as their experiment identified this topic as the most efficacious.

The four-slide version served as the control condition ("no role model"). In the two role model conditions, the same educational content was embedded in a brief finfluencer vignette. Specifically, we added an introductory slide preceding the four educational slides, in which the role model briefly introduced themselves, and we displayed a portrait of the role model alongside the text throughout the post. In the male role model condition ("Thomas"), the post featured a male person. In the female role model condition ("Anna"), the post was identical except for the name and depicted face (Figure 1). The two faces were selected from the Chicago Face Database (IDs #WF-015 and #WM-004) and show a smiling expression (Ma et al., 2015). They were closely matched in perceived age (Anna: $M = 24.2$ years; Thomas: $M = 25.8$ years), attractiveness (Anna: $M = 4.6$; Thomas: $M = 4.7$), and trustworthiness (Anna: $M = 3.9$; Thomas: $M = 3.6$) to minimize potential confounds across conditions.

Insert Figure 1 about here

Prior to the main study, we conducted a pretest with 48 participants to validate the manipulation checks and assess the comprehensibility of the educational post. The manipulation checks,

subsequently used in the main study, evaluated whether participants correctly recalled (1) who was depicted on the slides (female/male role model/none), (2) the post's topic, and (3) its core message. The pretest also examined the post's perceived realism and understandability.

Measures

We prioritized objective financial knowledge as our primary outcome to capture financial literacy, as it is the standard measure in this domain and avoids the pitfalls of self-reporting.

Objective financial knowledge. We assessed objective financial knowledge using seven items, with the index reflecting the number of questions answered correctly (0–7). The items included the "Big Five" financial literacy questions (Hastings et al., 2013). To align with our educational content, we added two additional risk diversification items used by Clark et al. (2025).

To complement our primary measure, we evaluated secondary outcomes, including subjective financial knowledge and behavioral intentions related to investing and saving, which together provide a more holistic view of financial literacy.

Subjective financial knowledge. We measured subjective financial knowledge with a single-item indicator ("How would you assess your overall financial knowledge?"), rated on a 7-point scale (1 = very low, 7 = very high) (Lusardi & Mitchell, 2014). Higher scores reflect greater perceived financial knowledge.

Marginal propensity to invest (MPI). To measure investment intentions, we adapted the logic of the "marginal propensity to consume" (Jappelli & Pistaferri, 2014) to an investment context. Participants were asked to imagine receiving an unexpected refund equivalent to one month's net income, and to indicate what percentage of this they would invest in the stock market over the next 12 months. We recorded responses as a continuous percentage measure (0–100).

Intention to save for retirement. Drawing on the Theory of Planned Behavior (Ajzen, 1991), we used a single item to assess participants' intention to increase their retirement savings.

Participants indicated their agreement with the statement, "I intend to save more money for my retirement in the near future than I am currently saving," using a 7-point scale (1 = strongly disagree, 7 = strongly agree). Higher scores indicate stronger intentions to increase retirement savings.

To shed light on the mechanisms by which role model manipulation may influence these outcomes, we also measured several potential mediators.

Financial self-efficacy (FSES). We measured financial self-efficacy with the Financial Self-Efficacy Scale (Lown, 2011). Participants responded to six items (e.g., "It is hard to stick to my spending plan when unexpected expenses arise.") on a 4-point scale (1 = Exactly true, 4 = Not at all true). We averaged responses to form an overall score, with higher scores reflecting greater financial self-efficacy.

Confidence. Following common practice in the financial literacy literature (Bucher-Koenen et al., 2017; Cziriak et al., 2024), we used participants' use of the "don't know" response option in the objective knowledge questions as an indicator of (lack of) confidence in financial knowledge. Specifically, we constructed a dummy variable coded 1 if a participant selected "don't know" at least once across the objective financial knowledge items and 0 otherwise.

Stereotypical beliefs. We assessed stereotypical beliefs as a proxy for socialization using a five-item scale (Driva et al., 2016). The items capture the extent to which participants endorse stereotypical views related to gender and financial decision making (e.g., "Men are usually more interested in finances than women."), rated on a 5-point scale (1 = strongly disagree, 5 = strongly agree). We averaged the scores to form a composite measure, with higher values indicating stronger stereotypical beliefs.

Interest (in retirement saving and investing). We captured interest in saving, investing, and retirement planning using two self-developed items grounded in the Theory of Planned Behavior (Ajzen, 1991). Participants indicated their level of interest in learning more about saving and financial planning for retirement, as well as their perception of the importance of saving and planning financially for retirement over the next year, on a 5-point scale. Due to a strong correlation ($r = 0.63$), these two items were averaged into a single interest score, with higher values indicating greater interest and perceived importance.

Finally, we measured several additional constructs to account for differences in perceptions of role modeling and social media use.

Role model score. To assess the extent to which the person in the social media post was perceived as a role model, we developed a three-item scale based on the Motivational Theory of Role Modelling (Morgenroth et al., 2015). Participants indicated their level of agreement (1 = strongly disagree, 7 = strongly agree) with items such as: "The person in the social media post represents a goal I would like to achieve myself." The final scale was computed as the average of these items, with higher scores indicating stronger perceived role-model qualities and identification.

Finfluencer exposure. We assessed prior exposure to finfluencers by asking participants whether they follow people or accounts that regularly post about financial topics and coded this as a dummy variable (1 = yes).

Data Analysis Strategy

We first assessed the reliability of the multi-item scales (Cronbach's $\alpha \geq 0.80$) and examined bivariate correlations among key variables. For the primary analysis, we estimated linear models for each dependent variable, with gender (male vs. female), experimental group (Anna, Thomas, no role model), and their interaction as predictors. We report Type III factorial ANOVAs including

F-statistics, p-values, and partial eta-squared effect sizes. To test our preregistered hypotheses, we derived estimated marginal means (using emmeans) and specified planned contrasts, reporting unstandardized mean differences, 95% unadjusted confidence intervals, Cohen's d, and p-values (unadjusted and Holm-adjusted within each outcome's contrast family). Objective financial knowledge served as the primary outcome, with hypotheses evaluated based on its effects. Secondary outcomes included subjective financial knowledge, MPI, and intention to save for retirement, which were analyzed in the same manner. We conducted exploratory simple mediation models (5,000 nonparametric bootstrap resamples, 95% CIs) for plausible X–M–Y paths after verifying standard regression assumptions. We also exploratory examined differences in role-model perception within the role-model conditions (Anna/Thomas) and tested whether the z-standardized role-model score was associated with our primary and secondary outcomes (three-way Gender × Condition × RMS_z interactions, probed via simple slopes and covariate correlations).

We disclose the use of generative AI tools (Gemini and Perplexity AI) for conceptual brainstorming and to assist in developing and refining statistical scripts. Additionally, DeepL Write and Gemini were used for linguistic editing and to enhance the clarity of the manuscript. We critically reviewed all AI-generated suggestions, verified them, and maintain full responsibility for the intellectual content and the accuracy of the findings.

RESULTS

Table 1 presents descriptive statistics for all outcomes (primary and secondary) by experimental condition and participant gender.

Insert Table 1 about here

We conducted 3×2 ANOVAs with experimental condition (Anna, Thomas, no role model) and participant gender (male, female) as factors. To verify the prerequisites for the prerequisites, we conducted several tests. Levene's tests indicated heterogeneous variances for objective financial knowledge and MPI ($p < 0.05$), but homogeneous variances for subjective financial knowledge and retirement intentions. Accordingly, we recomputed inference for objective knowledge and MPI using heteroskedasticity-consistent (HC3) standard errors, which yielded the same conclusions as the standard ANOVAs. Shapiro-Wilk tests indicated deviations from normality, which are common with large samples (Field, 2024). However, visual inspection of residual plots did not reveal any problematic patterns. No critical observations regarding Cook's distance were noted.

The results of the 3×2 ANOVAs showed no significant main effects for the experimental group or Gender × Group interactions for our primary outcome or across any of the secondary outcomes. However, the results showed significant gender differences for the primary outcome (objective financial knowledge) and the secondary outcomes (subjective financial knowledge, MPI, and intention to save for retirement), as depicted in Table 2. Men and women scored differently in terms of objective financial knowledge ($F(1,929) = 50.47$, $p < 0.01$, $\eta_p^2 = 0.05$), subjective financial knowledge ($F(1,929) = 149.57$, $p < 0.01$, $\eta_p^2 = 0.14$) and MPI ($F(1,929) = 94.86$, $p < 0.01$, $\eta_p^2 = 0.09$). The main effect of gender on retirement intentions was small ($F(1,929) = 3.90$, $p = 0.049$, $\eta_p^2 = 0.004$). Results remained unchanged when age, education, and income were included as covariates in parallel ANCOVA models.

Insert Table 2 about here

Regarding H1 (role model versus no role model), the global contrasts showed no differences for objective knowledge (ΔM = -0.10, d = -0.10, p = 0.14, 95% *CI* [-0.24, 0.03]). Consequently, H1 was not supported. Turning to the secondary outcomes, subjective knowledge revealed a small but noteworthy pattern. Participants in the role model conditions yielded marginally significantly higher subjective knowledge than those in the no role model condition (ΔM = 0.17, d = 0.13, p = 0.07, 95 % *CI* [-0.01, 0.35]). When exploratory looking into H1 by gender, we found that this pattern was driven primarily by men (ΔM = 0.27, d = 0.21, p = 0.04). In contrast, women showed no corresponding difference (ΔM = 0.07, d = 0.05, p = 0.62). No role model effects emerged for MPI and intention to save for retirement (Table 3).

Insert Table 3 about here

Consistent with the main effects observed in the ANOVA, planned contrasts for H2 confirmed the gender gap in objective knowledge, with men reporting higher knowledge (ΔM = 0.46, d = 0.47, p < 0.01, 95% *CI* [0.33, 0.58]). Thus, H2 is supported. Consistent results were obtained for the planned contrasts regarding the secondary outcomes, with men scoring significantly higher across all measures: subjective knowledge (ΔM = 1.06, d = 0.80, p < 0.01, 95% *CI* [0.89, 1.23]), MPI (ΔM = 18.58, d = 0.64, p < 0.01, 95% *CI* [14.84, 22.33]), and with a very small effect, retirement intentions (ΔM = 0.21, d = 0.13, p = 0.049, 95% *CI* [0.001, 0.41]).

Regarding H3, results for objective knowledge indicated no differences between in-group and out-group or no role models. The corresponding pairwise comparisons between ingroup vs.

outgroup/no role model within men and within women produced small effect sizes ($|d| \leq 0.20$) and non-significant Holm-adjusted p-values (Table 4). Therefore, H3 was not supported. No corresponding significant effects emerged for the secondary outcomes. For subjective knowledge, however, men showed a noteworthy descriptive pattern (Thomas vs. no role model: $\Delta M = 0.29$, $d = 0.22$, $p = 0.049$), but this difference did not remain significant after Holm correction ($p_{holm} = 0.20$). Therefore, it should be interpreted with caution.

Consistent with H3, H4 was not supported. Gender gaps in the Anna condition did not differ significantly from those in the Thomas or no role model condition across outcomes (all $p_{holm} \geq 0.21$).

Insert Table 4 about here

To exploratively examine potentially underlying mediation mechanisms, we investigated whether the proposed mediators (FSES, confidence, interest, stereotypical beliefs) were influenced by the presence of a role model. Among those, FSES emerged as the only promising pathway for mediation. Given that we only found a (yet marginally significant) effect of the presence of a role model on our secondary outcome, subjective financial knowledge, we tested this path as a mediation candidate. Across all participants, the presence of a role model was associated with slightly higher FSES ($a = 0.13$, $p < 0.01$), and higher FSES, in turn, predicted higher subjective knowledge ($b = 1.08$, $p < 0.01$), yielding a modest but significant indirect effect ($ab = 0.14$, 95% *CI* [0.05; 0.23]). The indirect effect remained significant for men ($ab = 0.16$, 95% *CI* [0.04; 0.29]) but was not significant for women ($ab = 0.12$, 95% *CI* [−0.01; 0.25]). Among the remaining mediator candidates, we observed the following exploratory pattern for women: the presence of a role model was associated with higher stereotypical beliefs (role model vs. no role model:

$\Delta M = 0.15$, $d = 0.17$, $p = 0.09$), primarily driven by exposure to Anna condition, and lower interest (role model vs. no role model: $\Delta M = -0.20$, $d = -0.22$, $p = 0.03$).

Finally, we conducted exploratory analyses to investigate whether role model perception differed by participants' gender and whether outcomes within the role-model conditions varied with participants' identification with the presented role model (standardized role model score; RMS_z). Women recognized Anna significantly more as a role model than Thomas ($\Delta M = 0.37$, $d = 0.32$, $p < 0.01$), whereas men showed no difference between Anna and Thomas ($\Delta M = 0.01$, $d = 0.01$, $p = 0.95$). Across secondary outcomes, higher RMS_z tended to relate to higher subjective knowledge, MPI, and retirement intention (all $p < 0.01$), whereas patterns for objective knowledge (primary outcome) were more heterogeneous, with only a significant positive slope in the Thomas condition among men ($p < 0.01$). Correlations showed that role model identification was positively associated with following finfluencers for both men ($r = 0.30$, $p_{holm} < 0.01$) and women ($r = 0.35$, $p_{holm} < 0.01$).

DISCUSSION AND IMPLICATIONS

The objective of this study was to examine whether the presence of a role model improves the effectiveness of a brief, social media-based financial education intervention and whether gender congruence moderates these effects. Results show persistent gender gaps (H2 supported) and little evidence that the presence of a role model improves financial literacy (H1 rejected). Gender congruence did not moderate these effects (H3 rejected) and therefore did not reduce the gender gap (H4 rejected). Any suggestive differences, when presented by a role model, were limited to a small increase in men's subjective financial knowledge and did not extend to objective knowledge or behavior-related outcomes. Financial self-efficacy may explain the effect on subjective financial knowledge, particularly among men. Exploratory analyses showed that stronger identification with

the presented role model is associated with better outcomes, and that identification is related to prior exposure to finfluencer-related content.

Theoretical Implications

Our findings contribute to the literature on gender gaps in financial literacy (Bucher-Koenen et al., 2024; Haag & Brahm, 2025) and the gender investment gap (Niessen-Ruenzi et al., 2025). We know that men consistently outperform women on financial literacy measures (Bucher-Koenen et al., 2024; Lusardi & Mitchell, 2011) and generally appear more risk-savvy, which is reflected in higher levels of stock market participation (Charness & Gneezy, 2012). We extend these findings by demonstrating that gender gaps in objective financial knowledge, subjective financial knowledge, and MPI remain robust also in the social-media-based educational context.

We extend the literature about role modelling by applying it to the financial domain. In line with the Motivational Theory of Role Modeling (Morgenroth et al., 2015), our findings confirm that, for women (the minority group in this context), gender-matching as a signal of similarity is a relevant driver of role model perception. Women rated the in-group model (Anna) significantly higher across all three functional dimensions: goal embodiment, attainability, and desirability. In contrast, men perceived both role models as equally effective. Our results suggest that the potential of the role model intervention is closely tied to its subjective reception, with the strongest positive associations among participants who indicated the highest role model score and therefore identified most closely with the role model. This aligns with the idea that a role model must be "accepted" as such to exert influence (Morgenroth et al., 2015).

Furthermore, we identify the boundaries of role modeling in the finance sector. Unlike experimental settings in STEM or mathematics, where role models successfully reduced gender gaps in test scores or career intentions (Marx & Roman, 2002; Passavanti et al., 2024; Stout et al., 2011), our experimental setting showed no comparable outcomes. The intervention was notably

less successful for women. This resistance among women may stem from deep-seated (childhood) socialization (Niessen-Ruenzi et al., 2025) and the dominance of male stereotypes in financial advertising (Langer & Niessen-Ruenzi, 2024), which a single-exposure intervention may not easily override. This contrasts with research in the financial domain, which shows that even subtle cues in question wording can reduce gaps (Cwynar, Bialowolski, et al., 2025). Consequently, we hypothesize that explicit role models could trigger defensive barriers and unintended opposite effects, as our exploratory patterns suggest, with women showing less interest and firmer stereotypical beliefs in the role model conditions. Role model interventions may backfire by reinforcing gender stereotypes (Verniers et al., 2024).

Finally, we identified FSES as a potential psychological mechanism underlying the influence of role models, a finding also supported in the context of entrepreneurship (BarNir et al., 2011). Although we only examined the mediation effect on subjective financial knowledge, our findings align with those of studies where interventions significantly improved self-efficacy, even when objective financial knowledge gains were limited (Lusardi et al., 2017; Sanders et al., 2007). It is essential to note that FSES is a robust predictor of investment behavior, often independent of objective literacy (Farrell et al., 2016).

Limitations and Recommendations for Future Research

The present study has several limitations that should be acknowledged. First, our brief online vignette likely underestimates the impact of repeated and more interactive role-model contact, such as ongoing exposure via social media or personal contact, which may be better suited to shifting financial literacy outcomes. Future research should investigate the impact of sustained, interactive role-modeling (e.g., community-based or peer-to-peer) on longitudinal outcomes. We demonstrate that designing financial education for women and men by merely incorporating a role model into the same content does not substantially alter (short-term) outcomes. Future studies should

investigate whether tailoring content to specific needs yields more positive outcomes as proposed by other authors (Cwynar, Filipek, et al., 2025; Hasler & Lusardi, 2017).

Second, the role model was operationalized primarily through gender, while other potentially important dimensions of similarity and attainability, such as socio-economic background, were not addressed. We propose that future researchers examine this aspect by also incorporating other attributes that explain the gender gap, such as education and relationship status (Haag & Brahm, 2025). Given women's greater reliance on informal sources, such as family and friends, for financial advice (Bucher-Koenen et al., 2017), it is also important to consider relational proximity when examining the effectiveness of role models in the future.

Third, our secondary outcomes are based on self-reported measures rather than on actual (portfolio) behavior choices. This circumstance limits the ability to draw conclusions about actual downstream financial behavior and the durability of any changes over time. Hence, longitudinal studies are required to observe actual behavioral changes resulting from role model exposure.

Fourth, the data were collected via an online panel. This raises questions about the generalizability of the results to the broader German population, particularly among less digitally engaged individuals. Also, the recruitment process was slower than expected. Consequently, the final sample size after exclusions remained slightly below our initial target of 969 participants. Additionally, the study is situated within a single cultural context. Cultural norms around gender, money, and financial socialization, however, explain part of the existing gender gap, even in culturally similar settings like former East and West Germany (Haag & Brahm, 2025). We therefore propose that more studies should be conducted to address the gender gap and the relevance of role models in various cultural backgrounds.

Practical Implications

For policymakers and educators, the results emphasize that effective interventions must target more than factual financial literacy. In this experiment, shifts were primarily observed in subjective financial knowledge and financial self-efficacy, while objective financial knowledge and behavior-related outcomes remained largely unchanged. Programs that aim to narrow gender gaps should therefore be designed to strengthen participants' sense that they can understand and handle financial decisions rather than focusing predominantly on information transfer. This also makes sense given that subjective financial literacy was found to be a stronger predictor of sound financial behavior than objective financial knowledge (Lind et al., 2020).

Our findings suggest caution in viewing role-model interventions as a simple remedy for financial gender gaps. While brief exposure to role models modestly boosted men's subjective financial knowledge, women showed no comparable shift despite evaluating the female role model more positively than the male role model. This asymmetry implies that short, symbolic impulses, such as merely placing female faces on existing content, might not be able to override deep-seated structural and socialization barriers. Instead, resources should be directed toward comprehensive, sustained, and relationship-based approaches that integrate solid financial education tailored to women's specific financial realities.

Finally, exploratory analyses revealed that stronger identification with the role model was associated with better outcomes. These findings suggest that tailoring role models to individual characteristics may be more effective than generic, one-size-fits-all approaches. Specifically, we found that individuals who already followed finfluencers were more likely to establish a strong connection. For practitioners, this means that, in addition to the characteristics of the role model, the choice of medium is also important. Interventions must be carefully tailored to the specific habits and platforms used by the target audience.

CONCLUSION

Our results demonstrate that the gender gap in financial literacy remains robust and resistant to our role model-based financial education intervention. Although gender-congruent representation signals inclusion, brief exposure to role models may not be sufficient to narrow the financial literacy gap. The observed patterns were primarily limited to improvement of men's subjective financial knowledge and self-efficacy, highlighting significant boundary conditions for role modeling theory in financial contexts. These findings provide a cautious reality check for "female finance" initiatives, suggesting that more intensive, tailored strategies are needed to effectively bridge the gender gap.

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FIGURES AND TABLES

Table 1

Descriptive statistics by gender and condition

	Male			Female		
DV	**Anna**	**Thomas**	**No RM**	**Anna**	**Thomas**	**No RM**
Primary DV						
Objective knowledge	5.96 (0.82), 162	5.87 (1.03), 164	6.06 (0.76), 154	5.48 (1.14), 159	5.50 (1.13), 154	5.54 (0.95), 142
Secondary DVs						
Subjective knowledge	5.25 (1.27), 162	5.29 (1.28), 164	5.00 (1.36), 154	4.16 (1.39), 159	4.12 (1.33), 154	4.08 (1.32), 142
MPI	53.99 (31.41), 162	55.33 (29.76), 164	57.33 (31.26), 154	38.27 (27.24), 159	34.86 (27.48), 154	37.77 (27.05), 142
Save for retirement	5.28 (1.62), 162	5.34 (1.59), 164	5.18 (1.71), 154	4.95 (1.50), 159	4.95 (1.72), 154	5.27 (1.45), 142

Note: Entries are *M (SD), n*. "No RM" denotes the control condition with no role model present. Gender is coded as male and female. MPI refers to "marginal propensity to invest". $N = 935$. Sample: male ($n = 480$), female ($n = 455$). Cell sizes: Anna ($n = 321$), Thomas ($n = 318$), no role model ($n = 296$).

Table 2

3 × 2 ANOVA results for primary and secondary outcomes

	Gender			Group			Interaction		
DV	***F***	***p***	***ηp²***	***F***	***p***	***ηp²***	***F***	***p***	***ηp²***
Primary DV									
Objective Knowledge	50.47	<0.01***	0.05	1.16	0.31	0.002	0.48	0.62	0.001
Secondary DVs									
Subjective Knowledge	149.57	<0.01***	0.14	1.65	0.19	0.004	0.69	0.50	0.001
MPI	94.86	<0.01***	0.09	0.55	0.58	0.001	0.60	0.55	0.001
Save for retirement	3.90	0.049 **	0.004	0.42	0.66	0.001	2.02	0.13	0.004
df		(1, 929)			(2, 929)			(2, 929)	

Note: F represents F-statistic; *p* represents p-value; ηp^2 represents partial eta-squared effect size. Gender effects test differences between male and female participants. Group effects test differences between the three groups (Anna, Thomas, no role model). Interaction effects test the combined influence of gender and group assignment. Type-III tests are reported. All p-values are two-tailed. MPI refers to "marginal propensity to invest". $N = 935$.

*** Significant at the 1% level

** Significant at the 5% level

* Significant at the 10% level

Table 3

Test of hypothesis 1 (role model vs. no role model): Overall and exploratory gender-specific effects on primary and secondary outcomes

	Overall				Male			Female		
DV	**Δ*M***	**95 % *CI***	***d***	***p***	**Δ*M***	***d***	***p***	**Δ*M***	***d***	***p***
Primary DV										
Objective Knowledge	-0.10	[-0.24, 0.03]	-0.10	0.14	-0.15	-0.15	0.12	-0.05	-0.05	0.59
Secondary DVs										
Subjective Knowledge	0.17	[-0.01, 0.35]	0.13	0.07 *	0.27	0.21	0.04 **	0.07	0.05	0.62
MPI	-1.94	[-5.96, 2.09]	-0.07	0.35	-2.67	-0.09	0.35	-1.20	-0.04	0.68
Save for retirement	-0.10	[-0.32, 0.12]	-0.06	0.37	0.13	0.08	0.43	-0.33	-0.20	0.045 **

Note: Δ*M* indicates the mean difference between conditions (Role Model − no Role Model); positive values indicate higher scores in the Role Model condition. Cohen's *d* is reported as the standardized mean difference. All p-values are two-tailed. Male and female refer to the participant gender. MPI refers to "marginal propensity to invest". $N = 935$. Sample: male ($n = 480$), female ($n = 455$). Cell sizes: Role model ($n = 639$), no role model ($n = 296$). $Df = 929$.

*** Significant at the 1% level

** Significant at the 5% level

* Significant at the 10% level

Table 4

Test of hypothesis 3 (ingroup vs. outgroup / vs. no role model): Gender-specific contrast tests

DV	Gender	Contrast	Δ*M*	95 % *CI*	*d*	$p_{unadjusted}$	p_{holm}
Primary DV							
Objective Knowledge	Female	Anna – No RM	-0.06	[-0.29, 0.16]	-0.07	0.57	1.00
Objective Knowledge	Female	Anna – Thomas	-0.02	[-0.24, 0.20]	-0.02	0.84	1.00
Objective Knowledge	Male	Thomas – No RM	-0.19	[-0.41, 0.02]	-0.20	0.08 *	0.32
Objective Knowledge	Male	Thomas – Anna	-0.09	[-0.30, 0.13]	-0.09	0.44	1.00
Secondary DVs							
Subjective Knowledge	Female	Anna – No RM	0.09	[-0.21, 0.39]	0.07	0.57	1.00
Subjective Knowledge	Female	Anna – Thomas	0.04	[-0.25, 0.33]	0.03	0.79	1.00
Subjective Knowledge	Male	Thomas – No RM	0.29	[0.001, 0.58]	0.22	0.049 **	0.20
Subjective Knowledge	Male	Thomas – Anna	0.04	[-0.25, 0.33]	0.03	0.79	1.00
MPI	Female	Anna – No RM	0.50	[-6.10, 7.11]	0.02	0.88	1.00
MPI	Female	Anna – Thomas	3.41	[-3.06, 9.87]	0.12	0.30	1.00
MPI	Male	Thomas – No RM	-2.00	[-8.42, 4.41]	-0.07	0.54	1.00
MPI	Male	Thomas – Anna	1.34	[-4.99, 7.68]	0.05	0.68	1.00
Save for retirement	Female	Anna – No RM	-0.33	[-0.69, 0.04]	-0.20	0.08 *	0.32
Save for retirement	Female	Anna – Thomas	0.002	[-0.35, 0.36]	0.001	0.99	1.00
Save for retirement	Male	Thomas – No RM	0.15	[-0.20, 0.51]	0.10	0.39	1.00
Save for retirement	Male	Thomas – Anna	0.06	[-0.29, 0.41]	0.04	0.75	1.00

Note: Δ*M* indicates the mean difference for the reported contrast (first condition minus second condition); positive values indicate higher scores in the first condition listed in the contrast. "No RM" denotes the control condition with no role model present. Cohen's *d* is reported as the standardized mean difference. All p-values are two-tailed; Holm-adjusted p-values control the family-wise error rate across the set of contrasts within each outcome. 95 % CIs are unadjusted. MPI refers to "marginal propensity to invest". $N = 935$. Sample: male ($n = 480$), female ($n = 455$). Cell sizes: Anna ($n = 321$), Thomas ($n = 318$), no role model ($n = 296$). $Df = 929$.

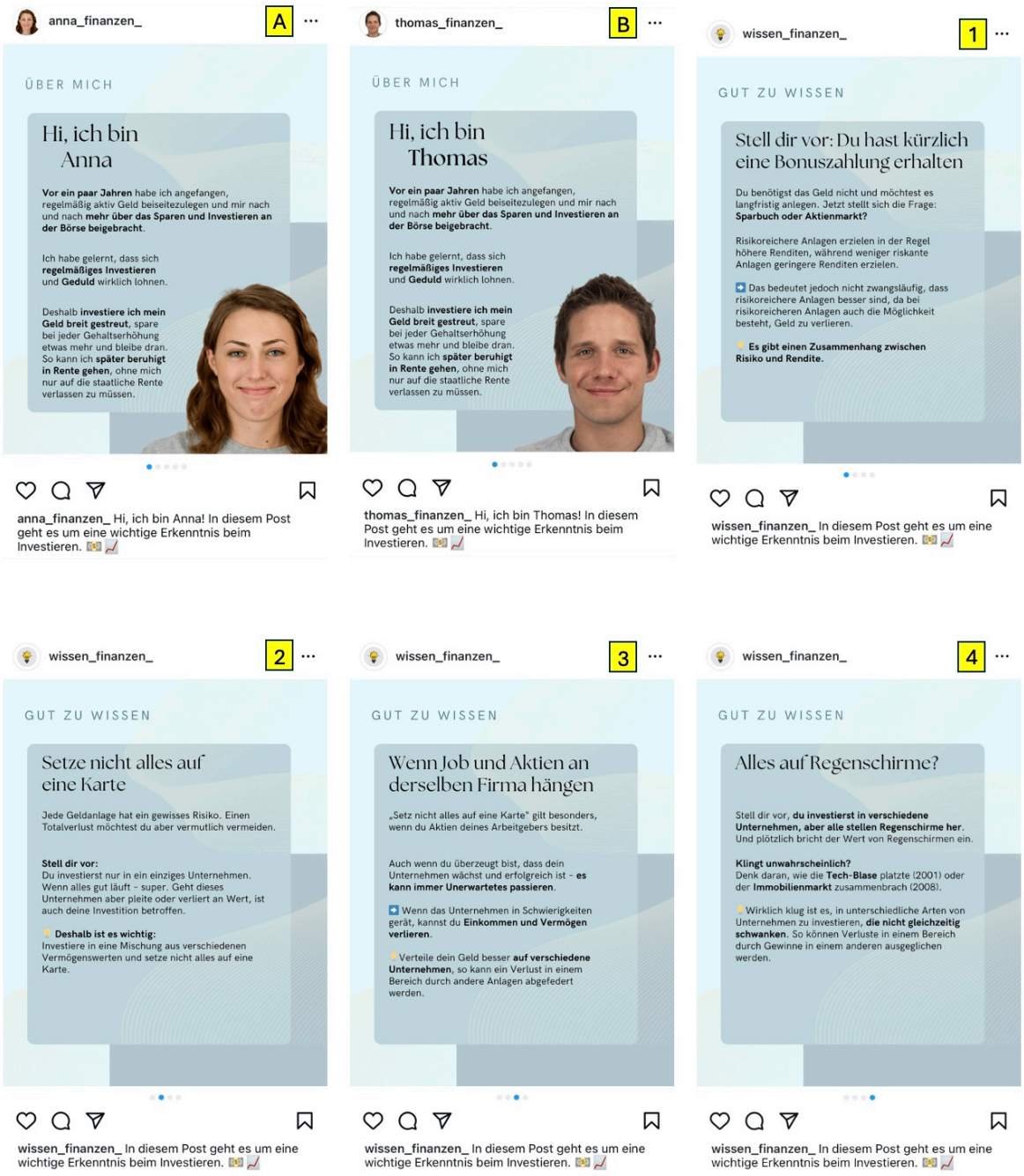
*** Significant at the 1% level

** Significant at the 5% level

* Significant at the 10% level

Figure 1

Intervention (language of intervention is German)



Note: A) Introduction slide in the Anna condition; B) Introduction slide in the Thomas condition. 1-4) Full social media post in the no role model (control) condition. In the Anna and Thomas conditions, these content slides are also shown as posted from the respective account and include the corresponding role model's face.