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**Investigating the impact of signaling attitude
homophily in social media advertisement on
persuasion and the mediating effects between
attitude homophily and persuasion**

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"The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics, or Erasmus University Rotterdam."

1 Introduction

"Birds of feather flock together", this metaphor illustrates the notion that people who are similar to each other tend to associate with one another. This notion is a well-researched phenomenon in cognitive science where scholars have investigated the effects of similarity between a source and a receiver in a variety of contexts. One widely investigated topic in this domain is how similarity affects persuasion where researchers have uncovered via which primal instincts and cognitive pathways similarity affects persuasion. Where this research started out in the pre-internet era, mainly focusing on how salesmen could optimize their performance by applying similarity techniques, in recent decades this research has evolved to wider applications from the effects of candidate similarity on voting behaviour (Van Erkel, 2019) to discovering that people's perception of Rasputin is positively influenced when people believe they share the same birthday (Finch and Cialdini, 1989). Next to a wider application, the field of persuasive similarity has moved beyond persons to products and brands and found evidence for the positive relationship between the perceived similarity of a consumer between a brand or product and persuasion (Zang et al. 2018, Shao and Ross, 2015, Gummerus, 2023). These findings have not gone unnoticed by marketers who have leveraged the persuasive effects of perceived similarity in their marketing efforts. Despite the widespread commercial implementation of similarity-driven marketing campaigns, to date, there has not been scientific research on this topic. Additionally, previous research in the marketing domain concerning the persuasive effects of similarity has primarily implemented an experimental design where subjects are asked to complete questionnaires related to perceived similarity and persuasion post-intervention. While these findings are insightful, subjects are aware of their participation in the experiment which may influence the results. It would therefore be valuable to see whether the same findings hold in a natural field experiment

setting where people are unaware they are participating in an experiment. Lastly, previous studies have found a variety of mediating effects between similarity and persuasion but all studies in itself test only one or two mediating effects which limits the completeness of attitude changes as a result of observing similarity. This research attempts to fill those gaps by conducting two experiments. The first experiment employs an A/B testing approach, comparing two advertisements aimed at convincing people to join a social network community where one advertisement signals lifestyle similarity and the other does not. The second experiment investigates the mediating effects perceived lifestyle similarity has on persuasion in a similar advertisement context via an online survey. The domain within persuasive similarity that focuses on the tendency of individuals to connect with each other who are similar to them in terms of lifestyle is known as attitude homophily. From here, the research question is formulated as follows: *What is the effect of signalling attitude homophily in written online social network advertisements on persuasion and what are the mediating effects between attitude homophily and persuasion in this context?*

When analyzing and sharing the results of similarity-driven marketing campaigns, a broader understanding of the effects of similarity in the marketing domain can be achieved which in turn provides valuable information for marketers. The remainder of this paper is organised as follows. First, the theoretical background and hypothesis development is elaborated upon. Second, the methodology, results, and conclusion of the first experiment are described. Third, the methodology, results, conclusion, and discussion of the second experiment are described. Lastly, this paper is concluded with the overall discussion of the research.

2 Literature review

This section aims to provide a theoretical framework for understanding various aspects, theories, and effects related to the domain of similarity and persuasion that are relevant to this research. First, this section will explore how similarity functions as a mental shortcut or heuristic. Second, it will delve into the cognitive theory that underlies the process of attitude change resulting from persuasive messages, and the role similarity plays in this process. Third, the two most relevant theories within persuasive similarity in online social networks, the similarity-attraction theory and homophily, will be discussed.

Similarity and cognitive theory

Similarity is a widely investigated topic in cognitive science where scholars have attempted to capture and refine various aspects of similarity and incorporated those into theories of learning and behaviour (Goldstone et al., 1991). From a general perspective, Tversky (1977) states that " Similarity serves as an organizing principle by which individuals classify objects, form concepts, and make generalizations. ". Additionally, he argues that "Similarity underlies the accounts of stimulus and response generalization in learning, it is employed to explain errors in memory and pattern recognition, and it is central to the analysis of connotative meaning." The concept that observing similarity results in response generalization and memory errors can be understood through the theory of heuristics. Heuristics refers to the mental shortcuts or strategies employed in problem-solving and decision-making one takes to simplify complex situations, make judgments, or arrive at solutions rapidly. Heuristics are often based on past experiences, rules of thumb, or generalizations, allowing individuals to make reasonably efficient and effective decisions, although they may not always be optimal or accurate (Gigerenzer and Todd, 1999). When individuals observe similarity, assumptions

are often made since human cognition heavily relies on the categorization of similar objects. Consequently, the assumptions made based on observing similarity serve as heuristics. However, these assumptions can introduce biases because they may not be relevant to the specific decision at hand or they may simply be incorrect. An example of how similarity would function as a heuristic is that an individual will judge the quality of a new product based on how similar it looks to other products which are known to have a high degree of quality. While the similarity in looks can be an indicator of product quality, this does not have to be the case. Because the categorization process individuals engage in is often identical, similarity can result in predictive behaviour.

Persuasive communication and similarity

Stiff (2002) defines persuasive messaging as “any message that is intended to shape, reinforce, or change the responses of another, or others”. Researchers have developed various theories exploring how message receivers internalize persuasive messages from external sources, leading to changes in attitudes and/or behaviors. One influential theory in the field is the Elaboration Likelihood Model (ELM), proposed by Petty and Cacioppo (1986). The ELM posits that individuals can be persuaded through two distinct information processing routes: the central route and the peripheral route.

The argumentation behind these two routes comes from the notion that when a receiver receives a message from a persuasive source, the receiver will perform a certain level of elaboration where elaboration refers to how much effort an individual invests in processing a message. High elaboration triggers the central route, characterized by logic and analytical thinking while low elaboration activates the peripheral route. The peripheral route relies on heuristics and shortcuts to reach conclusions. When individuals engage in central route processing, they are persuaded by the content of the message, whereas peripheral route processing

relies on heuristics for forming conclusions. It is important to note that the authors acknowledge the presence of a spectrum of cognitive effort rather than a strict dual system thinking approach in this theory. Another similar theory to ELM is the Heuristic-Systematic model (HSM), which also proposes a dual-processing framework, distinguishing systematic and heuristic processing. Systematic processing aligns with central route processing, while heuristic processing aligns with peripheral route processing. Although there are subtle distinctions between these two models, delving into them further is beyond the scope of this paper. Similarity has been proven to influence persuasion through the peripheral/heuristical route (L. Zhang et al., 2016, Chaiken, 1980) . Whilst it is possible that similarity can activate the central route by affecting the number of valence thoughts one has, this research focuses on the peripheral route since the decision to click on a Facebook ad is intuitive without a long and thoughtful consideration of the required action at hand. When an individual perceives the persuader as similar to themselves, this can activate peripheral cues such as increased liking and credibility. This, in turn, can result in receivers accepting the message without any effortful thinking.

Research on the persuasive effects of similarity

Multiple scholars have tested the effects of similarity on persuasion in experimental lab and real-life settings. For example, Sukhdial et al. (2002) found that millennials are more inclined to purchase a product when it is presented by someone that matches their self-image. Additionally, Emswiller et al. (1971) investigated whether a similar dressing style and gender between the experimenter and a student would increase the rate of helping behaviour. The experimenter who would approach students to ask if they could lend him a dime to make a phone call would either dress in a "hippie" or "straight" style. They found that when the experimenters' style matched that of the student, in two third of the cases students

agreed that to experimenter could make a phone call two-thirds of the time whereas when dressed differently, the phone call was granted less than half of the time. Additionally, they also found a positive and significant effect of similar gender on the number of times a student would lend out the dime. Moreover, Herjanto and Amin (2020) researched the effect of different types of similarity between bankers and customers on interaction intensity. They subdivided similarity into three categories based on the similarity construct theory introduced by Crosby et al. (1990) which are: appearance similarity (e.g. ethnicity, dress, mannerisms, and personality), status similarity (e.g. education, occupation, knowledge, income and social class), and lifestyle similarity (e.g. family situations, interest, political views and values). They found a positive and significant effect on lifestyle similarity whereas they did not find an effect on appearance and status similarity.

The effects of similarity are shown even to be present when the similarities are purely a result of chance, which is called incidental similarity. For instance, in a study conducted by Miller et al. (1998), participants played the Prisoner's Dilemma game, where the authors found that cooperation was more frequent when their birthday was manipulated to match that of their partners. Similarly, Finch and Cialdini (1989) discovered that participants' perceptions of the controversial historical figure Rasputin were positively influenced when they believed they shared the same birthday. Another study by Burger et al. (2004) revealed that compliance with a confederate's request, such as donating to a charity, significantly increased when participants shared a birthday, first name, or even fingerprint type with the confederate. Moreover, Brendl et al. (2005) found that individuals who share the same first initial as a brand name are more inclined to choose that particular brand.

Mediators between similarity and persuasion

The previous section has delved into research which examined the direct impact of similarity on persuasion. Further studies have examined the underlying mechanisms through which similarity affects persuasion. This body of literature found that observed similarity results in higher levels of trust, credibility, liking, goodwill and social connectedness from one individual to another individual, brand, or product. These factors have in turn be found to positively affect persuasion.

In terms of trust, Levine and Valle (1975) suggest that trust arising from similarity stems from the belief that if a proposed solution has proven effective for someone who shares similarities with the audience, it is likely to work for them as well, given their shared characteristics with the presenter. From the perspective of trust's impact on persuasion, a variety of researchers have found that increasing trust between a seller and a buyer increases persuasion (e.g. Milliman and Fugate, 1988, Ahmad and Ali, 2018) From here, the first hypothesis is formulated. as follows:

H1.1 trust mediates the effect between similarity and persuasion

With respect to liking, Cialdini (1984) argues in his book *6 tools of persuasion* that similarity is one of the most influential factors that produces liking and that liking is in turn a powerful tool for persuasion. Cialdini argues that if an individual likes someone, that individual is more likely to say "yes" to requests of that person compared to someone who does not possess this liking feature. He provides multiple examples of how this liking principle is leveraged in sales where the most iconic example is the "tupperware party". This concept relates to the phenomenon of tupperware representatives who organise tupperware sales in their house and possess highly similar features as that of the customer base. As a result, attendees of the tupperware party strongly identify with the seller, leading them to feel a sense of obligation to purchase tupperware. From this concept, the second

hypothesis is formulated as follows:

H1.2 liking mediates the effect between similarity and persuasion

Related to liking, goodwill has also proven to be mediating factor between similarity and persuasion by multiple scholars. (e.g. McCroskey and Teven, 1999, Touré-Tillery and McGill, 2015). From here, the third hypothesis is formulated as follows:

H1.3 goodwill mediates the effect between similarity and persuasion

Concerning credibility, research has found that different similarity properties have a positive effect on credibility. For example similarities in race (Morimoto and La Ferle, 2008), gender (Flanagin and Metzger, 2003), sexual preference (Atkinson et al., 1981), and language (Aune and Kikuchi, 1993) have been proven to increase credibility. There is also a body of research that has investigated the effects of credibility on persuasiveness where the general finding is that credibility positively affects persuasion. (e.g. Hovland and Weiss, 1951) From here the third hypothesis is formulated as follows:

H1.4 credibility mediates the effect between similarity and persuasion

Jiang et al. (2010) state that *the need for social connectedness plays an important role in the persuasive effects produced by similarity*. They draw their theoretical argumentation for this statement from the theoretical framework of belongings introduced by Baumeister and Leary (1995) which argues that humans have an innate need to belong and are driven to establish and maintain interpersonal bonds. Similarly, in his book, *The Science of Giving* Oppenheimer et al. (2011), argues that individuals feel close to others with whom they have something in common. Based on this concept, the fourth hypothesis is derived

H1.5 social connectedness mediates the effect between similarity and persuasion

The rationale behind the relationship between similarity and validation stems from the concept that when an individual encounters someone else who holds similar beliefs or perceptions, the individual will process this as a confirmation that their

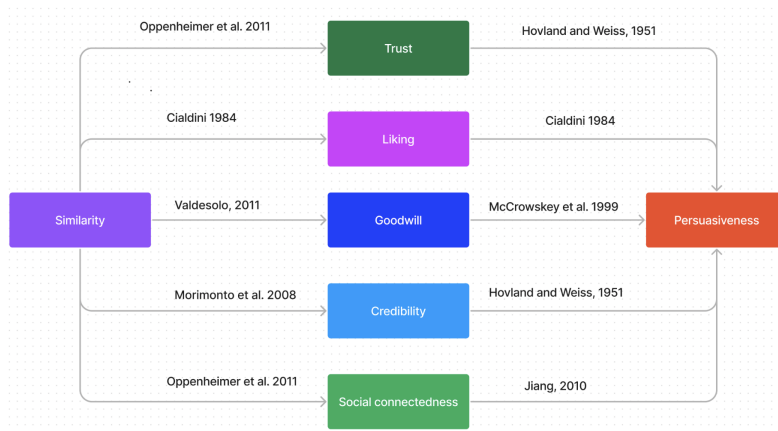


Figure 1: Mediating effects between similarity and persuasion

own beliefs are reasonable and valid (Byrne et al., 1966). When one's views are validated by another this in turn affects the likelihood that someone would accept a message (Singh et al., 2017). While this is an important mediator, this paper argues that in the context of this research validation is not relevant since the advertisements are not targeted on beliefs people hold.

It is important to recognize that there is an interaction between the effects stemming from similarity, as well as between similarity itself and the mediating effects. Hence, the relationship as displayed in fig. 1 is a simplified version of the reality where the interplay between the effects at play is more complex and intertwined.

Persuasive theories within the online social media context: similarity-attraction theory and homophily

Since this research focuses on the effects of similarity in a social media context, this section dives deeper into the similarity frameworks which are most relevant in this domain. Within the domain of the effects of similarity in online social media on persuasion, there are two theories that are referred to in most literature: the similarity-attraction theory and homophily. The elaboration and distinction of these theories are of importance since they possess subtle but important differences. In order to clearly identify in which theory this research places itself,

the argumentation and categorization of this paper are improved.

The similarity-attraction theory introduced by Erwin (1971) posits that individuals tend to like and feel more attracted to others who are similar to them. Homophily, on the other hand, is defined as the tendency of individuals to associate and connect with people who are similar to them (Ertug et al., 2022). This term is often used in academic papers as an important driver for social network formation. Both frameworks are identical in terms of providing a framework that states that observed similarity provides positive artifacts such as liking. The differences between the two frameworks for the context of this paper are twofold. First, where homophily refers to the tendency of individuals to form social connections as a result of similarity, the similarity-attraction framework links similarity to liking and other positive outcomes but does not require a relationship to be formed (Ertug et al., 2022). Second, in the domain of social networks, homophily is a more widely used term than the similarity-attraction model. Since this research focuses on establishing a relationship via a social network by joining a community, the concept of homophily is most appropriate for this research and will be further investigated in the next section.

Homophily

Lazarsfeld, Merton, et al. (1954) popularized the term "homophily" which brought together previous research conducted by network researchers investigating the phenomenon of individuals in social networks forming connections with similar others. While the concept of homophily is mostly discussed in communication literature, in recent years this concept has also gained more traction in the marketing literature (Kim et al., 2018).

Multiple scholars have put effort into identifying the different aspects of homophily. A widely recognized model of homophily categorization constructed by McCroskey et al. (1975) divides homophily into four categories: attitude,

values, background, and appearance. The attitude dimension relates to the similarity in thinking, behaviour, perception, doing things, sharing beliefs, sharing attitudes, liking and disliking things. The shared attitudes between people create a sense of familiarity and validation, leading to a stronger sense of connection and rapport. The value dimension is closely related to the attitude dimensions but concerns more human core values, namely morals, sexual attitudes, values, treatment of people, political preferences, and emotions. When individuals have similar morals and values, they are more likely to be attracted to each other and form relationships based on shared ethical perspectives. The appearance dimension concerns looks, size, weight and hair. The reasoning behind the effects of appearance similarity is that people feel more comfortable and attracted to those who possess similar physical features. Lastly, the social background dimension concerns social class, culture, economic situation, status, family, and background. The notion behind similarity in social backgrounds is that common experiences and values result in a sense of familiarity and connection.

This paper investigates the effects of attitude homophily since the experiment researches whether perceived homophily between the source and target audience who are interested in the same thing, home gyms, affects the target audience's conversion rate to join a Facebook group.

Homophily in marketing: Real-world examples

A large variety of companies in different sector leverage the concept of homophily in their marketing efforts in order to grow their brand and increase profits.

For example, Outdoor Voices, an activewear brand, introduced the hashtag #doingthings¹ on Instagram where they encourage customers to share photos and stories of themselves in their Outdoor Voices clothing whilst engaging in physical activities. In their e-mail marketing, they use these photos to stimulate the

¹<https://www.instagram.com/explore/tags/doingthings/>

similarity of other customers to the customers who are reading the mail by showcasing a similar lifestyle. In turn, this creates a sense of community and relatability. From Ladhari's homophily framework, this marketing effort relates to both the attitude dimension by showcasing a similarity in doing things and the appearance dimension by showcasing a similar type of dress. Additionally, Toms, a shoe company, incorporates their philanthropic efforts into their marketing. By showcasing that for every pair of shoes sold they donate one pair to a child in need², they seek to find homophily in terms of values with their customer base. This relates to the value dimension of Mccroskey's framework. Tiffany & Co, a luxury jewelry brand, host private high-end events such as fashion shows³. By showcasing that their brand represents the same high-end social attributes as their audience, they are able to form an emotional and lifestyle connection with their audience.

Homophily in an online environment

The effects of the same social-behavioural triggers, such as attitude homophily, can differ between the on- and offline world. However, research has shown that IT systems are perceived by individuals as social systems that are able to provoke social responses from their users (Al-Natour and Benbasat, 2009). This phenomenon is also known as the Computers are Social Actors (CASA) paradigm which argues that individuals apply the same or similar social norms and perceptions when interacting with IT systems as they would when interacting with an individual in real life (Gambino et al., 2020)

With respect to observing homophily in an online environment, some scholars argue that homophily might be more difficult to detect compared to real-life situations. For example Wright (2000) argues that "As a result of limited nonverbal cues in online environments, individuals may find it difficult to assess

²<https://www.savethechildren.org/us/about-us/become-a-partner/corporations/toms>

³<https://www.laineygossip.com/tiffany-and-co-event-in-london-was-full-of-outfits-of-the-week/71117>

similarity”. On the other hand, there is a body of scholars who argue that homophily is recognized and plays an important role in online contexts. For example, Walther et al. (2001) argues that homophily affects persuasion and perceptions of otherwise unknown individuals in an online environment. This perception is shared by the social identity model of deindividuation effects (SIDE) on computer-mediated communication (CMC) which examines how the anonymity and reduced cues in CMC affect online group formation. This framework argues that homophily is a significant driver in the formation and dynamics of online groups (Lea and Spears, 1992). K. Z. Zhang et al. (2018) argue in the same line of reasoning by stating that homophily in online environments eases communication efforts which compensates for the ambiguity of the source’s characteristics linked to the virtual environment.

A multitude of scholars has researched the persuasive and community commitment effects of homophily in online environments. For example, K. Z. Zhang et al. (2018) found that perceived homophily between a brand and the audience increased community commitment to brand microblogs and increased the perception of the informational quality of the blogs. Moreover, Wang et al. (2008) conducted a study where participants were shown different versions of web pages on which information was presented on cancer advice. Their results suggest that participants who perceived higher levels of homophily from various aspects of the webpage gave higher qualitative evaluations of the information that they read. In turn, leading to a greater likelihood to act on the advice presented on the page. Additionally, Al-Natour et al. (2011) found that the perceived personality homophily of a shopping assistant positively and significantly increased the trustworthiness of the shopping assistant. Conversely, they found that perceived personality homophily did not significantly affect perceived enjoyment and perceived social presence.

Homophily in online social networks

In online social networks, the positive effects of homophily between a source and receiver have been shown to promote interpersonal relationships, help achieve connections, and increase the chance of community commitment e.g. (Bu et al., 2022 Ladhari et al., 2020 K. Z. Zhang et al., 2018).

In the research domain on how homophily in online social networks impacts marketing objectives, influencer research has predominantly taken the forefront. For example, Sakib et al. (2020) found that homophily between a vlogger and its audience increased the degree of parasocial interactions. Similarly, Haobin Ye et al. (2021) found that the perceived homophily between a spokesperson on an audience member on social media resulted in more parasocial interaction. This, in turn, resulted in brand identification and voluntary interaction behaviour of the online audience. Moreover, Duh and Thabethe (2021) found that perceived similarity between an influencer and an audience member positively affects brand engagement.

With respect to attitude homophily, Sokolova and Kefi (2020) investigated the effects of multiple persuasion cues including attitude homophily of social media influencers on their audience. They found that attitude homophily was positively and significantly related to perceived credibility and the level of para-social interaction. Perceived credibility and para-social interaction were in turn both positively and significantly related to the purchase intention of an audience member on the products the influencers sell. Similarly, Bu et al. (2022) found a positive and significant relationship of attitude homophily between influencers and consumers on emotional attachment, vloggers' popularity, and purchase intention. Additionally, Kim et al. (2018) found that attitude homophily between an influencer and an audience member positively affects trust where trust in turn positively and significantly affects purchase intention, product attitude, and loyalty to the influencer.

Since these researches showcase that attitude homophily positively affects the likelihood of persuading individuals to take a certain action, this paper hypothesizes that signaling attitude homophily through Facebook advertisements will have a positive effect on the willingness of people to join a Facebook group. From here, the second hypothesis is formulated as follows:

H2: Signaling attitude homophily in written social media advertisements has a positive effect on persuasion

3 Experiment 1

Description

The experiment examines the impact of perceived attitude homophily in advertisements on community commitment. The experiment follows an A/B testing approach where two distinct Facebook advertisements are presented to home gym owners. The experimental approach is ethically approved by the ethical check of the Erasmus University. The novelty of this approach is twofold. First, to the best of the authors' knowledge, no previous research has explored the impact of framing attitude homophily on conversion rates for online advertisements. Second, unlike prior studies that primarily employed questionnaires, this approach investigates the effects of attitude homophily in a real-world context. Consequently, participants in this study remain unaware that they are partaking in research, distinguishing it from previous research where subjects were aware of their participation.

Experimental design

This research is conducted as an online between-subject field experimental design. The dependent variable for each advertisement is the page likes on the advertisement. Age group and gender are used as control variables.



The treatment group is exposed to an advertisement that includes two sentences signaling attitude homophily between the viewer and the message source. The control group receives an identical advertisement, except for the omission of the two sentences that signal attitude homophily.

Both advertisements started with the following copy:


"Hey! We see you are a home gym owner and we would like to invite you to our new Facebook group. In this group we are gathering like-minded home gympreneurs to share ideas, conquer challenges, and celebrate each other's successes. The whole idea is to find ways and best practices to earn income from our home and garage gyms. "


For the treatment group, the following sentence was added: **As fellow home gym owners, we are thrilled to build this community together!** This text was made bold in order to stand out.

Additionally, the advertisements included a photo with text. For both groups, the text overlaying the photo stated: *"Facebook Group for Homegympreneurs"*. For the treatment group, a subheading was added that stated *"Made by home gym owners for home gym owners"*. The reasoning behind adding this sentence was that people who view the ad have to click "view more" to see the entire copy of the ad. By signaling attitude homophily on the photo chances are more likely that viewers observe attitude homophily. The goal of those two sentences is to signal that the GORX team is similar in terms of lifestyle to that of the target group since they also possess a home gym.

 **Home Gympreneurs**
Gesponsord ·   

Hey! We see you are a home gym owner and we would like to invite you to our new Facebook group. In this group we are gathering like-minded home gympreneurs to share ideas, conquer challenges, and celebrate each other's successes. The idea for this group is to find ways and best practices to earn income from our home and garage gyms.



Home Gympreneurs
Click the link to got to Home Gympr... 


 Vind ik leuk  Opmerking plaatsen  Delen

Figure 2: Facebook ad of the control group

Home Gympreneurs
Gesponsord · 🌐

Hey! We see you are a home gym owner and we would like to invite you to our new Facebook group. In this group we are gathering like-minded home gympreneurs to share ideas, conquer challenges, and celebrate each other's successes. The idea for this group is to find ways and best practices to earn income from our home and garage gyms.

As fellow home gym owners, we are thrilled to build this community together!

Facebook group for Home Gympreneurs
Made by home gym owners for home gym owners

CONNECT COLLABORATE THRIVE

Home Gympreneurs 👍

👍 Vind ik leuk 💬 Opmerking plaatsen ➦ Delen

Figure 3: Facebook ad of the treatment group

Context of the advertisements

The advertisements are run for GORX Fitness ⁴. This company is based in the U.S. and provides an online platform where home gym owners can list their home gym and gym goers are able to work out at a home gym of choice.

GORX is a startup that launched their app recently. In order to grow gym listings on their platform it is important to build the brand awareness and engagement of

⁴<https://www.gorxfitness.com>

GORX. Facebook communities have been proven to positively affect brand awareness and brand engagement (Walther et al., 2001, Gummerus et al., 2012). Moreover, Calderón Garcia et al. (2019) argue that individuals will voluntarily engage in co-creation once they realize that they are able to benefit from the process of knowledge exchange with others.

Sample

Although there are no scientific sources for average conversion rates of Facebook advertisements, multiple platforms such as Irvine (2023) and Ezenduka (2022) state that the Click Through Rate (CTR) of an advertisement in the fitness industry is 1.01 percent and that the conversion rate $((\text{conversions} / \text{ad clicks}) * 100)$ equals 14.29 percent in the fitness industry. Thus, the conversion per view would be $0.0101 \text{ times } 0.1429 = 0.0014$. However, conversion is a broad term that can also consist of the purchase of a product. Liking a page on Facebook itself is a relatively low-effort conversion for an individual since the individual does not have to switch to another page but can stay in their feed and it costs them nothing. Therefore, this paper hypothesizes that people who will click on the advertisement to join the Facebook group are relatively highly likely to like the Facebook page. Therefore, with respect to the sample size calculation, a proportion ratio of 0.005 is implemented for the control group. With respect to the treatment group, there has not been similar research yet that has investigated the effect of attitude homophily framing on Facebook page likes. The research that comes closest to this research is the paper published by K. Z. Zhang et al. (2018) which found a coefficient of 0.316 of perceived similarity on community commitment on a Likert scale of 7. Although Likert scales cannot be exactly converted to percent changes, the coefficient is roughly translated to an increased proportion ratio of 0.0053. Plugging in those numbers in G-power with an alfa error probability of 0.05 and power of 0.95, sample sizes for both groups should be 1,238,815 per sample. This reach is outside

of the budget of the campaign and can therefore not be achieved in this study. Members of Facebook groups dedicated to home gyms were targeted. Facebook was chosen as a platform to run the advertisements on since it allows targeting on a group level ⁵ and has an active home gym owner community. The total target audience for the advertisements consisted of members of the five largest home gym Facebook groups ^{6 7}. The ads were run for one week in order to account for daily changes. Since the two ads within the campaign consist of the same target audience and specification, this paper argues there is no reason to believe that both ads were not randomly distributed within the target audience.

The target audience consists of both men and women between the age of 22 and 64. In total, 3,554 subjects were targeted where 629 subjects were targeted for advertisement A and 2925 subjects were targeted for ad B. 85 subjects were aged 18-24, 1,299 aged 25-34, 1,1412 were aged 35-44, 708 were aged 45-55 and 60 aged 56-64. With respect to gender, 391 subjects were female, 3141 were men and 22 subjects had an unknown gender.

To check whether both advertisements were randomly assigned to the subjects, two Fischer exact tests were conducted of age and gender on like where the P values equal 0.3465 11 and 0.9406 11 respectively indicating a proper randomization process.

⁵Facebook does not have to possibility to target group members directly in their ads manager. However, via the tool Leadenforce <https://leadenforce.com> it is possible to create and export a custom audience of group members to Facebook ads

⁶<https://www.facebook.com/groups/diyhomegyms> <https://www.facebook.com/groups/217912043314999> <https://www.facebook.com/groups/262681228448>, https://www.facebook.com/groups/2100223700211397/?hoisted_section_header_type=recently_seen/&multi_permalinks=3549576818609404 <https://www.facebook.com/groups/1480889032182400>

⁷Leadenforce is not able to capture all members of the Facebook groups into their custom target audience

Table 1: Descriptive statistics

Ad group	Age	Gender	Reach	Likes
A	18-24	male	21	0
A	25-34	male	251	1
A	35-44	male	207	4
A	45-54	male	102	2
A	55-64	male	4	0
A	18-24	female	4	0
A	25-34	female	12	0
A	35-44	female	18	0
A	45-54	female	7	0
A	55-64	female	1	0
A	35-44	unknown	1	0
A	55-64	unknown	1	0
B	18-24	male	53	1
B	25-34	male	927	20
B	35-44	male	1036	27
B	45-54	male	505	14
B	55-64	male	35	1
B	18-24	female	7	1
B	25-34	female	109	0
B	35-44	female	141	4
B	45-54	female	84	4
B	55-64	female	8	1
B	35-44	unknown	9	0
B	45-54	unknown	10	0
B	55-64	unknown	1	0

Procedure

One Facebook campaign was created which consisted of two ads. Clicking on the ads directed the individual to a Facebook page dedicated to turning their home gym into a business ⁸.

⁸Facebook doesn't allow ads to direct to a Facebook group which is why the ads referred to a Facebook page that in turn directed people to the Facebook group

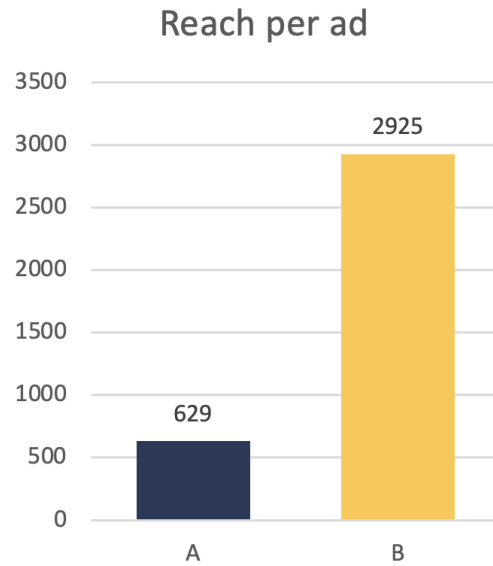


Figure 4: Reach per ad

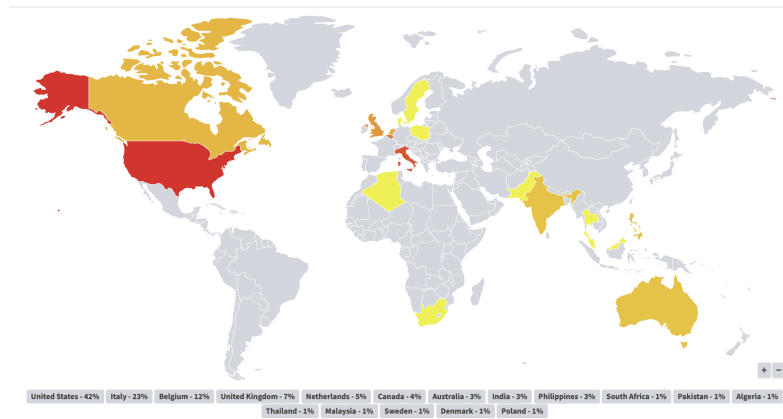


Figure 5: Target audience demographics

Analysis

This experiment makes use of logistic regression to analyse the relationship between the independent and dependent variables. A logistic regression is chosen since the dependent variable is binary and the sample consists of one main independent and two control variables. Additionally, the logistic regression allows to interpret the magnitude of the results. In order to test whether the assumptions of the logistic regression hold, a correlation matrix is implemented which is

showcased in table 2. The results show that no multicollinearity is present between the independent variables. The assumptions of no influential values and a linear relationship between the logit of the outcome and each predictor variable are not relevant in this regression since all independent variables are either binary or categorical. Next to the logistic regression, a Mann-Whitney U and Chi-Squared test between page likes and the treatment\control group are implemented to further investigate the robustness of the differences between the number of page likes and the two groups.

	Treat	Age.group	Gender
Treat	1	-0.61	-0.29
Age group	-0.61	1	-0.58
Gender	-0.29	-0.58	1

Table 2: Correlation Matrix

Results

fig. 6 display the likes of each advertisement where the advertisement signaling attitude homophily received 7 likes and the ad without signaling attitude homopihly received 73 likes. Dividing the likes by the amount of views for each advertisement results in fig. 7 which shows that the like/reach ratio for the control group equals 0.025 whereas the treatment group has a like/reach ratio of 0.011. The logit regression in 3 shows that this difference is significant at the 5% significance level with a coefficient of -0.787 which translates to an odds ratio of 0.455. Hence, the odds of liking the page in the treatment group are 0.455 the odds of liking the page in the control group, *ceteris paribus*. Gender and age group do not have a significant effect on page likes. The Fisher exact and Chi-squared test confirm these findings by having a significant p-value of 0.028 table 4 and 0.049 table 5 respectively. These results are contradictory to the hypothesis that signaling attitude homophily would result in a positive effects on page likes.

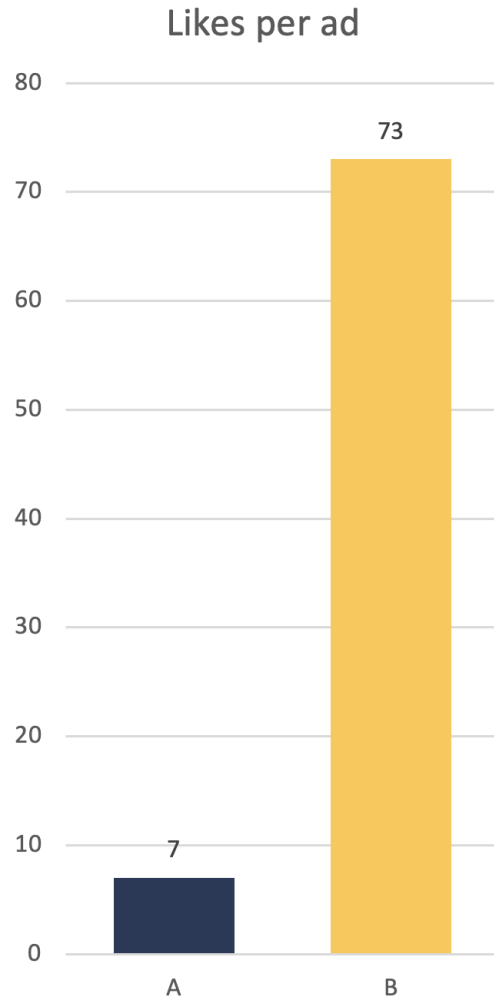


Figure 6: Likes per ad

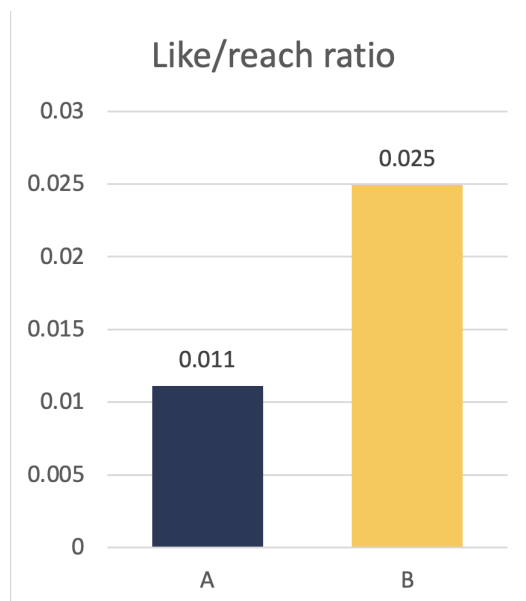


Figure 7: Like/reach ratio

Table 3: Logistic Regression Results

<i>Dependent variable:</i>	
Like	
Treat	-0.787** (0.399)
Gender	0.006 (0.344)
Age.group25-34	-0.436 (0.750)
Age.group35-44	-0.025 (0.737)
Age.group45-54	0.104 (0.752)
Age.group55-64	0.447 (1.018)
Constant	-3.561*** (0.776)
Observations	3,557
Log Likelihood	-378.016
Akaike Inf. Crit.	770.031

Note: *p<0.1; **p<0.05; ***p<0.01

Statistic	Values
p-value	0.03672
95% confidence interval	(0.1705, 0.9619)
Sample estimate (odds ratio)	0.4411

Table 4: Fisher's Exact Test Results

Table 5: Pearson's Chi-squared test with Yates' continuity correction

X-squared	p-value
3.8597	0.04946

Discussion Experiment 1

This experiment has researched whether signaling attitude homophily in Facebook advertisements increases persuasion in the form of page likes. The findings suggest that signaling attitude homophily significantly decreases the number of page likes which contradicts the hypothesis of this experiment.

There are several limitations in this research. First, due to the nature of Facebook ad campaigns, some people have been exposed to both advertisements, thus violating the assumption of independence. Unfortunately, this issue was observed only after the ads were run, and Facebook analytics lack the functionality to identify the group that has been exposed to both advertisements. Second, the sample is divided disproportionately between the treatment and control groups where the control group accounts for more than 80 percent of all observations. This disparity is a result of Facebook's algorithm that decides the distribution of ad displays. Third, the sample is limited to people who own a home gym which limits the generalizability of the findings to other sectors. Fourth, this research methodology cannot verify whether the subjects have observed the similarity signaling. It is possible that people who were targeted by the ad scrolled through the advertisement without paying attention or liked the page without observing the sentences focused on attitude similarity.

For future research, it is recommended to run each advertisement in a separate campaign to enhance the likelihood of a more balanced division of subjects between the treatment and control groups. Additionally, targeting separate but similar groups for each advertisement would prevent subjects to be exposed to both

advertisements. Lastly, it would be valuable to capture information on the observability and attitude changes of the subjects when exposed to the advertisements.

4 Experiment 2

Experimental design

This experiment comprises three objectives. First, it aims to research whether people observe attitude homophily between two advertisements that are highly similar to those of experiment 1. Second, it investigates the influence of attitude homophily on persuasion. Third, the experiment explores the potential mediating effects between attitude homophily and persuasion. The purpose of this second experiment is to address the limitations of experiment 1 and to answer hypotheses 1.1 through 1.5. This experiment consists of an online within-subject lab design where Qualtrics is utilized as the platform for the experiment. The experiment tests whether signaling attitude homophily affects community commitment, credibility, likeability, trustworthiness, social connectedness, and goodwill.



Figure 8: Hypotheses testing experiment 2

Sample

No other research in the similarity domain has thus far implemented the same experimental design. The research that comes closest is the research conducted by Sokolova and Kefi (2020) where they investigated a multitude of effects as a result of observed attitude homophily between a subject and influencers via a questionnaire where answers were given on a 5-point Likert scale. The coefficient they found equaled 0.54 which roughly translates to an effect size of 0.135. Plugging this effect size in Gpower using an alpha of 0.05 and a power of 0.95 results in a sample size of 749. The Subjects for this experiment were recruited via the personal network of the researchers where 26 responses were recorded. The sample consists of 18 males and 8 females. Additionally, 21 respondents are active on social media.

Procedure

Upon entering the experiment, the subjects are sequentially shown two ads, one that signals attitude homophily and one that does not. Both ads are highly similar to the home gym advertisements used in experiment 1. The main difference comprises of the fact that these advertisements are targeted to people who are interested in fitness rather than turning their home gym into a business. The reasoning behind this decision is that the target audience of the experiment relates more to fitness than to home gyms and can therefore more strongly relate to fitness advertisement which in turn positively affects participation relatedness and efforts in the experiment. The order in which the ads are presented to participants is randomized in order to minimize anchoring bias. After being shown both advertisements, the subjects are asked to assert whether they observed any differences between the two ads and if yes, what those differences were. This approach allows the experiment to investigate whether individuals do observe attitude homophily when viewing the

advertisement. In the second part of the experiment, both advertisements are shown side by side. For both advertisements, questions are asked on a 5 point likert scale to assess perceived levels of community commitment, trustworthiness, credibility, social connectedness, liking, and goodwill. Lastly, the survey includes gender, activity on social media and interest in fitness as control variables.

Analysis

The Wilcoxon signed ranked test is implemented to test the effects of attitude homophily on likelihood to join, trustworthiness, credibility, social connectedness, likeability, and goodwill. In order to test whether the mediating effects have a relationship with likelihood to join, the values of the control message are subtracted from the treatment message. From here a Partial Least Squared (PLM) regression is used since the PLM has the ability to model latent variables without requiring strict assumptions concerning the normal distribution of data. In order to test whether PLM is an appropriate test for this dataset a factor analysis was conducted. All variables had a sufficient loading factor which allows the model to keep all variables. table 6

Results

fig. 9 shows that 17 subjects did observe differences in first instance between the ads where 9 people did not observe any differences. fig. 10 lists what type of differences the subjects observed.

Table 6: Factor Analysis Results

Uniquenesses	
difference_join	0.687
difference_cred	0.392
difference_social	0.283
difference_like	0.468
difference_goodwill	0.819
difference_trust	0.492
Loadings	
difference_join	-0.559
difference_cred	0.780
difference_social	0.847
difference_like	0.729
difference_goodwill	0.426
difference_trust	0.713
SS loadings	2.858
Proportion Var	0.476
Test of the hypothesis	
Chi square statistic	12.48
Degrees of freedom	9
p-value	0.187

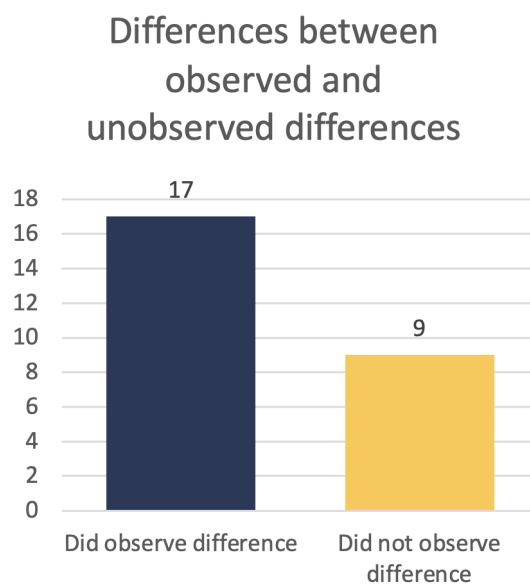


Figure 9: Observed and unobserved differences

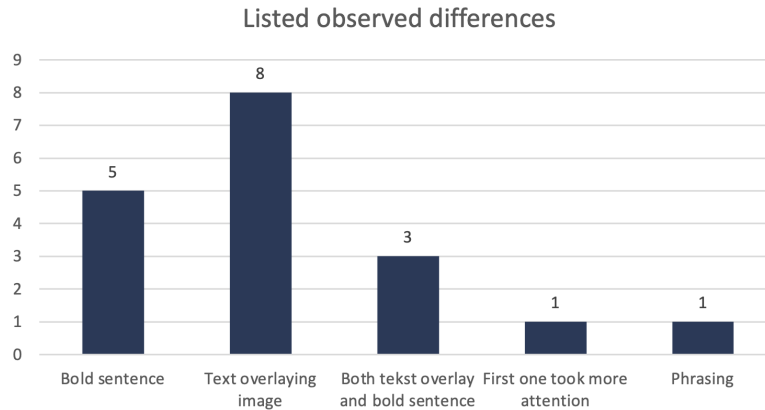


Figure 10: Listed differences

table 7 shows the mean values and standard deviations of the tested variables. What is striking is that for all variables except community commitment, the mean values for advertisement B are higher which contradicts hypotheses 1.1 through 1.5 which theorise that attitude homophily would have a positive effect on the mediators. In table 8 the results of the Wilcoxon signed ranked test are displayed where community commitment, trustworthiness, and credibility are insignificant, social connectedness and goodwill are significant at the 1% level and likeability is significant at the 5% level. The finding that attitude homophily has no adverse significant effect on community commitment contradicts the finding of experiment 1. However, the direction of the findings of social connectedness, likeability, and goodwill are the same as for experiment 1 since signalling attitude homophily has an adverse effect on these factors. In sum, experiment 2 rejects both hypotheses 1.1 through 1.5 and hypothesis 2.

Table 7: Means and SD's

Variable	Value
Likelihood to join_A (mean)	3.77
SD	1.14
Likelihood to join_B (mean)	3.65
SD	0.98
Trustworthiness_A (mean)	3.12
SD	0.95
Trustworthiness_B (mean)	3.23
SD	0.86
Credibility_A (mean)	3.00
SD	0.85
Credibility_B (mean)	3.27
SD	0.87
Social connectedness_A (mean)	2.31
SD	1.19
Social connectedness_B (mean)	2.92
SD	1.13
Likeability_A (mean)	2.27
SD	1.00
Likeability_B (mean)	2.65
SD	1.09
Goodwill_A (mean)	2.27
SD	1.04
Goodwill_B (mean)	2.65
SD	1.06

table 9 shows that no variables of the PLS regression are significant which contradicts the hypotheses that the mediating effects have a positive relationship on persuasion.

Table 8: Wilcoxon signed ranked: P-values

Variable	P-Value
Likelihood to join	0.49
Trustworthiness	0.46
Credibility	0.12
Social connectedness	0.01**
Likeability	0.03*
Goodwill	0.01**

Significance Levels: * < 0.05, ** < 0.01

Table 9: Coefficients and P-values PLS regression

	Coefficient	P-value
Credibility	-0.15	0.996
Social connectedness	-0.17	0.972
Likeability	-0.13	0.906
Goodwill	-0.03	0.742
Trust	-0.09	0.989

Discussion experiment 2

This experiment has found no evidence for the hypothesis that signaling attitude homophily positively affects persuasion, likeability, trustworthiness, social connectedness, and goodwill. This experiment has however found a significant adverse effect of signaling attitude homophily on social connectedness, likability, and goodwill. These findings contradict previous studies where attitude homophily positively affects the researched variables of this experiment. Additionally, the experiment has found no effect of the mediators on the likelihood to join the Facebook group. There are several limitations to this experiment. First, the sample size is small which reduces the statistical power and generalizability of the results. Second, the target audience was not ideal since not all respondents were interested in fitness which influences the relatbility of the advertisements.

5 Discussion

This research has via two experiments investigated the effects of signaling attitude homophily on persuasion where in experiment 1 persuasion was expressed in terms of Facebook page likes and in experiment 2 in the likelihood of joining a Facebook community. Additionally, experiment 2 investigated the effects of signaling attitude homophily on the mediating factors between similarity and persuasion and the effect of the mediators on persuasion. The findings of both experiments are not in line with the hypotheses which theorised that signaling attitude homophily would positively affect persuasion and the mediators. If anything, the results show that signaling attitude homophily negatively impacts persuasion and the mediators. Although no previous studies have explored the effects of signaling attitude homophily on persuasion in a social media written advertisement context, studies that have researched the effects of general perceived attitude homophily on persuasion between a source and a receiver have generally found a positive relationship (Sokolova and Kefi, 2020, Kim et al., 2018, Bu et al., 2022).

A possible explanation for the outcomes of the experiments could be that by observing attitude homophily, viewers perceive the group owners as identical to themselves and not as an authority who has significant experience in the fitness industry. Consequently, viewers may perceive limited learning potential from the group due to the owners' lack of expertise. Additionally, since experiment 2 showcased that signaling attitude homophily adversely affects social connectedness, likeability, and liking, it could be the case that explicitly pointing out that the group owners are similar in lifestyle to the viewers comes across as hollow or artificial. Whilst it is valuable to speculate about potential reasons for the findings, the reader should keep in mind that the research is subject to the limitations as discussed in experiments 1 and 2 which can have significantly impacted the robustness of the findings.

For further research, it would be interesting to see whether the same findings hold for larger sample sizes across a variety of domains. Additionally, it would be valuable to elicit the explicit opinions and attitude changes people experience when confronted with the written attitude homophily in advertisements to more thoroughly grasp the cognitive process one goes through when confronted with attitude homophily. Lastly, it would be interesting to test various levels of signaling attitude homophily on persuasion since the findings of this research suggest that explicitly pointing out lifestyle similarity between a source and a receiver adversely affects persuasion where other studies have found that more subtle forms of signaling attitude homophily positively affects persuasion. When the findings of behavioural change as a result of signaling attitude homophily are more robust, marketers can apply this knowledge in their advertisement campaigns which in turn helps them optimize their marketing efforts.

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6 Appendix

<input type="checkbox"/>	Source	Coverage	Date
<input type="checkbox"/>	DIY Home Gyms Public group • 55,952 members	18%	2 days ago
<input type="checkbox"/>	Fitness / Home gym Public group • 7,240 members	97%	2 days ago
<input type="checkbox"/>	Home Gym Public group • 105,893 members	16%	2 days ago
<input type="checkbox"/>	Home Gym Community by Garage Gym Reviews Closed group • 192,852 members	1%	2 days ago
<input type="checkbox"/>	Home Gym Fitness Equipment Buy / Sell Public group • 29,282 members	46%	2 days ago

Figure 11: Target audience groups and coverage Leadenforce

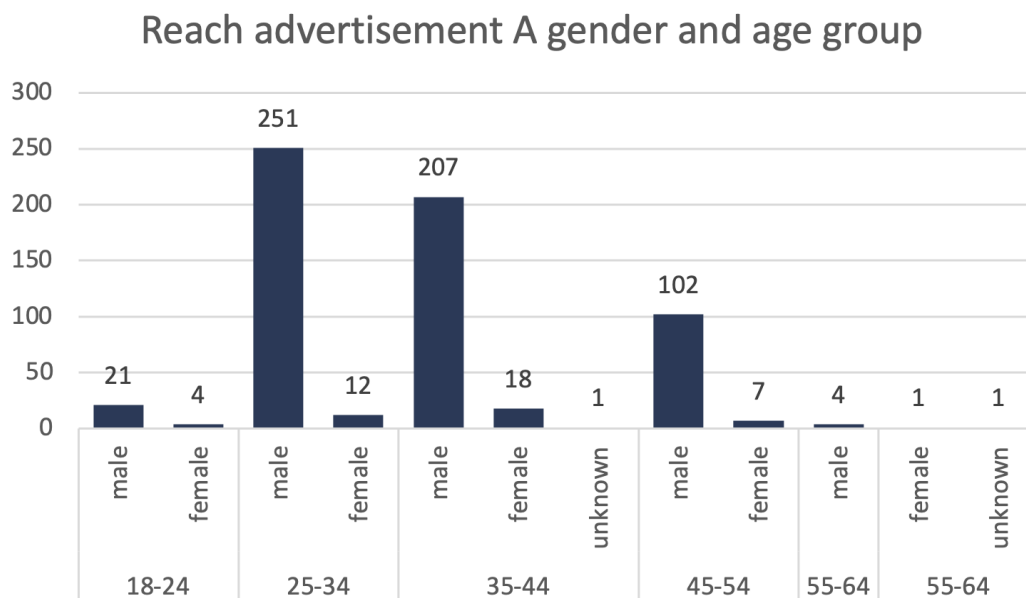


Figure 12: Reach advertisement A gender and age group

Statistic	Values
p-value	.0.9406
X-squared	0.0055618

Table 10: Chi squared test Gender on Page likes

Statistic	Values
p-value	.0.3465
X-squared	0.0055618

Table 11: Chi squared test Age on Page likes

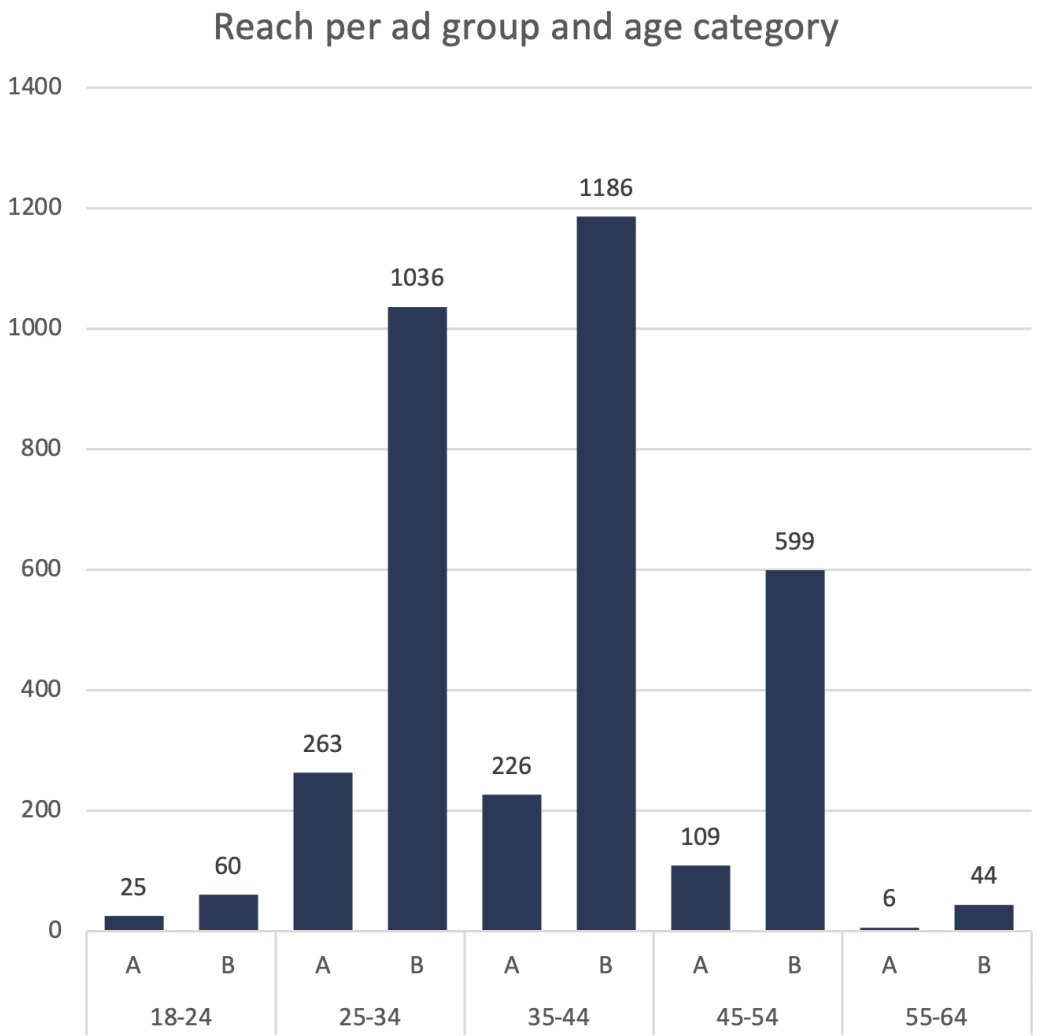


Figure 13: Reach per ad group and category